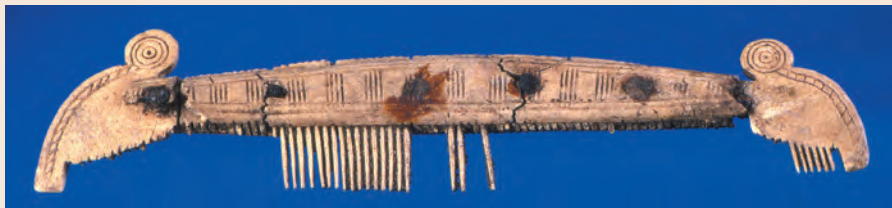


LIFE AND ECONOMY AT EARLY MEDIEVAL FLIXBOROUGH

c. AD 600–1000

The Artefact Evidence



Edited by

D. H. Evans and Christopher Loveluck

EXCAVATIONS AT FLIXBOROUGH VOLUME 2

EXCAVATIONS AT FLIXBOROUGH VOL. 2

Life and Economy at Early Medieval
Flixborough, *c.* AD 600–1000:
The Artefact Evidence

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- Vol. 1 The Early Medieval Settlement Remains from Flixborough, Lincolnshire: The Occupation Sequence, c. AD 600–1000 *by Christopher Loveluck and David Atkinson*
- Vol. 2 Life and Economy at Early Medieval Flixborough, c. AD 600–1000: The Artefact Evidence *edited by D. H. Evans and Christopher Loveluck*
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- Vol. 4 Rural Settlement, Lifestyles and Social Change in the Later First Millennium AD: Anglo-Saxon Flixborough in its Wider Context *by Christopher Loveluck*

Front cover:

top row: left: Gilt copper alloy disc-headed pin (no. 560; Rf 7835). (Bill Marsden, Humber Field Archaeology)
middle: Fragmentary brass mount (no. 979; RF 14087). (Bill Marsden, Humber Field Archaeology)
right: Gilt-silver disc brooch with zoomorphic decoration (no. 25; RF 5467) (Bill Marsden, Humber Field Archaeology)
bottom row: Antler single-sided 'winged' composite comb (no. 851; RF 6139). (Bill Marsden, Humber Field Archaeology)
background: various finds from the Flixborough site.

Back cover:

X-radiograph of the inscribed lead plaque (no. 1019; RF 1781), bearing the names of seven individuals, both male and female. (British Museum).

EXCAVATIONS AT FLIXBOROUGH VOL. 2

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edited by
D. H. Evans and Christopher Loveluck

with contributions by

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Jennifer Jones, Christopher Loveluck, Peter Makey, Bill Marsden,
Catherine Mortimer, Sonia O'Connor, T. P. O'Connor, Elisabeth Okasha,
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Penelope Walton Rogers, Lisa M. Wastling, Jacqui Watson, Jane Young and
Susan M. Youngs*

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- from Flixborough, eighth to ninth century (Bill Marsden; Humber Field Archaeology).
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- 10.1 Locking tongs (no. 3063, RF 12169) for holding partially fabricated metal artefacts; the keeper (the plate attached to the rebated end of one arm) has four holes, in which the other arm could be set, to keep it in tension. (Bill Marsden; Humber Field Archaeology).
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- 13.2 Sceattas and pennies; scale 1:1 (Photos: Bill Marsden, apart from no. 3268, which was taken from a Polaroid print).
- 13.3 Illustrations of sceattas and pennies which were retained by metal detectorists) no. 3425 is taken from the original Recorded Find sheet).
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- 13.5 Conical lead weight, with iron suspension handle (no. 3279, RF 3884). (Bill Marsden; Humber Field Archaeology).
- 13.6 Cylindrical lead weight (no. 3284, RF 3727), and a silver 'finger' ingot (no. 3289, RF 12198). (Bill Marsden; Humber Field Archaeology).

Chapter 14

- 14.1 Medieval annular gold brooch (no. 3367, RF 12237), formed from double-strand wire wrapped around a core; the pin is missing. Similar to a mid to late thirteenth-century example from York. (Bill Marsden; Humber Field Archaeology).

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Summary

Between 1989 and 1991, extensive excavations were undertaken adjacent to the former settlement of North Conesby, in the parish of Flixborough, North Lincolnshire. This English Heritage-funded project unearthed remains of an Anglo-Saxon settlement associated with one of the largest collections of artefacts and animal bones yet found on such a site – over 10,000 individual recorded finds, large quantities of bulk finds, and hundreds of thousands of animal, bird and fish bones. Analysis has demonstrated that the excavated part of the settlement was in use throughout what have been termed the ‘Mid/Middle’ and ‘Late’ Anglo-Saxon periods. In an unprecedented occupation sequence from an Anglo-Saxon rural settlement, six main periods of occupation have been identified, with additional sub-phases, dating from the 7th to the early 11th centuries; with a further period of activity between the 12th and 15th centuries AD.

The remains of approximately forty buildings and other structures were uncovered; and due to the survival of large refuse deposits, huge quantities of artefacts and faunal remains were encountered compared with most other rural settlements of the period. Together, the different forms of evidence and their depositional circumstances provide an unprecedented picture of nearly all aspects of daily life on a settlement which probably housed elements of the contemporary social elite amongst its inhabitants, between the 7th and 11th centuries. Furthermore, and perhaps even more importantly, the detailed analysis of the remains also provides indications of how the character of occupation changed radically during the later first millennium AD, when the area of what is now North Lincolnshire was incorporated, in chronological succession, within the Kingdom of Mercia, the Danelaw, and finally, the West Saxon and then Anglo-Danish Kingdom of England.

The artefact assemblage from Flixborough is exceptional amongst excavated English sites of this period, both in

terms of the sheer quantity of finds recovered, and for their variety; these help to shed light upon many aspects of everyday life, and upon the various crafts and industries practised within this settlement during this period. As the academic referee for this volume succinctly observed:

Many of the artefact classes represent the largest single-site groups of their kind, or contain unusual or exceptional examples; a significant number are of types associated with elite lifestyles and activities; others have important implications for the understanding of local, regional, and international economic activity.

The chronological range of material presented within this volume extends from the Mesolithic to the post-medieval period, but the vast bulk relates to the Middle and Later Saxon periods. Thematic chapters present a very extensive array of dress accessories in a variety of materials, certain luxury items and objects associated with specialist activities (such as hunting, riding, ceremonial dining, and literacy), and a wide range of tools and implements associated with a variety of crafts and industries (e.g. woodworking, iron-working, leather-working, and non-ferrous metalworking); other chapters look at the fixtures and fittings associated with buildings, the tools and equipment used in agriculture, fishing and fowling, and, last, but by no means least, the pottery and coinage in use in this settlement.

The volume, as a whole, presents a currently unique window onto the daily life of people living at an important rural settlement, between the 7th and 11th centuries AD, in eastern England; it also sets out the evidence for its wider trading and exchange contacts with other parts of Britain and Continental Europe – a theme which is examined in greater detail in Volume 4 of this series. The discussions and catalogues are richly illustrated, with 213 blocks of figures and 67 plates of photographs (mostly in colour).

Zusammenfassung

Von 1989 bis 1991 fanden in der Nähe der aufgegebenen mittelalterlichen Siedlung North Conesby in der Gemeinde Flixborough, North Lincolnshire, großflächige Ausgrabungen statt. Dieses von English Heritage finanziell geförderte Projekt deckte eine angelsächsische Siedlung mit einem der umfangreichsten Kleinfund- und Tierknochenspektren, die je an einem vergleichbaren Fundplatz gefunden wurden, auf. Während der Ausgrabungen wurden etwa 10.000 Kleinfunde und etwa Hunderte Tausenden von Tier- und Vogelknochen, sowie Fischgräten, dokumentiert. Die Auswertung dieses Fundmaterials zeigte, dass der untersuchte Teil der Siedlung während der sogenannten „mittleren“ und „späten“ angelsächsischen Perioden durchgehend besiedelt war. Anhand einer für eine ländliche angelsächsische Siedlung bisher einmaligen Nutzungsabfolge konnten sechs Hauptperioden mit mehreren Phasen identifiziert werden, die schwerpunktmäßig vom 7. bis in das 11. Jahrhundert datieren. Eine weitere, jüngere Nutzungsphase datiert vom 12. bis in das 15. Jahrhundert.

Die Ausgrabungen legten ca. 40 Gebäude und andere Strukturen, sowie Überreste von umfangreichen Abfallgruben, die im Vergleich zu ähnlichen Siedlungen erstaunlich große Mengen an Kleinfundmaterial und Tierknochen enthielten, frei. Aufgrund ihres guten Erhaltungszustands bieten die verschiedenen Fundgattungen einen einmaligen Einblick in fast alle Aspekte des täglichen Lebens einer ländlichen Siedlung des 7. bis 11. Jahrhunderts, in der unter anderem Angehörige der damaligen sozialen Elite wohnten. Von noch größerer Relevanz ist jedoch, dass die detaillierte Analyse des Fundmaterials deutlich macht, wie drastisch sich die Nutzungscharakteristika der Siedlung im Laufe des ersten Jahrtausends nach Christus veränderten. Während dieser Zeit gehörte das heutige nördliche Lincolnshire nacheinander zum Königreich Mercia, dem Danelag und dem westsächsischen, später anglo-dänischen, Königreich England.

Das Fundmaterial aus Flixborough ist nicht nur wegen seiner außergewöhnlichen Menge, sondern auch wegen der Breite an Funden, die dokumentiert wurden, für Fundplätze dieser Zeitstellung in England bisher einmalig. Als solches

lässt es nicht nur Schlüsse über etliche Gesichtspunkte des täglichen Lebens zu, sondern liefert auch Hinweise zu Handwerksformen und industriellen Tätigkeiten, die in der Siedlung stattfanden. Der Gutachter dieses Bandes fasste dies prägnant zusammen:

Viele der Fundgattungen stellen die größten derzeit bekannten Gruppen ihrer Art von einem Fundplatz dar, oder enthalten seltene oder gar einmalige Stücke; ein großer Teil dieses Materials weist auf eine soziale Elite hin, andere Funde bieten eine wichtige Grundlage für das Verständnis von Wirtschaftsstrukturen auf lokaler, regionaler und internationaler Ebene.

Die zeitliche Stellung des in diesem Band vorgestellten Materials reicht vom Mesolithikum bis in das Nachmittelalter. Der mit Abstand größte Anteil der Funde datiert jedoch in die „mittlere“ und „späte“ angelsächsische Zeit. In thematisch geordneten Kapiteln werden eine umfangreiche Auswahl von Trachtbestandteilen in verschiedenen Materialien, Luxusgütern und Funden, die mit bestimmten Aktivitäten der sozialen Elite (wie zum Beispiel dem Jagen und Reiten, Banketten und der Schreibfertigkeit) assoziiert werden, sowie Funden, die auf verschiedene Handwerkstätigkeiten hinweisen (so zum Beispiel Holzbearbeitung, Eisenherstellung und -verarbeitung, Gerberei und Metallverarbeitung), vorgestellt. Weitere Kapitel konzentrieren sich auf Beschläge und Ausstattungsbestandteile, die mit Gebäuden, landwirtschaftlichen Werkzeugen und Gerät, sowie Fisch- und Tierzucht assoziiert sind. Abschließend werden Keramik und Münzfunde der Siedlung vorgestellt.

Insgesamt ermöglicht dieser Band damit einen bisher einmaligen Einblick in das tägliche Leben einer wichtigen ländlichen Siedlung Ostenglands während des 7. bis 11. Jahrhunderts. Weiterhin werden wichtige Hinweise auf weiterreichende Handelskontakte innerhalb der Britischen Inseln und zum Europäischen Festland vorgestellt. Diese Thematik wird in Band 4 dieser Serie genauer untersucht. Sowohl der Diskussionsteil als auch der Katalog sind mit 213 Abbildungsblöcken und 67 meist farbigen Fototafeln reich illustriert.

Résumé

Entre 1989 et 1991, de grandes fouilles furent entreprises à coté de l'ancien établissement de North Conesby, dans la paroisse de Flixborough, North Lincolnshire. Ce projet, financé par *English Heritage*, a mis à jour les restes d'un établissement Anglo-saxon avec l'une des plus grandes collections d'artéfacts et d'ossements animaux jamais trouvées sur un tel site – autours 10000 archives de découvertes individuelles, de nombreux ensembles de découvertes, et quelques cents de milliers d'ossements d'animaux et d'oiseaux et d'arêtes de poissons. Les analyses ont montré que la partie fouillée de l'établissement était occupée pendant ce qu'on a appelé le « Milieu » et la « Fin » de l'époque Anglo-saxonne. Grâce à cet exemple sans précédent de séquences d'occupation d'un établissement Anglo-saxon rural, on a identifié six périodes d'occupation principales, avec des sous phases supplémentaires, qui vont du 7^{ème} au début du 11^{ème} siècle ; avec une autre période d'activité située entre le 12^{ème} et le 15^{ème} siècle après JC.

Les restes d'environ quarante bâtiments et autres structures furent mis à jour. Grâce à la présence d'importants dépôts de détritux, on a découvert de grandes quantités d'artéfacts et de restes d'animaux, contrairement à la plupart des autres établissements ruraux de la période. Les différentes formes de preuves, ainsi que les circonstances de leur déposition, fournissent une image sans précédent de presque tous les aspects de la vie quotidienne dans un établissement qui comptait certainement des membres de l'élite sociale de l'époque parmi ses habitants, entre le 7^{ème} et le 11^{ème} siècle. De plus, et peut-être surtout, les analyses détaillées des vestiges fournissent aussi des indications quant au changement radical du caractère de l'occupation pendant la fin du premier millénaire après JC, quand la région de l'actuel North Lincolnshire fut incorporée, chronologiquement, au Royaume de Mercie, au Daneslaw, et enfin au Royaume d'Angleterre Saxon de l'Ouest, puis Anglo-Danois.

L'assemblage du site de Flixborough est unique parmi les sites anglais fouillés de cette période, aussi bien en terme de la quantité exceptionnelle des preuves découvertes

que de leur variété. Ces découvertes peuvent aider à comprendre beaucoup d'aspects de la vie quotidienne, ainsi que l'artisanat et les industries de l'établissement à cette période. Comme un des membres du comité de lecture de ce volume l'a observé :

« Beaucoup des catégories d'artéfacts représentent les plus grands groupements de leur genre issus d'un même site, ou contiennent des exemples inhabituels ou exceptionnels. Un nombre considérable de ces classes d'artéfacts sont associées au style de vie et aux activités de l'élite, d'autres ont d'importantes implications quant à notre conception des activités économiques locales, régionales et internationales. »

La chronologie du matériel présenté au sein de ce volume s'étend du Mésolithique à la période post-médiévale, mais la majorité correspond au Milieu et à la Fin de la période Anglo-saxonne. Les chapitres thématiques présentent une gamme très large d'accessoires vestimentaires en matériaux divers, certains objets de luxe et des objets associés à des activités spécialisées (comme la chasse, l'équitation, les dîners d'apparat, et l'écriture), et une gamme importante d'outils et d'instruments associés à différents types d'artisanats et d'industries (par exemple la menuiserie, la ferronnerie, le travail du cuir, et le travail de métaux non ferreux). Les autres chapitres se consacrent aux installations fixes des bâtiments, au matériel et aux outils utilisés pour l'agriculture, la pêche et la chasse du gibier à plumes, et, dernier point mais non des moindres, à la poterie et la monnaie utilisée dans cet établissement.

Le volume, dans son ensemble, procure une image sans précédent de la vie quotidienne dans un établissement rural majeur de l'est de l'Angleterre, entre le 7^{ème} et le 11^{ème} siècle après JC. Il présente également les preuves de ses contacts élargis d'échange et de commerce avec d'autres parties des Iles Britanniques et de l'Europe Continentale – un thème qui est examiné plus en détail dans le volume 4 de cette série. Les discussions et catalogues sont richement illustrés, avec 213 planches de figures et 67 planches de photos (la plupart en couleur).

Acknowledgements

Inevitably with any major project which has run for two decades, there would be a myriad of people to credit for their help, support, and advice; as Flixborough also produced an abundance of finds and raised all sorts of tantalising research questions, the number of individuals and organisations whom we need to thank is substantial. The names of the 67 individuals who have contributed directly to the production of the final text and illustrations for these four volumes can be found in the List of Contributors, and we should like to extend our grateful thanks to each of them; however, in addition to these, many others were involved in the discovery and excavation of the site, and seeing through this project to its conclusion.

As described in Volume 1, Ch. 1.2, the first indications of settlement on this site were recognised in 1933, but it was unfunded field-walking in 1988 by Irene McGrath and Phil Lings which suggested the presence of a Middle Saxon settlement; and it was the excavations conducted by Dr Kevin Leahy during that summer which were to uncover not only part of a cemetery, but also to suggest the proximity of an adjacent enclosure. Kevin was involved closely in this project for the best part of the next decade, and has done much to publicise the site; we have continued to liaise closely with him and his successor, Rose Nicholson, as the North Lincolnshire Museums Service will be the recipient curator of the archive. The excavations would not have been possible, without the support of the landowners, Sir Reginald Sheffield, and his tenant, Mr Peter Ogg; we are also grateful for the support of the Sheffield family during the post-excavation process, and for allowing us access to this material during the last 16 years. The main reason for excavating the site was that it was threatened with destruction by sand quarrying; Messrs G. S. and J. Jewitt Estate Development Co. helped us throughout the process, by rescheduling their extraction programme around our requirements, and offering help in kind by supplying us with earthmoving machinery and operators, whenever they were needed.

Another key person who was involved in this project from its inception was the former County Archaeologist, Dr Ben Whitwell. This was a project which was very close to Ben's heart, and he poured an enormous amount of energy into trying to raise local consciousness about the site, and

to secure funding for its investigation and study; right up until his retirement in early 1995, he did much to champion the importance of this project. Thanks to his efforts, not only was substantial funding secured from English Heritage, but significant contributions were also given during the excavations of 1989 to 1991 by Humberside County Council, Scunthorpe Borough Council, British Steel, Glanford Borough Council, Clugstons, and Rugby Cement; our grateful thanks are due to all of these, and we should also like to acknowledge the support of the late Mike Symmons and the late Bob Hallas (who were respectively the County Council's Chief Property Services Officer and his deputy), who did much to raise political support for this project.

The excavations were supervised by David Tomlinson, and were undertaken by a small team consisting of the following: David Atkinson, Kath Crooks, Andrew DesForges, Gail Drinkall, Richard George, Tony German, Phil Lings, Irene McGrath, Lousie Muston, and Jon Watt. They were supplemented at various times by Ian Beck, Michael Cressey, Mike Frankland, John Tibbles, and Dawn Briggs; the volunteers included Anthony Martinson, supplemented at various times by members of our Employment Transfer scheme, Lorraine White, Simon Small, and Jim Firmage. Peter Fox, Dawn Dickinson and Mathew Sallis (of the County Surveyors team) helped to tie in the site survey grid.

Post-excavation work began in 1992, and was co-ordinated by Ben Whitwell, Gareth Watkins and David Tomlinson – with Gareth largely being responsible for finds co-ordination. Although many of the final members of the project team have been involved from those early days onwards, a number of other people kindly offered opinions on material, or took part in preliminary assessments of individual categories of finds or residues. Amongst those whom we should like to thank for their contributions are: Mrs Leslie Webster (formerly of the British Museum), Dr Seamus Ross (British Academy), Dr Richard Morris, Professor Peter Sawyer, Professor Ray Page, Christine Fell, Dr Phil Dixon, Dr Simon James, Dr Helena Hamerow, Professor Martin Carver, Dr Tania Dickinson, Dr Andrew Rogerson, Dr Dawn Hadley and Bob Carr. In addition, Dr Ailsa Mainman, Simon Trafford, Elaine Campbell, Annie

Milles, Dr Alex Woolf, Professor Ian Wood, Gail Drinkall, and Jon Watt all gave valuable input. Many of the early drawings which were prepared for interim reports and enabling documents were the work of John Marshall and Linda Smith, who were the two permanent illustrators for the Humberside Archaeology Unit.

The support of key figures such as Professor Rosemary Cramp, Dr Richard Morris and Dr Geoff Wainwright was invaluable in securing English Heritage grant aid. Over the last 16 years many people in that organisation have helped to steer the project through to publication; in addition to the specialist contributors, the support of Geoff Wainwright, Tim Williams, Chris Scull and Barney Sloane has been invaluable. We should also like to thank the successive Regional Inspectors of Ancient Monuments for this area for their continued interest and support – Andrew Davison, Dr David Fraser, Jon Etté, and Keith Miller. Sarah Jennings and Sebastian Payne gave of their expertise in matters concerning, respectively, ceramics and environmental science. Throughout the last 16 years our Project Officers, Fachtna McAvoy and latterly Dave McOmish, have patiently coaxed the team through its paces. The project also benefited from significant financial support from the British Academy, which funded the comparative British and Continental research to set the Flixborough–North Conesby remains in their wider context, via a postdoctoral research fellowship awarded to Dr Chris Loveluck.

At an early stage in the post-excavation assessment programme it was decided that the most useful way in which the various contributions to this particular volume could be presented would be to discuss the objects by functional groups, rather than by materials: it was felt

that this approach would be much more informative for the reader. However, as the resultant chapters would be multi-authored, we were keen to ensure that the individual authorship of texts could be identified as clearly as possible. We obviously had the options of listing authors alphabetically, or by order of the appearance of their sections within each chapter; but, it seemed fairer to list first those who had written the largest parts of a chapter, and then to rank the other authors in descending order. We have also tried, wherever possible, to incorporate the results of investigative conservation, lithological identifications and scientific analyses in any discussion of individual objects and in their accompanying catalogue entries; whilst some of the observations about the presence of minerally preserved organics, platings or inlays on an individual object may amount to only a sentence or two, they have greatly improved our understanding of the objects, and, so we wanted to be able to properly acknowledge this within the body of the text. Accordingly, we have used the convention of listing “with contributions by” in the appropriate chapter or section headings: these are intended as a suitable acknowledgement of the very valuable contribution that these individuals have made both to the project and to our understanding of many of the artefacts published in this volume.

Many of the photographs are by Bill Marsden, who has also been responsible for producing many prints over the years for exhibitions and interim publications. Administrative support was provided successively by Zena Ahmed, Claire Hampshire and Georgina Richardson. Lastly, we should like to thank the Departments of Archaeology at Southampton and Nottingham Universities for allowing Dr Chris Loveluck to finish these reports.

Preface and Introduction

Christopher Loveluck

Scope, aims and structure of the Flixborough publications

Background

Between 1989 and 1991, excavations adjacent to the former settlement of North Conesby, in the parish of Flixborough, North Lincolnshire, unearthed remains of an Anglo-Saxon settlement associated with one of the largest collections of artefacts and animal bones yet found on such a site. Analysis has demonstrated that the excavated part of the settlement was occupied, or used for settlement-related activity, throughout what have been termed the 'Mid/Middle' and 'Late' Anglo-Saxon periods. In an unprecedented occupation sequence from an Anglo-Saxon rural settlement, six main periods of occupation have been identified, with additional sub-phases, dating from the 7th to the early 11th centuries; with a further period of activity between the 12th and 15th centuries AD.

The remains of approximately forty buildings and other structures were uncovered; and due to the survival of large refuse deposits, huge quantities of artefacts and faunal remains were encountered compared with most other rural settlements of the period. Together, the different forms of evidence and their depositional circumstances provide an unprecedented picture of nearly all aspects of daily life on a settlement which probably housed elements of the contemporary social elite amongst its inhabitants, between the 7th and 11th centuries. Furthermore, and perhaps even more importantly, the detailed analysis of the remains also provides indications of how the character of occupation changed radically during the later first millennium AD, when the area of what is now North Lincolnshire was incorporated, in chronological succession, within the Kingdom of Mercia, the Danelaw, and finally, the West Saxon and then Anglo-Danish Kingdom of England.

The quality of the overall archaeological data contained within the settlement sequence is particularly important for both the examination of site-specific issues, and also for

the investigation of wider research themes and problems currently facing settlement studies in England, for the period between AD 600 and 1050. For example, with regard to site-specific research, the remains provide an exceptional opportunity for examining local dynamism in settlement evolution, and for reconstructing the changing lifestyles of the inhabitants and their changing relationships with the surrounding locality, the trans-Humber region, and the wider world. At a broader level, amongst other themes, the wider comparison of the material culture traits evident in past lifestyles at Flixborough enables a re-assessment of the problems of defining the character and social complexity of rural settlements, dating from the 7th to 11th centuries AD.

Aims, structure and inter-relationship of the Flixborough publications

The publications of the Flixborough settlement remains aim to present the evidence in a way that will enable readers to understand the process of analysis and interpretation, from the micro-level of the excavated deposits themselves, to the macro-level of appreciating their importance for our knowledge of 7th- to 11th-century England, and to a certain extent neighbouring areas of Continental Europe. The presentation, analysis and interpretation of the archaeological evidence are divided into four volumes, with the ultimate goal of a fully integrated understanding of the lifestyles of the inhabitants of the settlement. This entailed complex interweaving and interpretation of stratigraphical, structural, biological and artefact remains within the chronological occupation sequence in the excavated area. It also required assessment of the representativity of the evidence for the scale of interpretation possible from the data.

The different volumes within the series of publications serve slightly different purposes. Volume 1 (Loveluck and Atkinson) presents an integrated analysis of the stratigraphic and chronological sequence of activity on the excavated site, and analysis of the contents of the archaeological

deposits in preparation for wider interpretation. The reasoning is also presented for judging whether the remains are representative of the excavated area alone, or a wider settlement area. Thus, the volume provides the analytical narrative of the nature of occupation and the use of space through time, integrating the results from all the forms of data. The narrative does not, however, discuss approaches to wider interpretation of the settlement remains from the 7th to 11th centuries AD. These are informed by comparative analysis and assessment of different contemporary influences on interpretation of archaeological evidence and are presented in Volume 4. Hence, the first volume in the series provides the primary level in the post-excavation analysis and interpretation of the evidence from Flixborough, to which all the other publications refer for their archaeological and chronological context.

Detailed presentation of the thousands of artefacts recovered from the archaeological deposits and discussion of their comparative importance is presented in this volume, the second of the series. The occurrence of many of these artefacts, especially those critical for dating the occupation sequence and interpretation of activities is contained within Volume 1, but the full catalogues and material-specific discussions are presented in this volume. Presentation of the artefacts, and also the biological remains (see below) in separate volumes is a reflection of the scale and importance of the different types of data by themselves, and as an integrated assemblage. Volume 2 presents the most comprehensive picture to date of daily life on a rural settlement of this period in eastern England, from the perspective of mobile material culture – artefacts and debris from various manufacturing processes. The discussions in both Volumes 1 and 4 are cross-referenced to the material-specific analyses in Volume 2.

Volume 3 (Dobney *et al.*) presents the nature of the biological remains from the site, above all represented by animal bones. Due to the exceptional circumstances of the occupation sequence and the unprecedented size of the assemblage represented by the faunal remains, Volume 3 is designed to present the evidence both in its site-specific and wider comparative context, with integrated interpretation of the contribution of the animal bones for understanding aspects of the settlement's economy, status and character.

The final book in the series, Volume 4 (Loveluck), offers a series of thematic analyses, integrating all the forms of evidence to reconstruct the lifestyles of the inhabitants. These comprise settlement-specific aspects and wider themes. The former include relations with the surrounding landscape and region, trade and exchange, and specialist artisan activity. Whereas the wider themes consider approaches to the interpretation of settlement character, the social spectrum of its inhabitants, changing relationships between rural and emerging urban centres, and the importance of the excavated remains within contemporary studies of early medieval settlement and society in western Europe.

In certain instances, primarily in Volumes 1, 2 and 3, cross-referencing links to the digital archive of the research on the Flixborough remains are also presented. This digital archive is to be housed with the Archaeological Data Service (ADS) for the United Kingdom. It contains most of the principal databases relating to the stratigraphic data, artefacts, and environmental samples from the excavations, together with much graphical information, including certain sections and feature plans not presented in the reports, and also detailed artefact distribution plots for all the main artefact types. The latter have not been produced in the printed publications due to the sheer number of distribution plots by period and phase, and the huge quantity and density of finds by deposit, which renders printed distributions illegible except when produced at large scale. The digital archive also contains much of the data on the vertebrate remains. The four-volume series of publications, in conjunction with the ADS digital archive, and the original excavation and post-excavation research archives, will then allow ongoing re-interpretation of the early medieval settlement and its context in future years.

The structure of this volume

The purpose of this volume is to explore different aspects of life on the 7th- to 11th-century settlement through the medium of the artefacts recovered. The material remains are presented on the basis of functional groups, rather than by artefacts made of specific materials, in order to analyse together the objects relating to particular activities undertaken by the population of the settlement. Technological analyses of objects and residues are presented alongside studies of artefact form, decoration and role, in order to arrive at a comprehensive appreciation of the functional, technological and sometimes symbolic attributes of the remains.

The volume is designed specifically for use with Volumes 1 and 4 of the series. It provides the detailed discussion of the artefact assemblages referred to in the construction and analysis of the settlement's chronology (Volume 1), and in the analysis of site formation processes which provided the 'source criticism' to establish the representativity of the remains for wider interpretation (Volumes 1 and 4). This volume also presents the detailed discussions of researchers who focus on specific types of artefact or material, and the conclusions that they have drawn from the evidence have not been subjected to any editorial influence. The volume, as a whole, presents a currently unique window onto the daily life of people living at an important rural settlement, between the 7th and 11th centuries AD, in eastern England. The integrated analysis and interpretation of all the remains from the Anglo-Saxon settlement are undertaken in Volume 4, principally by the series editor (Loveluck).

Changes in the discard of artefacts and changing evidence of particular activities in different periods/phases of the settlement's occupation are discussed by individual authors, when appropriate and possible. Detailed

information on individual artefacts can also be found in catalogues presented beneath discursive text so that individual deposition contexts and specific phases of discard can be discerned. Descriptions and dimensions of artefacts, their material constituents, and links to the illustrations can also be found in the catalogues. With the exception of the pottery (Ch.12) and industrial residues, the numbering of the artefact catalogue runs sequentially throughout the volume, and the number of a catalogue entry also corresponds to the number given to an artefact drawing in the illustrative figures. The recorded find (RF) number of each artefact is also given in each catalogue entry, so that appropriate cross-referencing can be made between discussion sections and catalogues in this volume, and with the ADS research archive databases and the site research archive, where artefacts are referred to by their RF numbers.

Each chapter begins with a short introduction which summarises for the reader the range of material dealt with within that chapter, and offers a succinct overview of the artefactual evidence for various activities (e.g. agriculture, literacy, craft working, etc.), and their chronological range. These introductory sections, and other uncredited passages, have been written by the two editors.

The functional groups defined for the presentation and discussion of the material culture begin with items of dress and objects which are likely to have been personal to individuals (Ch. 1). This is followed by two chapters on aspects of life which were probably the preserve of limited elements of the settlement's population, at different periods in the occupation sequence. These relate to ceremonial dining, using luxury utensils in imported glass and copper alloy (Ch. 2); artefacts relating to riding, hunting and possibly warfare; and evidence of literacy, and its role (Ch. 3). This discussion of artefacts associated with personal apparel, ostentatious display, and administration is then situated in relation to the artefacts helping to frame the social settings for some of the former activities; namely, the structural fittings of buildings and domestic implements of everyday life (Chs 4 and 5).

The material reflections of consumption, management and the physical settings of the settlement itself are then followed by six chapters on the artefact signatures of

agricultural and other food procurement practices (Ch. 6), and a range of craft-working activities undertaken on the settlement throughout, or at different times, in its occupational history: woodworking, leatherworking, textile production, ironworking and non-ferrous metalworking (Chs 7–11). This evidence for the productive capacity of the settlement precedes two chapters on types of artefact which provide indications of its integration within regional and long-distance exchange networks: pottery vessels (Ch. 12), coinage and items related to bullion exchange (Ch. 13). The importance of the coinage and pottery for site chronology and understanding of site formation processes is discussed in relation to all other components of deposits in Volume 1, but specific considerations in relation to residuality of particular pottery wares and refinement of the chronology for Middle Saxon pottery in the East Midlands of England are discussed in this volume. The consumption of pottery at Flixborough is also set within the regional patterns of pottery production and exchange in the East Midlands, between the 7th and 11th centuries.

The final chapter of this volume discusses the artefacts dating from the Prehistoric, Romano-British and medieval periods, found during the excavations between 1989 and 1991 (Ch. 14). The vast majority of the Mesolithic, Neolithic, Iron Age and Romano-British remains were found as residual finds in 7th- to 11th-century deposits. As well as being of intrinsic interest in their own right, as indications of multi-period use of the sand spurs and their immediate surrounds for habitation, the Iron Age and Romano-British artefact assemblage was also particularly important in understanding site formation processes, the origins of deposited material, and the parameters of interpretation possible from the Anglo-Saxon deposits (see Loveluck and Atkinson, Volume 1; and Loveluck, Volume 4, Ch. 2). The medieval remains, dating from the 12th to 15th centuries also provided indications of deposit contamination in certain instances. Furthermore, they provided evidence for the continued use of the excavated area for peripheral settlement activity throughout the Middle Ages, hinting at a possible re-organisation of the 10th- to 11th-century settlement focus, during the 12th or 13th century, under Norman lordship.

1 Dress and Personal Items

Nicola Rogers, Patrick Ottaway, Gabor Thomas, Martin Foreman, Ian Panter, Susan M. Youngs, John Hines and Jennifer Jones with contributions by Glynis Edwards[†], Christopher Loveluck, Sonia O'Connor, T. P. O'Connor, Lisa M. Wastling and Jacqui Watson

The material discussed in this chapter comprises a very extensive range of brooches, strap-ends, hooked tags, buckles and belt fittings, jewellery, toilet implements, medical items, pins and combs. The bulk of the metal objects were made of copper alloy or iron; but, a few of the items are made of silver. In addition, glass, lead alloys, enamels, and various inlays and coatings have also been used in composite items. None of these items was made solely of gold, but gilding is present on a number of objects. The various finishing techniques used on many of the non-ferrous objects are discussed in detail in this chapter. Two reworked hooked tags hint at on-site production, which may also complement the other evidence for non-ferrous metalworking at this site (see Chapter 11, below).

Dress accessories and personal items in bone and antler were represented by a substantial collection of combs, and forty-one of the pins. Whilst the soil conditions were not very favourable towards the preservation of many organic materials, one wooden bead did survive. [For solitary examples of a glass bead, see Chapter 2, and a possible bone bead, Chapter 5.7.]

The importance of such dress and personal items in the life of the inhabitants of the Middle and Later Anglo-Saxon settlement is reflected in the fact that the catalogue entries presented here represent just over 8.7% of the entire Recorded Finds assemblage recovered from the site. [For the comparable material for other periods in the life of this site, the reader is referred to Chapter 14.]

1.1 Brooches

by Nicola Rogers, John Hines, Patrick Ottaway, Jennifer Jones and Ian Panter

Non-ferrous metal brooches

by Nicola Rogers, with a contribution by John Hines, Jennifer Jones and Chris Loveluck

Safety-pin brooches (FIG. 1.1)

Eight copper alloy brooches (cat. nos 13–20) and one silver (no. 21: RF 10994) are of a form now termed ‘safety-pin’, alluding to their similarity to modern day safety-pins; a ninth copper alloy brooch (no. 22: RF 11935) is possibly of this type. This is a relatively rare brooch form, only recently established as a Saxon type (White 1988, 40); the ten found at Flixborough represent the largest group recovered from any Saxon site. Made in one piece, the head of the brooch is coiled once to form the sprung pin which is held securely at the other end by a looped-up catch. The design of these brooches allows little scope for varying the shape of the flat bow, which tends to be lozenge-shaped (see no. 14: RF 1968), or an elongated oval (see no. 15; RF 11043). Decoration on the bow is limited to ring-and-dot motifs (see nos 15 and 17: RFs 11043 and 12750), simple incised lines (see no. 16; RF 11595), or notches (see no. 20; RF 14425); the silver pin (no. 21; RF 10994) is plain, apart from the animal-head shaped tip of the catch loop. All the brooches appear lightweight, and White suggests that as four brooches have been found in female burials in the area of the hip, this type may have acted as a fastening for undergarments or girdles (*op. cit.*, 41).

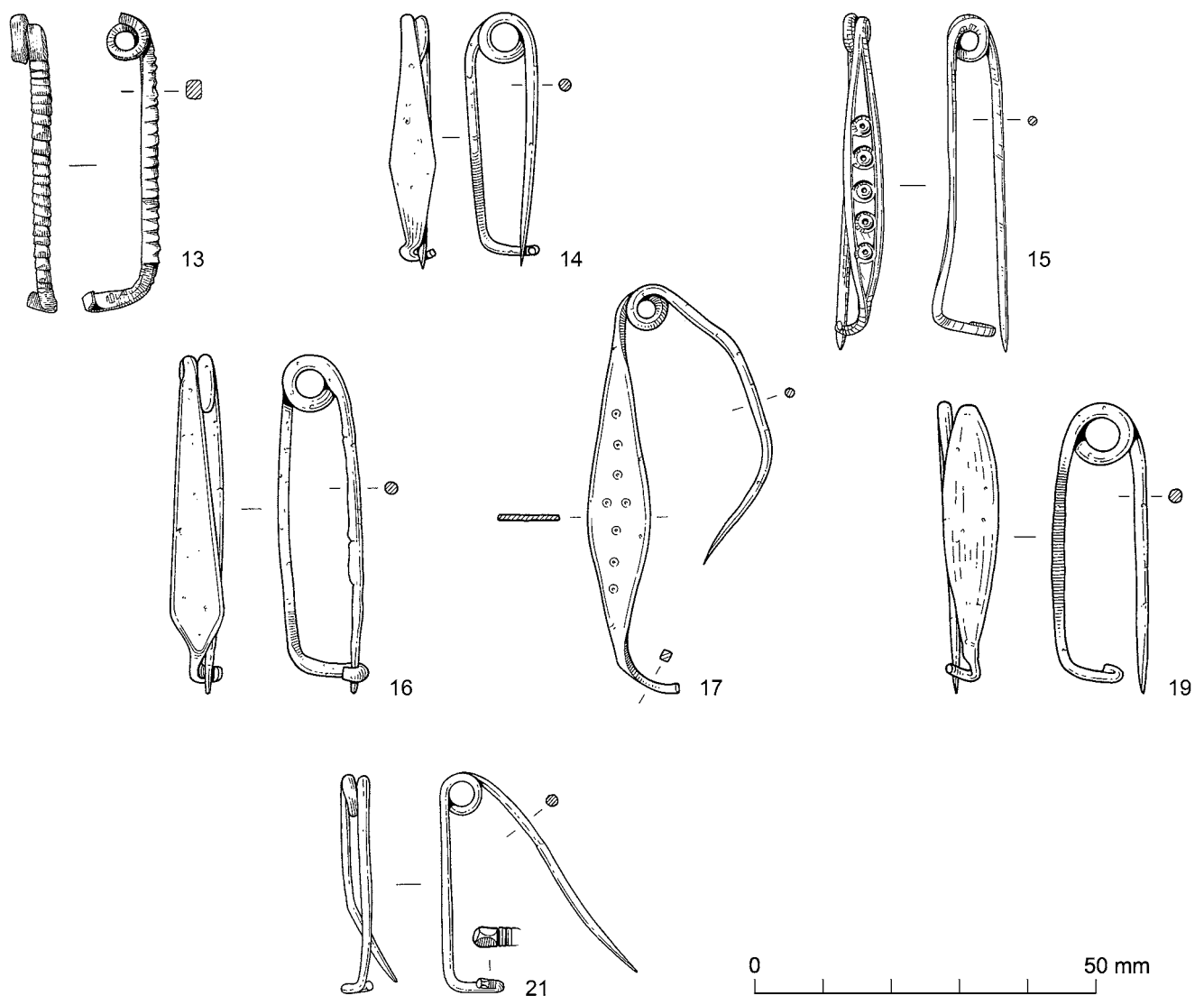


FIG. 1.1. Copper alloy and silver safety-pin brooches. Scale 1:1.

This brooch form appears to be based on a prehistoric type, described by Hattatt as the ‘violin bow brooch’ which he considers Bronze Age in origin (Hattatt 1989, 4), and in which classification he included examples now more likely to be interpreted as Saxon (*op. cit.*, fig. 1, nos 1385–6). Hull and Hawkes considered other examples to be Iron Age, including two found at Whitby which Peers and Radford had suggested were Saxon copies of Bronze Age examples (1943, 58, fig. 12, nos 4, 12); Hull and Hawkes interpreted the Whitby brooches as repaired or altered Iron Age brooches (1987, 141–2, pl. 41, nos 7264–5). White identified three brooches as ‘Anglo-Saxon bow brooches’, which he noted were a previously unrecognised late 6th–7th century group, and included an example from Uncleby, East Yorks. (White 1988, 40–1, fig. 22, no. 3). None of the Flixborough brooches closely resembles those

published by White, but other brooches which are similar have been found in Saxon contexts, including one found on or just above the floor of a Grubenhaus at Mucking (Hamerow 1993, 61, fig. 105, no. 2), and another found in a Middle–Late Saxon assemblage at Sedgeford, Norfolk (Cooke *et al.* 1997, 35). In the light of these examples, it seems likely that the Whitby brooches are also in fact Saxon, and should post-date the establishment of that site in 657AD – though as they were unstratified, they could date to any part of the occupation of the Saxon monastery between the mid 7th and the 10th centuries. Chris Loveluck comments that whilst much of the literature on these brooches places the early types in the 7th century, the vast majority of the examples now known are thought to date to the 8th and 9th centuries. The stratified examples from Flixborough (nos 13–16 and 21; RFs 3181, 1968, 11595,

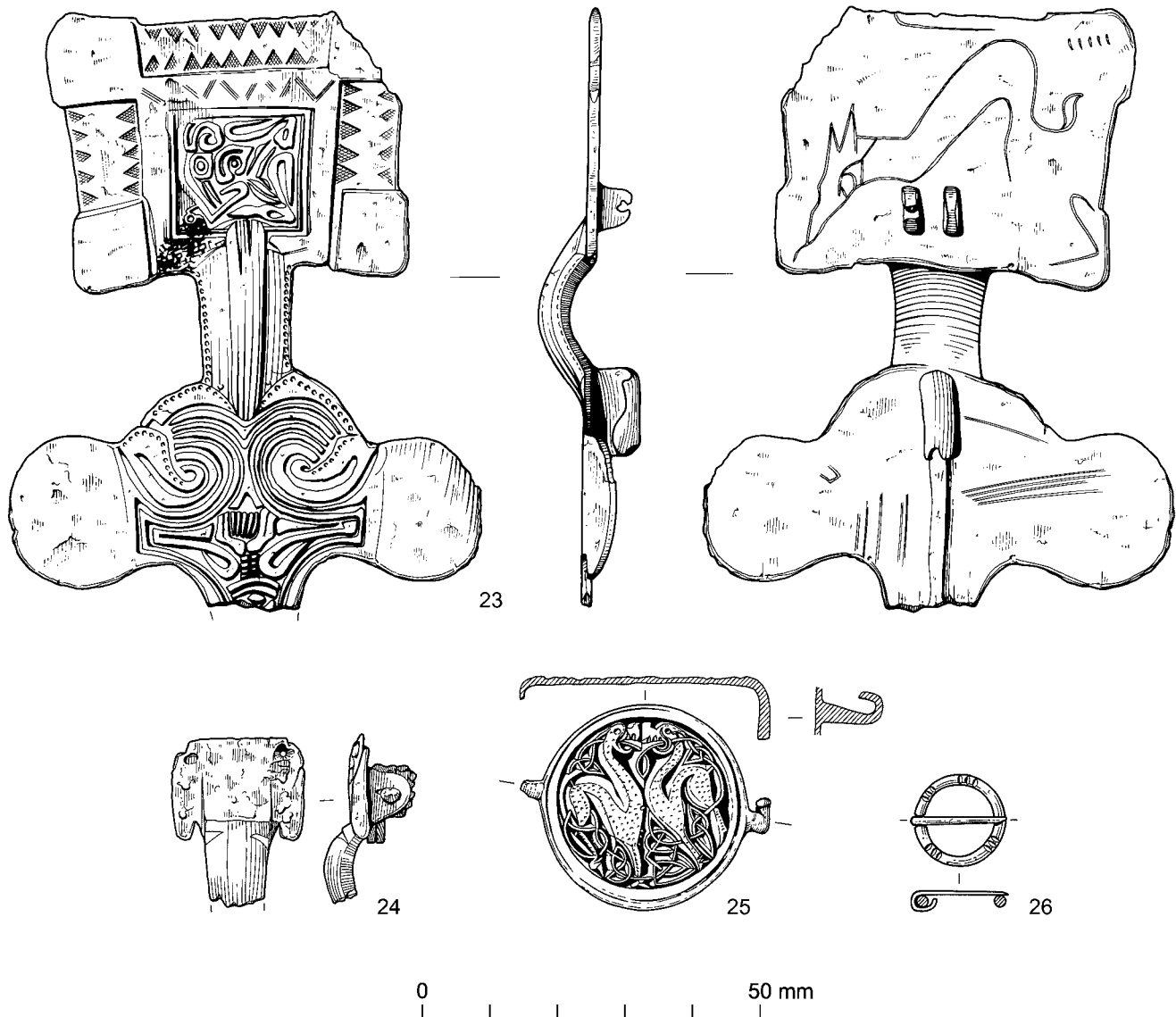


FIG. 1.2. Great square-headed brooch, small-long brooch, disc brooch and annular brooch. Scale 1:1.

11043 and 10994) all come from late 8th/early 9th century to late 9th/early 10th-century deposits, and thus appear to confirm this 8th–9th century date range. It is interesting to note that the animal-head shaped tip to the catch on no. 21 (RF 10994) is repeated on at least two other objects from the site – on the pin of buckle no. 115 (RF 3036), and the catch of the disc brooch (no. 25; RF 5467).

Great square-headed brooch

(no. 23; RF 6. FIG. 1.2; PL. 1.1)

by John Hines incorporating a note on the graffito by Chris Loveluck, and on the EDXRF analysis by Jennifer Jones

The great square-headed brooch from Flixborough belongs to group XVII of the Anglo-Saxon great square-headed

brooch series according to the current classification (Hines 1997, esp. 133–41). This group is made up of brooches of a relatively uniform type, of which 18 examples are now known. The majority of these have been found in East Anglia, but more northerly outliers, such as this example, have been found at Market Overton, Rutland (Leics.), Ruskington (Lincs.), Londesborough (E. Yorks.) and Thornborough Pasture, near Catterick (N. Yorks.). The group is placed in Phase 3 of the square-headed brooch series, a phase for which a date-range of manufacture between c.530 and 570 is proposed.

The Flixborough brooch is an interesting example in several respects. The backward-facing animal in the headplate inner panel is clearer, more detailed, and more coherent than a related design found on several

other brooches in this group. It is conceivable that the Flixborough example is particularly close in design to the prototype for the group, but it does not correspond in sufficient detail to the designs on the other brooches for this to be really demonstrable. The backward-facing animal design seems ultimately to be of Scandinavian origin (Leigh 1984), although by the time the Flixborough brooch was made it had spread widely, to Kent and on the Continent (Fig. 1.2: cat. no. 23).

The second especially unusual feature of the Flixborough brooch is its long, slender bow, sharply angled in cross-section. Such bows are very rare amongst Anglo-Saxon square-headed brooches, although similarly long, slender and angled bows are common in Scandinavia and on Continental brooches derived from Scandinavian models. Group XVII brooch bows are in fact characteristically very short and squat. The large, outspread animal in the footplate inner panel of most group XVII brooches, Flixborough included, can also be traced back to Scandinavian sources, and it seems possible that the Flixborough example has somehow preserved more of its Scandinavian ancestry than other brooches of the group have. The full range of cultural connections of the Humberside and Northumbrian areas in the mid 6th century, both to the south within England, and across the North Sea, are, however, too complex to justify brief speculation on what exactly the Flixborough brooch might signify in these terms.

A rather unusual feature is the inscribed graffito, possibly of a wolf, on the back of the brooch (Fig. 1.2: no. 23). This too can be paralleled on a contemporary Norwegian square-headed brooch (Hines 1997, fig. 69h-i), and similar animals occur incised on 6th-century Anglian English cremation urns (Myres 1977, 65–6 and figs 364–5). It is impossible, though, to be certain that this motif was present when the brooch was being worn. The object was recovered as an unstratified find, in the area of the Mid to Late Anglo-Saxon settlement remains, having been disturbed from nearby 5th- to 6th-century deposits or kept in residual use from the Early Anglo-Saxon period as scrap copper alloy. With the contemporary parallels, it seems most likely that the graffito had some meaning for its 6th-century wearer. It might nevertheless have been the idle graffito of a Mid to Late Anglo-Saxon occupant of the settlement.

Jennifer Jones comments that this copper alloy brooch is of particular interest amongst the gilded objects from the site, with gilding visible, mainly in protected areas, on the decorated front surface. This object is largely complete, missing only the foot and the pin. Extensive surface EDXRF analysis was done before and after corrosion removal at 10 sites on the front and back of the brooch. The base alloy was found to be a leaded bronze, with very low levels of zinc detected at some analysis sites. The central front decorated panel had gold detected at 50%, but gold was also detected quite strongly (>17%) in decorated areas where none was visible, and on the undecorated lobes. This would suggest that the whole front of the brooch was originally gilded. The gilding of the large round footplate lobes of group

XVI and XVII great square-headed brooches, which in most areas are covered with thick silver-foil appliqué, would now appear to be a distinctive characteristic of the Humberside area. What EDXRF analysis has discovered on the Flixborough specimen is visibly matched on group XVI brooches from Laceby (N.E. Lincs.), and Welbeck Hill grave 41 (N.E. Lincs.). As this technique can reveal gilding no longer detectable by eye, it would be informative also to test a group XVII brooch from Thornborough Pasture near Catterick (N. Yorks.) by this means – a brooch that otherwise appears neither gilded nor silvered.

Gold was detected at low levels (<2%) on the brooch back, but mercury was not reliably detected at any site on the brooch surface (cf. Hines 1997, 205–22 and 313–15; Brownsword and Hines 1993). Along the edges of remaining areas of gilding, a distinct copper-coloured layer can be seen between the gold layer on top and the base alloy beneath, when viewed through the microscope. This suggests the possible use of some form of diffusion gilding, involving the application of a gold/copper alloy to the heated bronze substrate, perhaps with subsequent pickling with acidic mixtures to remove copper from the alloy at the surface; however, parallels for the use of this technique during this period have been very difficult to find.

Small-long brooch (Fig. 1.2)

The head fragment of a small-long brooch (cat. no. 24: RF 2557) was found in an unstratified context; it appears to fall into E. T. Leeds' (1945) cross-potent head class. He noted that these brooches, which have been found in great numbers in Early Saxon cemeteries, had a wide, rather northerly, distribution across England, with examples from as far north as South Ferriby, North Lincolnshire, south to Sarre, Kent (*op. cit.*, 14, fig. 9; Sheppard 1907, 262, pl. XXX, nos 2–4). More recently, regional studies have indicated the recovery of these brooches from numerous cemeteries in and around Lindsey (Leahy 1993a, 39–42), while an overview of small-long brooches from Suffolk noted that both cross potent and cross pattée types were strongly linked to Cambridgeshire, the Midlands, and Lincolnshire (West 1998, 299). Dating as this object does to the 6th century, it clearly pre-dates the earliest structures on the site, although its worn state may indicate that the brooch was of some age when it was buried.

In the local surrounding area, Leahy has noted finds of small-long brooches from: Barton-upon-Humber, Brocklesby, Fillingham, Fonaby, Caistor, Horncastle, Irby upon Humber, Keelby, Louth, ?Thimbleby, and Waddington (1993a, Appendix A).

Disc brooch (Fig. 1.2; PL 1.2)

A gilded silver disc brooch (cat. no. 25: RF 5467), complete apart from its pin, was found in a Phase 4ii dump. Although this deposit is dated to the mid-9th century, it contained a number of residual and reworked 8th- and earlier 9th-century finds, plus a less diverse range but greater quantity of mid-9th century date; no. 25 represents one of the

residual pieces. A double border surrounds two confronted long-necked quadrupeds, enmeshed in deeply cut chip-carved irregular interlace, which winds around their legs and through their mouths. Backs arched, their chests and squared-off noses touch, and their bodies are speckled, the triangular speckles produced by a punching tool with a sharp corner. Although missing, the pin was made integrally with the brooch, and the tip of the hooked catch has been shaped to form an animal head, a feature also seen on a buckle pin tip (cat. no. 115: RF 3036), and the catch on a safety-pin brooch (no. 21, RF 10994; see above).

A number of elements of the motifs employed on the disc brooch point to a late 8th- to early 9th-century date. Confronted symmetrical pairs of animals enmeshed in interlace are known in art of the 7th–9th centuries, in manuscripts, metalwork and other materials (Tweddle 1992, 1158), but the clear delineation of the animals within the interlace, the emphasis on the animals, in terms of their size in relation to the area of interlace, and the way the interlace develops from the animals' bodies, from their mouths, tails and legs, are all indicative of late 8th- to early 9th-century art (*op. cit.*, 1158–60; Webster 2001b, 267), probably deriving from the later part of that period (R. Cramp, pers. comm.). The use of speckling to create texture on metalwork is also typical of the same period (Tweddle 1992, 1145). The motif of creatures enmeshed in interlace on no. 25 can be paralleled not only on metalwork of the period, such as the remarkably similar beasts depicted on the Witham pins, also found in Lincolnshire (Webster and Backhouse 1991, 227–8, no. 184), and a silver pin from Brandon, Suffolk (*op. cit.*, 82–3, no. 66b), but also in manuscripts, as on the Leningrad Gospels (Alexander 1978, no. 39, ills. 188–95), often in similarly complex interlace patterns (Gannon 2007, 45), and in sculptures such as the zoomorphic friezes at Breedon-on-the-Hill (Webster 2001a, 45–7; Jewell 2001, 248).

Annular brooches (Fig. 1.2)

A small annular brooch with simple incised line decoration (cat. no. 26: RF 4566) was unstratified. Although this simple brooch form is commonly found in the medieval period (see below), the diminutive nature of no. 26 suggests that it is more likely to be a Saxon type, which tended to be very small (Hattatt 1985, 220). Leeds notes very similar brooches at Uncleby (East Yorks.) – some also decorated with groups of transverse lines (Leeds 1936, 98–9) – and at Garton Slack (East Yorks.) and Riby Park (North Yorks.; *op. cit.*, 100), but also records that other examples have come from Lincolnshire (Leeds 1945, 49). Such small, delicate brooches seem most likely to have been used on light or flimsy garments (Hattatt 1982, 176).

Possibly a fragment of an Anglo-Saxon annular brooch of flat section, no. 27 (RF 3778) was unstratified. Its identification as an annular brooch is very tentative – unlike the vast majority of these brooches, it is undecorated, and the fragment has no constriction or hole for the attachment of a pin, although this element of the brooch may have

been on the missing part. In terms of shape and overall diameter, it would appear to represent a small example of Hirst's type IV (Hirst 1985, 55–7), which she suggests is a 'distinct Anglian type of the sixth century' (*ibid.*, 55). Apart from one similarly sized example from Sewerby (*ibid.*, fig. 39, no. 3), various sites in Suffolk have also produced similar small annular brooches (West 1998, 29, fig. 30, nos 3, 8; 77, fig. 109, no. 14).

Catalogue

(Dimensions are in mm. L. = length; W. = width; Th. = thickness; Diam. = diameter)

Safety-pin brooches (Fig. 1.1)

- 13 Copper alloy. Incomplete, pin broken off just below spirally twisted loop, bow of square section decorated with deep transverse V-sectioned notches. L.44, W.5.6 Bow section W.3, Th.2.7
RF 3181, Context 2717, Phase 4i–4ii.
- 14 Copper alloy. With pin of circular section, file marks on bow edges and front surface. L.36.9, W.6.5 Bow Th. 1.5 Pin section diam. 1.8
RF 1968, Context 1728, Phase 5b.
- 15 Copper alloy. With elongated oval bow, edges with incised lines defining field containing axial row of ring-and-dot motifs, pin of circular section. L.49, Bow W.5.5, Th.0.8. Pin section diam. 1.3
RF 11043, Context 6490, Phase 5b/6i.
- 16 Copper alloy. In two adjoining fragments, with extended lozenge-shaped bow with incised lines along each edge, pin of circular section. L.46.2 Bow W. 7.3, Th.1.4. Pin section diam. 1.9
RF 11595, Context 10962, Phase 3biii–v.
- 17 Copper alloy. Distorted with extended lozenge-shaped bow decorated with cross-shaped arrangement of ring-and-dot motifs within incised line border, pin of circular section. L.60.5. Bow W.9.1, Th. 1. Pin section diam. 2
RF 12750, Unstratified.
- 18 Copper alloy. With plain lozenge-shaped bow, pin of circular section L. 40.5. Bow width: 7.5. Bow thickness: 1. Pin section diameter: 1.5
RF 14021, Unstratified.
- 19 Copper alloy. With plain elongated oval bow, pin of sub-circular section. L 43. Bow width: 8. Bow thickness: 1.7. Pin section diameter: 1.5
RF 14133, Unstratified.
- 20 Copper alloy. With lozenge-shaped bow, tip of one end broken off, decorated with deep triangular notches on each side, pair of incised lines at each end, pin broken off at incomplete end where apparent repair has been attempted with short strip riveted near to bow end, strip with remains of curved ?pin replacement. L 46. Bow width: 9.5. Bow thickness: 2
RF 14425, Unstratified.
- 21 Silver. With bow and pin of circular section, file marks on pin shank, catch decoratively faceted to animal head shape. L.40.3. Bow section diam. 1.4
RF 10994, Context 6472, Phases 5b–6i.

?safety-pin brooch

- 22 Copper alloy. Fragment, with incomplete spring, pin bent up and end roughly broken. L.24.4. Pin section diam. 4.5
RF 11935, Unstratified.

Great square-headed brooch (Fig. 1.2; Pl. 1.1)

- 23 Copper alloy, gilt. Hines (1997) group XVII. Incomplete, with the terminal lobe of the footplate and one corner of the headplate broken off. The pin, usually iron, is missing, and its anchorage on the back of the headplate is damaged. Besides decoration in cast relief on the face, there is punched decoration in the headplate frame, along the sides of the bow, and on the upper edges of the footplate, and incised decoration in the headplate inner panel frame as well as probably along the bow ridge and on the pin catch at the back. A naturalistic animal graffito is incised into the back of the headplate. All of the decoration and its parallels are discussed in greater detail in the main text (above, pp. 3–4).

Surface EDXRF analysis showed the base alloy to be a leaded bronze, with very low levels of zinc detected at some analysis sites. The central front decorated panel had gold detected at 50%, but gold was also detected quite strongly (>17%) in decorated areas where none was visible, and on the undecorated lobes. This would suggest that the whole front of the brooch was originally gilded. Gold was detected at low levels (<2%) on the brooch back, but mercury was not reliably detected at any site on the brooch surface. Ian Panter notes that the surfaces of some areas on this brooch have a disrupted “bubbly” appearance, with loss of definition of the decorative detail, which is evidence for it having been burnt. Length (from headplate to point of breakage): 87.5mm. Width at headplate: 52mm; width at footplate side-lobes: 69mm. (Fig. 1.2; Pl. 1.1).

FX 88, RF 6. Unstratified.

Small long brooch (Fig. 1.2)

- 24 Copper alloy. Fragment, cross-potent head and part of bow, head top corners cut away asymmetrically, only one hole fully perforated, holes at bottom developed into sub-triangular slots. There are triangular mouldings to each side at upper end of bow which is triple-faceted and of plano-convex section. The remains of an iron pin and spring survive within lugs on the head’s reverse. L.25.6, W.20.7, Th.1.9. Bow section W.9.7, Th.4.6
RF 2557, Unstratified.

Disc brooch (Fig. 1.2; Pl. 1.2)

- 25 Silver. Complete, apart from pin which has broken off, decorated with pair of confronted beasts within double relief circular border; beasts with arched backs and speckled bodies, surrounded by and enmeshed in deeply cut chip-carved interlace. This face has been mercury-gilded, some of the gilding worn away on the edges. A small part of the integral pin survives on one side; the hooked catch on the other has been shaped to resemble an animal head. Diam. 29.7, Th. 0.8
RF 5467, Context 3758, Phase 4ii.

Annular brooches (Fig. 1.2)

- 26 Copper alloy. Of circular section, decorated with four groups of three transverse incised lines, pin of sub-rectangular section with pointed tip. Diam. 13.7, Section diam. 1.5
RF 4566, Unstratified.
- 27 Copper alloy. ?brooch, made of sheet, semi-circular, both

ends broken. External diam. 37.5, Internal diam. 24, Th. 0.9
RF 3778, Unstratified.

*Iron brooches**by Patrick Ottaway*

There are 22 examples (14 unstratified) of small iron ‘safety-pin’ brooches, none being over 50mm in length. Typically they have a lozenge-shaped head with a spring and catch on the underside. A few, however, including cat. nos 34, 48 and 49 (RFs 5770, 13591 and 13864: all unstratified), have long narrow asymmetrical heads which are at their widest near one end. No. 41 (RF 10987, Phases 5b–6i) is unique in having a parallel-sided head. The brooch head is often, but not always pierced in the centre. The reason for this is not apparent, and there is no evidence for their being riveted to anything else. In fact some of the heads which are pierced are also decorated as if for display. Decoration is confined to those with regular lozenge-shaped heads, and takes the form of punched dots (no. 29, RF 2482, Phase 6iii; no. 35, RF7935, Phase 3biii; no. 46, RF 12985, unstratified), punched dots with incised grooves along the margins (no. 37, RF 8967, unstratified), and diagonal grooves, again with grooves along the margins (nos 40 and 45: RFs 9367 and 12501 – both unstratified). Eight brooches are plated, and, where analysed, the metal is tin.

Stratified examples occur throughout the Flixborough sequence. No. 33 (RF 4097) dates to Phase 4ii, and there are three from Period 6 contexts. These are very distinctive and unusual objects for which there are no ready parallels except for two, one of which is lozenge-shaped and pierced in the centre, and the other which is oval, found in contexts dated to the 6th–7th century at Shakenoak Farm, Oxon. (P. D. C. Brown 1972, 94, fig. 43, 206–7).

Catalogue (Fig. 1.3)

Brooches usually have a lozenge-shaped head which is symmetrical unless stated, a spring and pin attached at one end and a catch at the other. All are plated, unless otherwise stated, and plating metal is given if analysed.

- 28 Half of head only. Plating is tin-lead. L.44, W.13mm (Fig. 1.3).
RF 2249, Context 2024, Phase 6iii.
- 29 Only part of pin is missing. Head pierced in centre; there are small indentations around the hole and running from the hole to each end. L.46, W.9mm (Fig. 1.3)
RF 2482, Context 2182, Phase 6iii.
- 30 Pin and spring only. L.26mm
RF 2644, Context 2184, Phase 6iii.
- 31 Head and catch. Head pierced in centre. L.40, W.10mm
RF 2748, Unstratified, Area M.
- 32 Head and catch. Head pierced in centre. Plating is tin-lead. L.48mm
RF 3262, Context 3216, Phase 5b.
- 33 Half head only. L.36, W.11mm
RF 4097, Context 3107, Phase 4ii.

- 34 Elongated, asymmetrical head only. L.50, W.6mm
RF 5770, Unstratified, Area C.
- 35 Head and spring. Head is pierced in centre; there are several punched dots around the hole. Degraded fibrous organic material on back. L.35, W.10mm (Fig. 1.3)
RF 7935, Context 7220, Phase 3biii.
- 36 Head only. L.47, W.11mm
RF 8554, Unstratified, Area C.
- 37 Head only, pierced in centre. Incised grooves define the margins. Central hole surrounded by 7–8 indented dots and a line of dots runs towards each end. L.27, W.10mm
RF 8967, Unstratified.
- 38 Incomplete asymmetrical head only, pierced in centre. L.34, W.10mm
RF 9044, Context 3107, Phase 4ii.
- 39 Head only. Fibrous organic material, could be spun threads/weave. L.35, W.7mm
RF 9341, Unstratified, Area C.
- 40 Head only. Incised grooves define margins and chevron pattern in centre. Plating is tin-lead. L.36, W.13mm
RF 9367, Unstratified, Area C.
- 41 Incomplete, straight-sided head and spring. L.40, W.8mm
RF 10987, Context 6472, Phase 5b–6i.
- 42 Pin and spring only. L.35mm
RF 11937, Unstratified.
- 43 Head asymmetrical and pierced at widest point. Not plated. L.34, W.8mm
RF 11998, Unstratified.
- 44 Head and catch. Head pierced in centre. Plating is tin-lead. L.34, W.9mm
RF 12393, Unstratified.
- 45 Incomplete head and catch. Incised grooves define margins and there are incised diagonals across the centre of the head. Not plated. Random organic material present. L.36, W.11mm
RF 12501, Unstratified.
- 46 Incomplete head. Two punched dots each surrounded by 6–7 smaller dots. Plating is tin-lead. Plant material present. L.18, W.11mm
RF 12985, Unstratified.
- 47 Pin and spring only. Plating is tin-lead. L.26mm
RF 13529, Unstratified, Area B.
- 48 Elongated and asymmetrical head. L.45, W.7mm
RF 13591, Unstratified.
- 49 Elongated and asymmetrical head. Slight traces of random organic material. L.50, W.5mm
RF 13864, Unstratified.

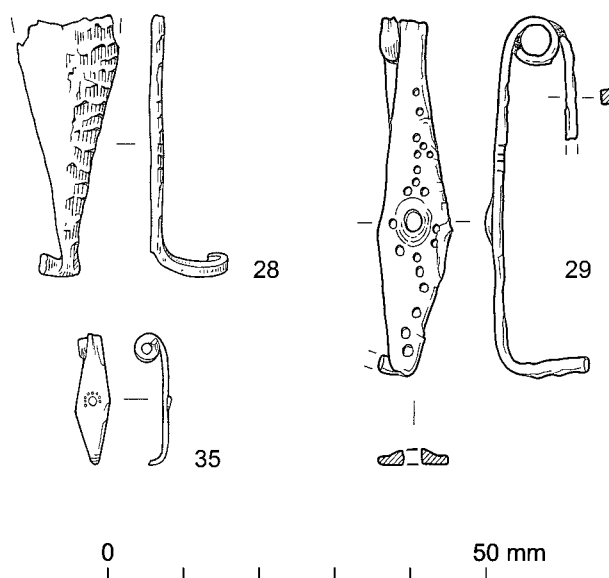


FIG. 1.3. Iron brooches. Scale 1:1.

characterised by its convex-sided form, a split attachment-end, usually pierced by a pair of rivets, and a terminal in the form of a stylised animal's head seen from above. Decoration, which is invariably present on this class, is restricted to one surface and may be accompanied by a subsidiary fan-shaped field located at the split-end, reserved for a standardised trilobate palmette motif (see, for example, nos 50 and 55: RFs 554 and 100).

The class can be attributed broadly to the 9th century by the following: the occurrence of high-status silver examples in coin-dated hoards including, Sevington, Wilts. (c.850), Trewhiddle, Cornwall (c.868), Talnotrie, Dumfries and Galloway, Scotland (c.875) and Cuerdale, Lancs. (c.905: Blackburn and Pagan 1986); the recurrent display of stylistically diagnostic features, particularly Trewhiddle-style decoration (see below); and by a growing number of stratified archaeological discoveries from sites such as *Hamwic* (Hinton 1996, 37–44), Whithorn, Dumfries and Galloway (Nicholson and Hill 1997, BZ19a), and York (Moulden *et al.* 1999, no. 78). The stratified examples from Flixborough reinforce this general dating, two coming from mid-9th-century fills from ditch (50) and a further example from one of the late 9th-century dumps. While the remaining stratified examples, derived from mid 10th- to 11th-century contexts, are probably residual, the possibility of loss during this period cannot be ruled out in light of the possibility that some artefacts and art-styles traditionally dated to the 9th century may have an extended chronology within the north of the country (Moulden *et al.* 1999, 259).

The class represents the commonest form of surviving Late Saxon ornamental metalwork; to date over 900 examples have been recorded from sites within Britain as

1.2 Strap-ends

by Gabor Thomas, with contribution by Susan M. Youngs, Glynis Edwards† and Jacqui Watson

Discounting a group of eighteen strap-ends made from folded strips of metal, and a somewhat more ambiguous example included here for completeness (no. 83a), the strap-end assemblage from Flixborough is otherwise dominated by a mainstream Late Anglo-Saxon class

distant as Trehiddle in Cornwall and Westness, Orkney, Scotland, and as a result of Viking activity examples have also been discovered further afield in Ireland and Scandinavia (Thomas 2000). Within Britain, the majority of find-spots fall to the south-east of a line drawn from the Bristol Channel to Whitby on the coast of North Yorkshire, the highest concentration coming from East Anglia, Lincolnshire and the Humber region, a pattern heavily influenced by metal-detecting, their major source of discovery. Finds to the north and west of this geographical line are relatively dispersed and predominantly coastal.

Strap-ends of this type acted as decorative terminals to straps of textile and leather employed in a variety of functional contexts, also affording the practical service of protecting their ends from fraying. One of their most widespread uses may have been as terminals to silk or textile girdles (Wilson 1964, 63), a suggestion that accords with the frequent richness of their decoration and their loss on a broad spectrum of contemporary settlement types. The discovery of several matching pairs in hoards and other archaeological contexts, together with their frequency at probable market sites, have also invited the suggestion that more robust examples may have been attached to bags and satchels (Webster in Webster and Backhouse 1991, 233; MacGregor 1994, 126).

The strap-end assemblage from Flixborough illustrates the wide variation exhibited by the class in respect to decorative technique, motif and composition. Six belong to the most popular and widely distributed sub-class characterised by Trehiddle-style decoration, an art-form intimately associated with metalwork produced during the 9th and early part of the 10th centuries (Brøndsted 1924, *passim*; Wilson in Wilson and Blunt 1961, 99–106). Overall, Flixborough's examples display several of the style's defining traits, including: the use of beaded or billeted borders to enclose the main decorative field; the portrayal of profiled semi-naturalistic animals, often in a crouched, backward-looking pose, sometimes with extremities which develop into foliage or interlace; the texturing of motifs with speckling and double-nicking; and finally, the use of vitreous inlays including enamel and niello as a means to highlight decoration.

On the basis of decorative composition, the Trehiddle-style strap-ends from Flixborough can be divided into two groups: the first distinguished by a single crouching animal, and the second, by a more attenuated form of animal which emits interlacing strands. Nos 50 and 51 (RFs 554 and 10785), representative of the second group, are closely related and the best in quality of the Flixborough assemblage, as indicated by their beaded edges and the crispness of their engraving, which is in both cases inlaid with niello. The decoration exhibited by these two strap-ends is characterised by a nicked, and in the case of no. 51 (RF 10785), a nicked and speckled animal, with a sinuous body which loops the full length of the decorative field in a figure-of-eight pattern. In both cases the strands of interlace which emerge from either the animal's tongue

or hindquarters form triquetra knots located at the side or bottom of the field.

Certain elements of this decorative composition reappear on other strap-ends and more widely amongst the corpus of Late Saxon ornamental metalwork. A similar looping animal, albeit less intricate and tightly controlled, with a pierced body is displayed on a beaded strap-end from Richborough (Kent) (Smith 1850, pl. V). A good parallel for the distinctive and unusual body lappets which project into the upper corners of the decorative field is provided by a gilt copper-alloy strap-end from the Baths Basilica, Wroxeter (Hereford and Worcester), compared by David Wilson to the complete strap-end from the Sevington hoard (Wilts.), deposited c.850 (Barker *et al.* 1997, 194, fig. 297). Outside the strap-end corpus the closest relatives of the Flixborough animal appear on fields 10 and 17 of the silver guard-mounts of the Abingdon sword, dated on stylistic grounds to the last quarter of the 9th century (Hinton 1974, pls 1b and c). While comparanda exist for individual elements of this composition, that such a distinctive combination of traits should be shared by two of Flixborough's strap-ends, strongly suggests that they are products of a single hand or workshop; one can not discount the possibility that they were intended to be worn as a pair.

No. 52 (RF 14022), a less elaborate version, has plain borders and simplified zoomorphic interlace which differs from the above in two respects. Firstly, at the expense of the animal the interlace has grown to occupy a greater proportion of the decorative field, and secondly, there is little or no interplay between the animal's body and the strands of interlace emitted by its hindquarters. In these divergences this motif is much more closely related to the overall handling of the aforementioned Wroxeter and Sevington animals and is also fairly widespread on Trehiddle-style strap-ends from Lincolnshire and the Humber region (Thomas 2000, Appendix 1). The poor preservation of the remaining example, no. 53 (RF 10905), precludes further comment.

Of the two strap-ends which constitute the first Trehiddle-style group, the damaged example no. 54 (RF 3748) is the better executed, featuring a classic, crouching Trehiddle-style animal with angled hip and splayed toes, closely matched by the decoration on strap-ends from Stevenston Sands, Ayrshire, Scotland (Callander 1932–3, fig. 5, no. 1), and Middle Harling, Norfolk (Margeson 1995a, fig. 41, no. 69).

On no. 55 (RF 100), notable for its use of a single rivet for attachment in common with the small silver pair of strap-ends from the Trehiddle hoard (Wilson and Blunt 1961, pl. XXIIIc), the crouching animal is much reduced in scale and reserved against an enamel ground. Through a national study (Thomas 2000) and selected scientific analysis (e.g. Stapleton *et al.* 1995), enamelled decoration has been identified on several such strap-ends, where it is used either, as here, as a ground to highlight Trehiddle-style decoration, or else simpler incised geometric designs,

as in the case of no. 58 (RF 3744). The Flixborough strap-end appears to be a degenerate version of more crisply executed enamelled strap-ends from Harling and Bawsey, Norfolk (Margeson 1995a, fig. 41, no. 70; Webster and Backhouse 1991, cat. no. 188d), and Trowbridge, Wilts (Graham and Davies 1993, 83, fig. 29.4), though on the latter two examples the animal has been replaced by a panel of interlace.

Nos 56 (RF 1505), and possibly 57 (RF 7326), are representatives of a distinctive decorative sub-class characterised by settings of niello, or less commonly enamel, inlaid with silver-wire scrollwork (Thomas 1996). Over 85 per cent of the 100 or so finds of this sub-class have been found in Norfolk and Suffolk, a focused distribution which strongly suggests that this style of decoration represents a provincial East Anglian fashion. No. 56 (RF 1505) displays the most common decorative arrangement displayed by this grouping, characterised by a pair of elongated rectangular panels of niello, each inlaid with a combination of silver-wire scrolls surrounded by smaller horseshoe-shaped filler elements (*ibid.*, 83, fig. 5). Although the first example of its sub-class to be discovered in either Lincolnshire or North Lincolnshire, the Flixborough find conforms to the general distribution outside East Anglia which is strongly polarized towards the east coast reaching as far as Cottam (East Riding of Yorkshire) in the north, and Berechurch (Essex) in the south (*ibid.*, 83, fig. 1); hooked tags decorated in the same style, and thus also likely to be of East Anglian origin, have been discovered at Harpswell, Lincs. (Scunthorpe Museum acc. no. 1996.145) and South Newbald, East Riding of Yorks. (Leahy 2000, figs 6.4.14 and 6.5.5). Given their probable source, these strap-ends complement other evidence – most notably Ipswich-type ware pottery and West Saxon coinage – reflecting Flixborough's active engagement in contemporary east-coast trading networks.

While highly corroded and fragmentary, the pair of inlaid rectangular settings on the front panel of no. 57 (RF 7326) suggests this may be another example of the East Anglian sub-class, although the use of a central notched band is unusual.

Flixborough has several strap-ends drawn from the cheaper end of the market including nos 58 and 59 (RFs 3744 and 11933), which carry panels of incised or punched decoration in association with simplified palmette and terminal features. No. 58 (RF 3744) is an example of a particularly common and widespread variety distinguished by lattice decoration, which in some cases, as here, was inlaid with enamel or niello. Several examples, both with and without inlays, have been discovered from sites within the Humber region and North Yorks. such as Fishergate, York (Rogers 1993a, nos 5317 and 5321), and St Peter's Church, Holton-le-Clay, Lincs. (Sills 1982, fig. 11D). No. 59 (RF 11933), which is decorated with punched arcs, has fewer parallels from a more defined geographical area, the majority coming from East Yorkshire sites including Cottam (Haldenby 1992, fig. 3, no. 7), South

Newbald (Leahy 2000, fig. 6.4.2) and Thwing (Leahy forthcoming).

The four split-end fragments are also derived from strap-ends of this classic Late Anglo-Saxon class, as indicated by their slender dimensions, scalloped upper edges, paired rivet-holes, and in the case of no. 61 (RF 2556), palmette motif.

The plain strap-end, no. 60 (RF 1524), although clearly related to the above class in size and in its use of a delicate split attachment-end, is distinguished by having a plain rounded terminal. This unusual shape recalls the strap-end discovered in a pre-10th-century (period I) context at Cheddar, Somerset, incised with foliate decoration which David Wilson has ascribed to the late 9th century (Wilson 1979, 282, fig. 95, C.A. 14). The morphology of these two strap-ends could reflect the early influence of continental tongue-shaped Carolingian strap-ends which provided the model widely followed by Anglo-Saxon craftsmen during the 10th century; the discovery of the Flixborough example from a mid 10th-century occupation deposit would accord with this attribution (see, for example, the series from Winchester in Hinton 1990b).

Another variation on this mainstream Late Saxon class is no. 65 (RF 3276), which has a tapering shaft of ovoid cross-section with a pair of raised collars marking the junction between the wedge-shaped split-end and a knopped terminal. The majority of parallels for this unusual form, including a group of metal-detected finds recorded by Kevin Leahy at Scunthorpe Museum, are from Lincolnshire and North Lincolnshire sites, a pattern which may reflect a regional fashion, or perhaps the activity of a single workshop based in the locality. From the same region and also displaying a wedge-shaped split-end with a tapering shaft, in this instance in combination with a pointed terminal, is an iron strap-end from Riby, Lincs., recovered from the fill of an 8th–9th-century ditch (Ottaway 1994, fig. 15, no. 70).

A related strap-end, discovered in a Late Saxon ditch at Worton Rectory Farm, Yarnton, Oxon. (Anne Dodd, pers. comm.), represents one of the few parallels from further afield, although the use of a knopped terminal also distinguishes a series of Middle Saxon strap-ends, represented at *Hamwic* and *Lundenwic*, with very narrow round-sectioned shafts indicating a specialised usage perhaps lace-tags (see Hinton 1996, 37–9; Blackmore 1989, fig. 41, no. 208; Goffin 1995, fig. 10, no. 19).

The group of 18 folded, sheet-metal, strap-ends from Flixborough represent an important body of evidence for on-site manufacture and recycling, especially no. 66 (RF 552), fabricated from an off-cut from an 8th-century bucket-mount (see Youngs, p. 10). Unfortunately, due to their lack of stylistic detail, such strap-ends are notoriously difficult to date closely, a problem compounded by the longevity of their simple folded design. While few examples have been securely identified from Mid to Late Saxon contexts, see, for example, those from *Hamwic* (Hinton 1996, 44, fig. 17) and Ripon, North Yorks. (Rogers 1996), and North Elmham,

Norfolk (I. H. Goodall 1980a, 503, fig. 263, no. 15), it is likely that some residual finds may have in the past been mistaken as medieval clasps or bindings.

Of Flixborough's series, no. 81 (RF 13198), which is decorated with sub-triangular edge nicks on its front face, has a number of parallels from mid-to-late-Saxon sites, including a folded strap-end from Thwing (East Riding of Yorks.), discovered in a midden deposit containing early 10th-century pottery (Leahy forthcoming). A broad 9th-century date is also likely for those examples, including nos 59, 66, 74 and 75 (RFs 552, 4167, 4489 and 11933), with upper edges which are crudely notched or scalloped – in some cases leaving a central triangular protrusion – in imitation of the split-ends characteristic of the Late Anglo-Saxon animal-headed class. In the case of no. 74 this attribution is supported by its discovery in a late 9th or earlier, context. While the remaining unstratified examples from Flixborough lack such diagnostic features, it is tempting to attribute the series as a whole to the late Saxon period given that the evidence recovered for non-ferrous metalworking activity peaks strongly during the 9th century.

Note on strap-end no. 66 (RF 552: Figs 1.4–1.5)
by Susan M. Youngs

The sheet of leaded bronze from which this strap-end was cut was already decorated with finely incised lines, and all edges of the strap-end cut through this curvilinear ornament. The design forms a flowing pattern of compass-based spirals and trumpets punctuated with vesicas (or pointed ovals: FIG. 1.5). Although some of the detail is now unclear, the whole area of preserved decoration shows variations within the individual fields and in the minor elements, and there appears to be no exact repetition between the spirals and details. A distinctive characteristic is the plain back-ground and the use of panels of hatching within the vesicas and also areas of the spirals and trumpets; in two internal panels triangles of parallel lines are engraved at right-angles to each other.

This fluid curvilinear ornament with fine hatching has close parallels on the bronze sheeting that was used to decorate elaborately mounted wooden buckets. These are rare and specialised vessels and the remains of only six buckets of this type are known. Three surviving complete buckets formed part of the furnishings of Viking-period burials in Scandinavia and were found, variously, in Sweden, at the trading centre of Birka on Lake Mälär, in Norway at Hopperstad, Vik, Sogn og Fjordane, and most recently in 1986 at Skei, Steinkjer, in Nord-Trøndelag (Bakka 1963, 27–33; Graham-Campbell 2001, 30–31, fig. 3.3). This fluid curvilinear ornament with its distinctive, alternating hatching finds its best, direct parallels in the bands of engraved ornament found on these complete vessels. These are birch or yew-wood buckets but covered externally with incised bronze sheeting, which was tinned in the case of the Birka bucket (Bakka 1963, 27–33; Graham-Campbell 1980, no. 318; Bakka 1984, 233–5).

On all three buckets the lowest register of ornament is an incised curvilinear pattern of the Flixborough type, with vesicas and fine cross-hatching.

It has been argued that the Hopperstad and Birka bucket panels are so similar in shape and ornament that they must have come from the same workshop, but the quality of the incised ornament is variable. The Flixborough offcut is much closer in quality of execution and style to the Birka panel, and shares with it the distinctive twisted-band effect in the centre of the spirals. All three buckets are exotic finds from Scandinavia, imported there during the Viking period, as were related fragments of bronze sheeting found at Farnen, Vestfold and Torshof, Akershus (Bakka 1963, fig. 28). Another fragment was excavated from an early Viking period burial at Machrins, Colonsay (Ritchie 1981, 268–9). Dr Bakka considered these buckets to be Northumbrian in origin because of their use of inhabited vine scroll and on the basis of the use of oblique hatching (*passim*, 28, 32–3). More recent finds at Donore, County Meath and Clonmore, County Antrim, however, confirm an Irish use of this type of hatching. The possibility that the friezes of interlinked spiral beasts used on all four Scandinavian finds could be Pictish was developed in the context of the St Ninian's Isle finds (Wilson in Small, Thomas and Wilson 1973, 127–32), but this cultural attribution was not accepted by Bakka because of the evidence of Northumbrian sculpture showing the origin and development of the 'Tree-of-Life' motif seen on the buckets. This, however, downplays the Pictish use of this ornament in sculpture. Increased awareness of the complex artistic inter-relationships between Ireland, Iona and the expanded Columban federation makes it harder to be so sure of regional attributions for the portable applied arts of fine metalwork and manuscript production. Bakka's opinion remains substantially viable, and the appearance of this reused piece in Lindsey (North Lincs.) in a pre-Viking context is certainly consonant with an origin in Northumbria for the original bucket. It is likely that these vessels with their Christian decoration had an ecclesiastical source and possible ritual function, as did the various shrine fittings discovered in Viking graves.

Dating is largely conventional, based on stylistic considerations with very few fixed reference points. The Hopperstad bucket came from a 10th-century burial (Wamers 1985, Cat. 64), the Birka example from a Middle Viking Period grave, that is dating from the late 9th to the second half of the 10th century (Graham-Campbell 1980, no. 318; Bakka 1984).

The buckets were broadly dated to the 8th century by Bakka, but, in the light of recent excavations and analyses, the period 750 to 825 is more likely for their manufacture and hence for the original bronze sheet of the Flixborough piece.

[The affinities of this piece are also discussed more fully and illustrated in Youngs 2001, 211–16.]

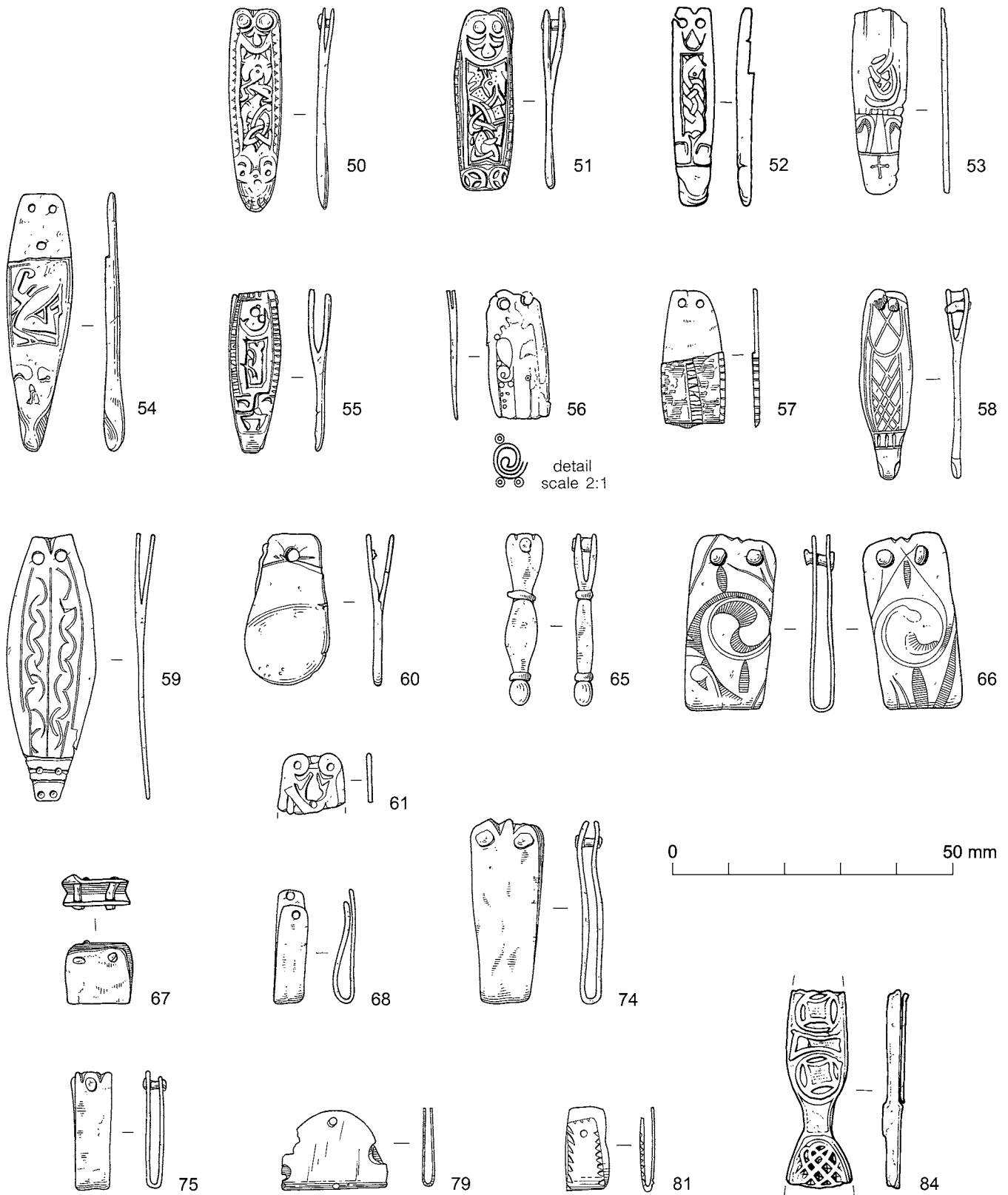


FIG. 1.4. Copper alloy strap-ends. Scale 1:1.

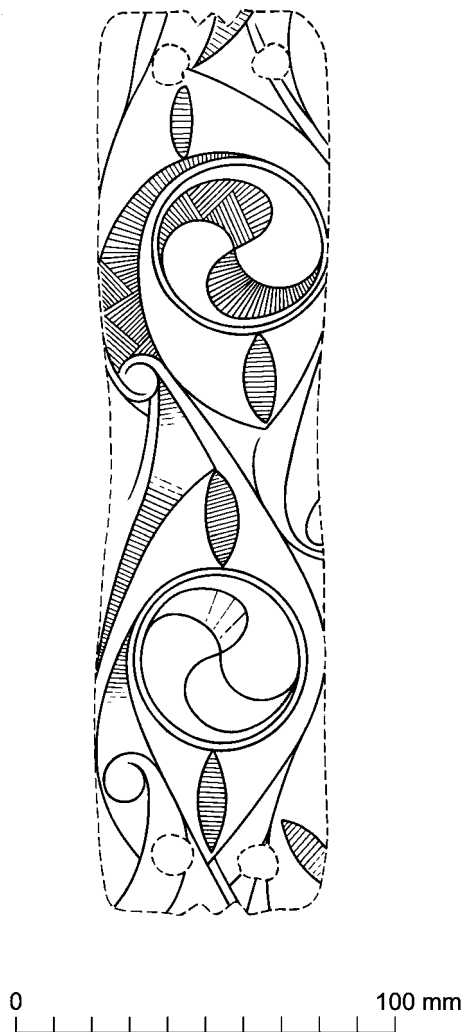


FIG. 1.5. Detail of decoration on strap end no. 66, RF 552. Scale 2:1. [drawing by Lisa Humphrey, British Museum]

Note on an enamelled strap-end no. 84
(RF 1618: FIG. 1.4; PL. 1.4)

by Susan M. Youngs

The middle portion of a cast copper-alloy strap end, broken at both ends, was recovered from a Phase 6iii context. It comprises a long narrow plate which narrows to a waist towards one end to give two decorative fields tapering slightly at the ends. The smaller one has cast interlace in low relief, the larger one is inlaid with champlevé enamel. The reddish matter in the interlace field appears to be corrosion rather than enamel. The main field has a background inlay of decayed yellow, with a reserved pattern of two circles with a hollow bar between them. The circles have four arcs around the edge to create an inner cusped lozenge still filled with red enamel. The back is plain, and the back of the larger area has laminated or been deliberately split.

It is best interpreted as a strap-end but its purpose is not entirely clear.

Opaque enamel is characteristic of Irish metalwork of the 8th century, although strap ends are not found in the Irish material. Enamel is also employed on some later classes of metalwork, principally horse bridle mounts and also belt buckles associated with Viking burials in Man and western Scotland which have small fields of enamel. The elongated and waisted form of this strap end and the use of enamel suggest that it is probably a product of this Hiberno-Norse tradition, dating from the 9th century.

Conclusion

by Gabor Thomas

Flixborough's total of 36 complete and fragmentary strap-ends is numerically comparable to that of the most extensively excavated contemporary settlements such as *Hamwic*, with a total of 37, and the most productive of the so-called 'productive sites' of eastern England, including Cottam and South Newbald (East Riding of Yorks.), and Bawsey (Norfolk), with totals of 32, 28 and 30 respectively. In composition, Flixborough's tally is comparable to other large strap-end assemblages from the Humber region, including those from the Anglian focus at Cottam B (Haldenby 1990; 1992; 1994) and South Newbald (Leahy 2000), which are characterised by a predominance of the mainstream animal-headed class decorated in either the Trewhiddle style or with simple geometric designs.

Despite the discovery of probable imports, including the East Anglian silver-wire sub-class, from both Flixborough and Cottam, and the possible Hiberno-Norse enamelled example (no. 84), it is likely that the majority of strap-ends from these sites were obtained via more restricted networks of trade, communication and exchange local to the Humber region and neighbouring parts of Lincolnshire and Yorkshire. With a lack of definitive archaeological evidence for production sites, it is difficult to gauge precisely where and under what level of specialisation strap-ends within this region were manufactured. The extreme levels of stylistic variability displayed by the class on sites with high strap-end yields such as Flixborough does suggest, however, that the local market was supplied by a multiplicity of local workshops and/or craftsmen rather than a limited number of major production centres. More certainty surrounds the origins of Flixborough's large group of folded, sheet-metal, strap-ends which were probably manufactured on-site as a cheaper, and, in some cases, temporary alternative to strap-ends purchased or commissioned locally. Although these simple strap-ends can be paralleled individually on other sites both within and beyond the Humber region, the exceptional quantity recovered from Flixborough should be taken as a further reflection of the self-sufficiency of this important Late Anglo-Saxon estate centre.

The absence of Anglo-Scandinavian and cast tongue-

shaped strap-ends from Flixborough's assemblage – both of which circulated within the North-eastern Danelaw during the 10th to 11th centuries – is notable, though not surprising given that they were evidently produced in much fewer numbers than the earlier Anglo-Saxon animal-headed type (Thomas 2001). Cottam, for example, has only three such strap-ends to show for its Anglo-Scandinavian occupation (Haldenby 1990, fig. 4, no. 17; 1992, fig. 3, nos 1 and 9; Richards 2000). This fall-off evidenced in the strap-end assemblage is seen in other classes of ornamental metalwork, as reflected in the comparative dearth of material from sites such as Wharram Percy, North Yorks., which were demonstrably occupied during the Anglo-Scandinavian period (Richards 1997). David Hinton has suggested that this decline is a reflection of changing attitudes towards the conspicuous display of status through personal adornment (1990e, 102). Whether or not one wishes to explain this phenomenon in explicitly social terms, it has important implications for the way in which the negative evidence from Flixborough and other sites like it is interpreted, for such cannot necessarily be equated with a cessation of occupation or a decline in status or activity.

Catalogue (Figs 1.4 and 1.5; Pls 1.3–1.4)

- 50 Copper-alloy convex-sided strap-end pierced at its split-end by a pair of copper-alloy rivets with flattened heads and shanks of square section. The borders enclosing the decoration on the front of the strap-end bear triangular punch-marks in imitation of beading. A well-defined trilobate palmette is located between the rivets, while the central sub-rectangular panel of decoration below is occupied by a nicked, Trewhiddle-style animal with an attenuated body which curves in a figure-of-eight configuration. The animal's head, which features a small ear and an eye consisting of a circular pit with a rear linear extension, bites the narrowing mid portion of its body. The neck and upper section of the body form a loop which sprouts a pair of foliate lappets into the interstice at the upper corners of the field. The front leg, which emerges from a punched circular hip at the centre of the loop, pierces the neck of the animal prior to terminating in a foot with an elongated toe. Below the head, the body bifurcates into a hind leg, terminating in a two-toed foot, and an interlacing tail which self-engages to form a simple knot at the bottom of the field from which a strand emerges to pierce the animal's hindquarters diagonally. The worn zoomorphic terminal has oval ears with lunate and circular incisions separated by a small central lobe, incised eyes and a rounded snout. The reverse of the strap-end is plain. L.36mm, W.9.3mm, Th. 1.9mm. (FIG. 1.4)
RF 554, Context 555. Area A, Phase 6ii–6iii, dark soil.
- 51 Copper-alloy convex-sided strap-end pierced at its split-end by a pair of copper-alloy rivets with flat heads and shanks of square section. The front-plate is decorated with a fan-shaped field inhabited with a well-defined trilobate palmette. The central panel of decoration, enclosed within a beaded outer, and plain inner, border, is skilfully executed and inlaid with niello (now missing in several places). It portrays a nicked and speckled, backward-looking, Trewhiddle-style animal with an attenuated body which engages with strands of interlace in a looping, figure-of-eight configuration. Behind a prominent head with a drilled eye, gaping mouth and forked tongue, the neck of the animal curves round in an upper loop which sprouts a pair of sub-triangular lappets into the interstices at the upper corners of the field. A strand of interlace, emitted by the animal's tongue, pierces the central portion of the body before self-engaging to form an interlaced knot sandwiched between the body and the left-hand frame. The animal's looping hindquarters develop into a tail which forms a second interlacing knot at the bottom of the field. The zoomorphic terminal is limited to a pair of sub-circular ears decorated internally with three interlocking lunate incisions. Below this point the metal has been filed down in antiquity to create a flat edge, possibly following a breakage. Fibrous organic material preserved between the plates. L. 32.7mm, W. 10.2mm, Th. 1.4mm. (FIG. 1.4)
RF 10785, Context 10772. Area G, Phase 2–4ii ditch fill.
- 52 Copper-alloy parallel-sided strap-end with incised decoration. The scalloped split-end is pierced by a pair of rivet-holes, beneath which emerges a stylised palmette formed from an incised inverted 'V' resting within an arc. The central rectangular field of decoration, enclosed within incised borders, is inhabited by a contorted backward-looking Trewhiddle-style animal with a segmented triangular-shaped foot, dotted eye and a gaping mouth, the lower jaw of which engages with the tail to form a panel of interlace below. The zoomorphic terminal has crudely incised oval ears, faceted eyes and a squared-off snout. L.35.3mm, W. 7.7mm. (FIG. 1.4)
RF 14022, Unstratified.
- 53 Damaged convex-sided copper-alloy strap-end, broken across the split-end so that the rivet holes and some of the decoration are missing. The latter, which is badly worn and corroded, consists of a central sub-rectangular field of incised zoomorphic interlace enclosed within plain borders. At the upper edge of the field, is a backward-turned animal head with a circular eye and gaping mouth. Below this point a poorly defined neck and body degenerate into a confused interlace pattern which extend towards the bottom of the field. The zoomorphic terminal has large oval ears and bears an incised cross on its snout. L.33mm, W. 10.2mm. Th. 1.4mm. (FIG. 1.4)
RF 10905, Context 10772, Area G, Phase 2–4ii ditch fill.
- 54 Copper-alloy convex-sided strap-end with a damaged split-end. The latter is pierced by three rivet holes, a pair adjacent to the upper edge, and a third placed centrally below. The central sub-rectangular panel of decoration, which is partially obscured by the split-end breakage and corrosion, bears the remains of an incised crouching Trewhiddle-style animal inlaid with niello. The animal is portrayed in a backward-looking pose, its body terminating in a tail and a hind-leg with a two-toed foot. The zoomorphic terminal has oval ears with lunate incisions, faceted eyes and a rounded snout. L. 46.5mm, W. 11.8mm, Th. 3.5mm. (FIG. 1.4)
RF 3748, Unstratified.
- 55 Copper-alloy convex-sided strap-end with crudely billeted edges and a single, centrally-placed, rivet hole at its split-end. A simplified, U-shaped palmette is located between the rivet hole and a central sub-rectangular field of decoration which consists of a stylised crouched and backward-looking Trewhiddle-style animal reserved against an enamel ground. The zoomorphic terminal has oval ears with lunate incisions,

- an engraved and enamel-inlaid motif on its brow and a squared-off snout. Irregular tooling marks are discernible on its reverse. L. 29.2mm, W. 9mm, Th. 1.1mm. (FIG. 1.4) RF 100, Context 1, Topsoil.
- 56 Copper-alloy convex-sided strap-end pierced by a pair of rivet holes at a damaged split-end, which bears the worn remnants of an engraved fan-shaped field on its front surface. The central panel is decorated with a pair of sub-rectangular recessed fields which would have originally held decorative settings of niello/enamel inlaid with silver wire. Only small fragments of these remain, most notably in the left-hand panel which retains a circular scroll of silver wire flanked by three smaller wire loops. One of the latter is all that remains of the original inlay in the right-hand panel. A lateral breakage has removed the bottom of these fields and the zoomorphic terminal. Fibrous organic traces in corrosion from iron rivet. L. 23.1mm, W. 11.4mm, Th. 1.6mm. (FIG. 1.4) RF 1505, Context 1269, Area E, B, C, F, Phase 6iii occupation deposit.
- 57 Damaged convex-sided copper-alloy strap-end, the front-plate and terminal of which are missing. The surviving back-plate of the split-end has a nicked upper edge and a pair of rivet holes. The front panel, which is fragmentary and corroded, has billeted edges which enclose two longitudinal panels of corroded inlay separated by a crudely notched central border. The inlay is too corroded to reconstruct the original decoration, but it is likely to have been of niello and silver wire. Diagonal tooling marks are evident on the reverse. L. 24.5mm, W. 11.1mm, Th. 1.1mm. (FIG. 1.4) RF 7326, Unstratified.
- 58 Copper-alloy convex-sided strap-end pierced at its split-end by a pair of iron rivets which have corroded and discoloured much of the surrounding metal. Below the rivets is a large simplified palmette composed of an incised outer 'U' with an internal diagonal cross. The central panel is decorated with an incised, enamel-inlaid lattice design enclosed within incised outer borders, the enamel having discoloured to whitish-green. The well-modelled zoomorphic terminal has three longitudinal nicks to represent ears, slightly faceted eyes, and a rounded snout. The reverse is covered with diagonal tooling marks. Degraded fibrous traces in iron corrosion from rivets. L. 33.4mm, W. 9.5mm, Th. 1.9mm. (FIG. 1.4) RF 3744, Unstratified.
- 59 Copper-alloy convex-sided strap-end with a pair of asymmetrically placed rivet holes at its crudely scalloped split-end. The central panel of incised decoration consists of two columns of conjoined interlocking arcs enclosed within vertical borders. The highly stylised zoomorphic terminal features three transverse lines, of which the central one has been punched with a pair of circular holes representing eyes. Similar punch-marks have been used for the nostrils on the squared-off snout. Due to its fabrication from a very thin sheet metal both sets of punch-marks are visible on the back of the strap-end as convex 'pimples'. Fine diagonal tooling marks are discernible on its front surface. L. 47.1mm, W. 16.3mm, Th. 0.6mm. (FIG. 1.4) RF 11933, Unstratified.
- 60 Plain copper-alloy strap-end of tongue-shaped form pierced at its split-end by a single, centrally-placed, rivet hole. The plate widens from the split-end toward a rounded, featureless terminal. A pair of deeply cut tooling-marks made from the edges of the plate bisect one another at the base of the rivet hole. L. 27.1mm, W. 15.3mm, Th. 1mm. (FIG. 1.4) RF 1524, Context 1456, Area E, F, Phase 6iii occupation deposit.
- 61 Decorated front-plate from a copper-alloy strap-end. In addition to a pair of rivet holes parallel to its upper edge, a third, which pierces the tip of the central leaf of the foliate palmette, indicates that the strap-end was repaired in antiquity. The trilobate palmette which emerges from between and beneath the pair of rivet holes has a defined basal bulb, which forms a sub-triangular projection at the upper edge of the split-end and a central horizontal band, which separates the bulb from the fan of leaves below. Only a small section of the original front panel survives, revealing a sub-rectangular field of engraved decoration enclosed within a pair of plain borders. Greater survival of the left-hand side of the panel suggests that the original design may have been zoomorphic. L. 10.7mm, W. 11.8mm, Th. 0.6mm. (FIG. 1.4) RF 2556, Unstratified.
- 62 Sub-rectangular back-plate from a copper-alloy strap-end. The fragment is pierced asymmetrically by two small rivet holes and is scalloped at its upper edge. The fragment can be identified as a back-plate on the basis of its curvature and the lack of surface decoration. L. 13mm, W. 12.7mm, Th. 0.7mm. RF 3444, Unstratified.
- 63 A gently curving back-plate from a copper-alloy strap-end. Below a crudely scalloped upper edge, the plate is pierced by a pair of rivet holes, the right-hand of which retains the corroded remains of a copper-alloy rivet. A third rivet hole is located centrally below the pair. L. 12.3mm, W. 11.5mm, Th. 0.45mm. RF 4600, Context 3107, Area G, Phase 4ii ditch fill.
- 64 Corroded back-plate from a copper-alloy strap-end pierced by a pair of rivet-holes. The lack of surface decoration suggests that this formed the back-plate. L. 13.7mm, W. 12.4mm, Th. 0.8mm RF 3828, Context 3989, Area E, Phase 3a–3bi–3bv dumping deposit.
- 65 Cast copper-alloy strap-end of ovoid cross-section. The wedge-shaped split-end has a pair of sub-triangular nicks at its upper edge and a centrally-placed attachment rivet. A pair of raised moulded collars, which extend onto both front and back surfaces of the strap-end, divide off a central convex-sided shaft from the split-end and a knopped spheroid terminal. The strap-end is otherwise plain. Fibrous traces on rivets. L. 30.2mm, W. 6mm, Th. 2.8mm. (FIG. 1.4) RF 3276, Context 3275, Area E, Phase 5a–6i dumping.
- 66 Sub-rectangular strap-end made by cutting a strip 62.2mm by 30.2mm from a decorated copper-alloy sheet, folding it lengthways, cutting two small decorative notches in each narrow end and piercing this open end with two rivet holes (FIG. 1.5). Some of the original incised decoration is abraded and difficult to read, for example where the sheet is folded, but it forms a continuous abstract pattern with two spirals, trumpets framing vesicas and areas enriched with fine hatching. The metal is unevenly patinated and thicker along one long edge (see FIG. 1.5). Slight organic traces on rivets. L. 31.1mm., W. 15.1mm, Th. 0.5mm. (FIGS 1.4–1.5) RF 552, Context 535, Areas C, F, B; Phase 6iii, dark soil.

- 67 Plain sub-rectangular strap-end formed from a folded strip of copper alloy. The attachment-end is pierced by a pair of copper-alloy rivets of square section which are crudely burred over at the back to hold them in place. L. 11mm, W. 11.7, Th. 0.15mm. (FIG. 1.4)
RF 108, Context 1, Areas A–G. Topsoil.
- 68 Plain sub-rectangular strap-end formed from folded narrow strip of copper alloy. The attachment end possesses a centrally-placed rivet hole. L.20.5mm, W.5.2mm, Th.0.3mm. (FIG. 1.4)
RF 109, Context 1, Areas A–G. Topsoil.
- 69 Plain sub-rectangular strap-end formed from a folded strip of copper alloy. The strap-end was originally secured by two small copper-alloy rivets at the attachment-end, of which only the right-hand survives. L.17.2mm, W.21.1mm, Th.0.2mm
RF 920, Unstratified.
- 70 Plain sub-rectangular strap-end formed from a folded strip of copper alloy. The front face of the attachment end has a pair of rivet-holes, the left-hand retaining the corroded remains of the original copper-alloy rivet-head. The back edge of the attachment-end, including the rivet-holes, are missing. L.12.1mm, W.26.8mm, Th.0.3mm
RF 932, Unstratified.
- 71 Damaged sub-rectangular section from a folded, copper-alloy strap-end, pierced centrally near its upper edge by a rivet-hole. The bottom of the plate is curved in the vicinity of the original fold. L.12.7mm, W.12.2, Th.1.4mm.
RF 1080, Context 1017, Areas A–F, Period 7 dark soil.
- 72 Fragment of a plain sub-rectangular strap-end formed from a folded strip of copper alloy. A pair of rivet-holes pierce the plate towards one of its ends. L.10.6mm, W.14.2mm, Th.0.2mm.
RF 1903, Context 1891, Area E, Phase 6ii–6iii dark soil.
- 73 Plain sub-rectangular strap-end formed from a folded strip of copper alloy. The attachment-end is pierced by a centrally-placed rivet-hole. L.c.24mm, W.9.7mm, Th.0.35mm
RF 3823, Unstratified, Area C.
- 74 Plain sub-rectangular strap-end formed from a folded, slightly tapering strip of copper alloy. The attachment-end, which is pierced by a pair of copper-alloy rivets, has a scalloped upper edge with a central triangular projection. Irregular tooling-marks are discernible on its outer surface and the recess in the attachment-end retains a small portion of the original strap. Leather survives between plates. L.32.3mm, W. 12.1mm, Th. 0.5mm. (FIG. 1.4)
RF 4167, Context 3107, Area G, Phase 4ii ditch fill.
75. Sub-rectangular strap-end formed from a narrow folded strip of copper alloy. The upper edge of the attachment-end is decorated with a pair of triangular nicks which flank a centrally-placed copper-alloy rivet of square section. Very degraded leather between plates may have delaminated, or be double thickness. (FIG. 1.4)
L.20.5mm, W.6.5mm, Th.0.3mm.
RF 4489, Context 3610, Area E, Phase 6ii dump.
- 76 Sub-rectangular strap-end formed from a folded strip of copper alloy pierced at its attachment-end by a pair of rivet-holes. The edges have been irregularly cut, the fold is asymmetrical and the upper edge of the front face has been crudely scalloped. The surface of the strap-end bears irregular file marks. Black fibrous organic material, probably leather, present. L.22.4mm, W.19.2mm, Th.0.35mm
RF 11932, Unstratified.
- 77 Plain sub-rectangular strap-end formed from a folded strip of copper alloy pierced through its attachment-end by a pair of rivet-holes. The surface of the strap-end bears irregular file-marks. L.19.4mm, W.14mm. Th.0.4mm.
RF 11973, Unstratified.
- 78 Plain sub-rectangular strap-end formed from a folded strip of copper alloy. The strap-end has been pierced at its attachment-end by a centrally-placed copper-alloy rivet which secures a fragment of textile or leather in the recess. Black fibrous organic material, leather (?), survives. L.11.7mm, W.10.3mm, Th.0.1mm.
RF 12200, Unstratified.
- 79 Plain strap-end fabricated from a folded, ovoid sheet of copper alloy. A small centrally-placed rivet hole pierces the attachment-end which has damaged edges. L.14mm, W.18.6mm, Th.0.2mm. (FIG. 1.4)
RF 12756, Unstratified.
- 80 Sub-rectangular strap-end formed from a folded strip of copper alloy, roughly tapered at both ends and pierced towards one end by a central rivet hole. Between the recess of the attachment-end is an additional pierced strip of copper alloy, to which adheres a surviving portion of the original (?) leather strap. L.19.7mm, W.12.4mm, Th.0.15mm.
RF 13069, Unstratified.
- 81 Sub-rectangular strap-end formed from a folded strip of copper alloy, roughly tapered towards its ends and pierced towards one end by a central rivet-hole. The front of the attachment-end, which tapers at a steeper angle than the back, is decorated with a series of sub-triangular edge-nicks; a further pair of these nicks exists on the back towards the fold. L.14.5mm, W.7.9mm, Th.0.5mm. (FIG. 1.4)
RF 13198, Unstratified.
- 82 Sub-rectangular strap-end formed from a folded strip of copper alloy, pierced at its attachment-end by a centrally-placed iron rivet. Corrosion products from the iron rivet have obscured much of the surface of the strap-end. Random organic material survives on the outside. L.19.6mm, W.14.8mm, Th.0.3mm
RF 13704, Unstratified.
- 83 Plain rectangular strap-end formed from a folded strip of copper alloy, pierced at its attachment-end by a centrally-placed copper-alloy rivet. The outer surface bears irregular file-marks. L.21.6mm, W.9.2mm, Th.0.2mm
RF 50010, Unstratified.

An enamelled strap-end (RF 1618: FIG. 1.4; PL. 1.4)

by Susan M. Youngs

- 84 Middle portion of a cast copper-alloy strap end, broken at both ends. A long narrow plate narrows to a waist towards one end to give two decorative fields tapering slightly at the ends. The smaller one has cast interlace in low relief, the larger one is inlaid with champlevé enamel. The reddish matter in the interlace field appears to be corrosion rather than enamel. The main field has a background inlay of decayed yellow, with a reserved pattern of two circles with a hollow bar between them. The circles have four arcs around the edge to create an inner cusped lozenge still filled with red enamel. The back is plain and the back of the larger area

has laminated or been deliberately split. It is best interpreted as a strap-end but its purpose is not entirely clear.

Opaque enamel is characteristic of Irish metalwork of the 8th century, although strap ends are not found in the Irish material. Enamel is also employed on some later classes of metalwork, principally horse bridle mounts and also belt buckles associated with Viking burials in Man and western Scotland which have small fields of enamel. The elongated and waisted form of this strap end and the use of enamel suggest that it is probably a product of this Hiberno-Norse tradition, dating from the 9th century. Length 36. mm; width 11.3–12mm. (FIG. 1.4; PL. 1.4)

RF 1618, Context 1454, Phase 6iii.

Five iron strap ends

by Patrick Ottaway

(with a contribution by Gabor Thomas)

There are five tin-plated iron strap-ends (two unstratified). Four of them have a 'mouth' at the head where they were riveted to a strap in the same way as Anglo-Saxon non-ferrous strap-ends. Nos 86–7 (RFs 6843 and 9768: both Phase 6iii–7) and no. 89 (RF 12513; unstratified) are similar in tapering to the tip. No. 89 (RF 12513) is the simplest in form being decorated with incised grooves across the lower part of one face. No. 86 (RF 6843; Phase 6iii–7) has incised diagonal grooves in a central field and a stylised animal head at the tip. It is similar to three tin-plated iron strap-ends from Anglo-Scandinavian contexts at 16–22 Coppergate, York (Ottaway 1992, 690–1, fig. 298, 3790–1, 3). Other iron strap-ends of the same basic form as the Flixborough examples come from middle Anglo-Saxon contexts at *Hamwic*, Southampton (SOU15.008 and SOU31.150, unpublished, excavated by Southampton City Council), and Ramsbury (Evison 1980, 35, fig. 20, 6). No. 88 (RF 9920: unstratified) is rather different from the first two in having a lobe at each end; it closely resembles an Anglo-Scandinavian strap-end from Coppergate (Ottaway 1992, fig. 298, 3789).

No. 85 (RF 3344; Phase 4i–ii) was made by simply folding a piece of metal over and riveting it to the strap. Both arms narrow towards the 'mouth', where they have a pierced, rounded terminal. There are two incised grooves on each arm immediately below the terminal.

Note on strap-end no. 87 (RF 9768; FIG. 1.6)

by Gabor Thomas

Despite featuring a highly simplified terminal and near parallel sides, no. 87 (RF 9768) is clearly related to the Late Anglo-Saxon animal-headed class of which Flixborough has several copper-alloy examples. The lattice decoration displayed on its front panel is a particularly common motif on non-ferrous strap-ends, including one of the Flixborough series, no. 58 (RF 3744). Other iron strap-ends having a superficial resemblance to the Flixborough example have been discovered at Ramsbury, Wilts. (Evison 1980, fig. 20, no. 6) and Canterbury, Kent (Webster 1988), however, their thickened shafts and expanded split-ends place them

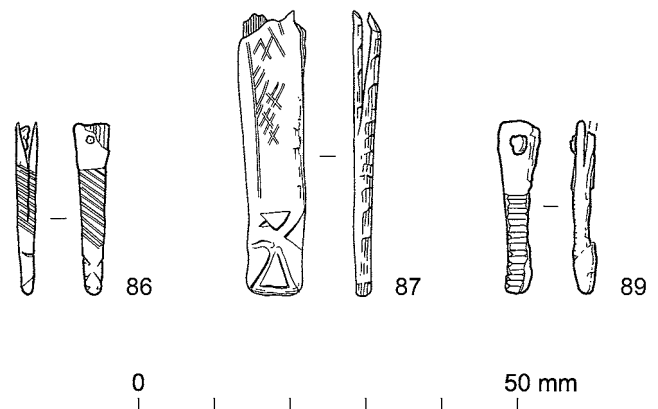


FIG. 1.6. Tin-plated iron strap-ends. Scale 1:1.

in a different morphological class with a longer chronology that extends into the 11th century (see, for example, the series from Winchester in Hinton 1990c). Other iron strap-ends dating to the Mid-Late Saxon period found closer to Flixborough, at Riby, Lincs. (Ottaway 1994, fig. 15, no. 70) and 16–22 Coppergate, York (Ottaway 1992, nos 3789–93), bear little relation to this example.

Catalogue (FIG. 1.6)

All have a 'mouth' at one end which gripped the strap with assistance of a single rivet. All are plated.

- 85 Made from a folded plate, both arms of which are narrowed towards the 'mouth' where they have a pierced, rounded terminal, rivet *in situ*. Two grooves on each arm immediately below the terminal. Plating is tin-lead. Mineralised leather within. L.32, W.10mm
RF 3344, Context 2717, Phase 4i–4ii.
- 86 Tapers from mouth to tip. Central part has incised diagonal grooves. Terminal is a simplified animal head. Plating is tin-lead. L.45, W.9mm (FIG. 1.6)
RF 6843, Context 6300, Phase 6iii–7.
- 87 Iron strap-end in a heavily corroded condition, broken across its split-end so its rivet holes are missing. The central panel, which tapers slightly towards the terminal, carries incised decoration consisting of a lattice pattern enclosed within outer borders. The stylised zoomorphic terminal has faceted eyes and is decorated on its brow and squared-off snout with a pair of confronted incised triangles. Plating is tin-lead. L.36.9mm, W.7.9mm, Th.2mm. (FIG. 1.6)
RF 9768, Context 6300, Area D,E, Phase 6iii–7, dark soil occupation deposit.
- 88 One face has a lobe at each end, and between them a channel with a groove on each side. Plating is tin. L.28, W.14mm
RF 9920, Unstratified.
- 89 Tapers from mouth to tip. Incised grooves across lower half of one face. Plating is tin. L.45, W.10mm (FIG. 1.6)
RF 12513, Unstratified.

1.3 The hooked tags

by Gabor Thomas

The hooked tag, another common class of Anglo-Saxon ornamental metalwork represented at Flixborough, enjoyed a long period of usage extending from the 7th to 11th centuries. Under the simplest classification based upon the shape of their attachment plates, hooked tags can be divided into two principal morphological groups, sub-circular or sub-triangular, leaving a small number of shield-lozenge- and diamond-shaped variants such as no. 99 (RF 3408). Whereas the sub-triangular form is the first to enter the repertoire during the late 7th to 8th centuries, as attested by their discovery in 'final phase' burials (see Geake 1997), the sub-circular form represents a later, possibly late 8th-century, adaptation. Both groups remained fashionable for the remainder of the period, although the popularity of sub-circular examples with small attachment plates increased during the 10th and 11th centuries. This pattern is to some extent reflected in the Flixborough assemblage; in contrast to a fairly uniform temporal distribution of sub-triangular examples, three of its four stratified sub-circular examples are derived from 10th-century or later contexts.

Hooked tags are considerably plainer than contemporary strap-ends; the majority are of sheet-metal construction and carry simple punched or incised decoration on their attachment plates. Elaborate silver examples with projecting attachment-lugs and niello-inlaid Trewhiddle-style decoration date to the 9th and 10th centuries (Graham-Campbell 1982; Blair 1992; Webster and Backhouse 1991, nos 196–200; Farley 1991); a recently published chip-carved example from Ipswich, Suffolk, suggests that similarly ornate examples were also made during the second half of the 8th century (West 1998, fig. 97.5).

The distribution of hooked tags, which is broadly comparable to that of Late Anglo-Saxon strap-ends, is similarly widespread in central, southern and eastern England. North of the Humber, however, they are scarcer, the most northerly find-spot to date being the Viking cemetery at Carlisle Cathedral, Cumbria (Keevil 1989, fig. 2, no. 1). Several examples have also been found on the continent; a handful from southern Sweden, Norway and Denmark may represent Scandinavian copies made during the 11th century (Weber 1987, 106, fig. 4; Graham-Campbell and Okasha 1991, 224).

Unlike strap-ends, which were secured using riveted split-ends, hooked tags were sewn into position via two or more holes, or perforated lugs. Hinton has suggested that the indented or scalloped upper edges of some hooked tags may have helped to secure the attachment thread in place (Hinton 1990e, 548). As to function, it is likely that the popularity of hooked tags, like contemporary strap-ends, lay in their multipurpose use, although their delicate proportions suggest they would have been best suited to fastening silk ribbons and other light materials associated with costume and dress-accessories, a suggestion that is

also supported by the burial evidence. Grave finds have been discovered both singly and in pairs, and in association with different parts of the skeleton (see Geake in Volume 1, Ch. 8.1). Whereas most pairs, including the fine example from Cathedral Green, Winchester (Hants.), have been found next to the individual's knees, and are thus best interpreted as garter fastenings (Webster and Backhouse 1991, no. 200), the function of singletons, which are usually, though not exclusively, associated with the pelvic region is more obscure (see Griffiths 1987–8, 45–6). One suggestion, which follows the interpretation of the silver pairs from the Tetney (Lincs.) and the Forum, Rome, coin-hoards is that they were used to close money-bags held or suspended from the waist (Graham-Campbell and Okasha 1991, 225). In greater numbers they may have also served more robust functions, for example, fastening the hems of garments together in a similar fashion to the modern-day hook-and-eye, as has been suggested for the five associated examples from Shakenoak, Oxon. (Dickinson 1973, 116–17).

Flixborough has hooked tags made of copper-alloy, iron and silver, a range that is elsewhere restricted to urban settlements including Winchester (Hinton 1990e), and Anglo-Scandinavian York (Ottaway 1992; Mainman and Rogers 2000). There is some correlation between the metal chosen and the form of the Flixborough series; whereas its iron examples are predominantly sub-circular, the majority of its non-ferrous examples are sub-triangular.

<i>Form</i>	<i>Cu-alloy</i>	<i>Iron</i>	<i>Silver</i>	<i>Total</i>
Circular	2	7	0	9
Triangular	12	3	2	17
Total	14	10	2	26

Nos 90 and 91 (RFs 1816 and 11967), the most ornate of Flixborough's hooked tags, are both reworked from objects of 8th-century origin. The gilded, chip-carved decoration which characterises these pieces (Pl. 1.5), as well as other ornamental metalwork from Flixborough, including the disc-brooch (no. 25) and pins nos 565 and 677, is a hallmark of 8th-century ornamental metalwork (Wilson 1964, 10–21). Stylistically, the delicate, fine-meshed, interlace shared by the two tags is also a diagnostic feature of 8th-century Anglo-Saxon ornamental metalwork, and may be readily contrasted with the more restrained patterns and broader interlace strands which characterise metalwork of a later period, as for example, one of Flixborough's strap-ends, no. 52 (RF 14022).

While in each case only a small and indeterminable fraction of the original decoration survives on the two pieces, an attempt can be made at refining this attribution through stylistic analysis, commencing with the zoomorphic decoration on the larger tag, no. 90 (RF 1816; Pl. 1.5). The looping animal at the apex can be interpreted as a simplified version of a family of profiled beasts known as 'bipeds' which regularly appear on gilded, chip-carved metalwork

dating to the 8th century, although the norm is for them to be depicted in confronted or affronted pairings (see Tweddle 1992, 1156–7; Budny and Graham-Campbell 1981). Some details displayed by the Flixborough animal, including the neck collar, the restrained use of surface punching, and the manner in which the animal's limbs pierce its own body, a technique referred to as 'penetration' by T. D. Kendrick (1938, 145), represent recurrent traits within this stylistic horizon (e.g. Webster in Webster and Backhouse 1991, nos 177, 183 and 184). The scroll at the base of the animal's jaw is another stylistic trope used during this period and occurs in a similar position, though in a more developed spiral form, on the animal-head terminals on the bow of a copper-alloy key from Gloucester (*ibid.*, no. 176), a silver-gilt animal-headed fitting from the River Thames, near Westminster Bridge, London (*ibid.*, no. 179) and on the animals on the eyebrows and nasal of the Coppergate Helmet (see Tweddle 1992, 1133–48). More unusual is the animal's tightly encircled neck and body, adapted to fit the tapering confines of the object, and 'pivoting' hip, features which are paralleled on a zoomorphic chip-carved mount from Bishopstone, East Sussex (Thomas forthcoming). The flattened, elongated, head, meanwhile, recalls the pair of confronted animals on a disc-headed pin from St Mary's Abbey, York, attributed to c.900 (Webster in Webster and Backhouse 1991, no. 183).

With regard to overall handling of the composition, a possible chronological indicator is the lack of interplay between the animal and the interlace, a feature which is best paralleled on artistic media dating to the second half of the 8th century (Tweddle 1992, 1159). Generally, on material of an earlier 8th-century date, animals play a more integral role within the interlacing patterns and in many cases the distinction between the animal's attenuated bodies and strands of interlace is indicated by differing widths or surface treatment, rather than their placement within the field. Taken together, the detailing of the animal and the interlace and their spatial relationship within the overall pattern suggest a date in the second half of the 8th century for the original decoration.

On the other reworked tag, what little of the original decoration survives indicates that it incorporated fine-textured looping interlace similar to that used on the above. An additional feature of chronological significance is a rounded foliate bud in the top left-hand corner of the field which is used as a terminal to one of the strands of interlace. The provision of vegetal appendages to either interlace or animals is another stylistic idiom which emerged during the late 8th century (see Budny and Graham-Campbell 1981, 11) and occurs on many major pieces of contemporary metalwork such as the Witham pins (Webster and Backhouse 1991, no. 183) and the Fetter Lane sword hilt (from Fetter Lane, London; *ibid.*, no. 173).

One feature which characterises several of Flixborough's non-ferrous hooked tags, including nos 94, 99 and 101–2 (RFs 6506, 346, 3403 and 12752), is the elaboration of the sides of the plate, immediately above the hook, with pairs

of nicks or indentations. This feature is best interpreted as a stylisation of the zoomorphic hooks which appear on some finer silver Trewhiddle-style hooked tags (e.g. Graham-Campbell 1982, fig. 2, no. 2; West 1998, fig. 132. 7), and a bone motif-piece found at Seal House, 106–8 Thames Street, London (Pritchard 1991, fig. 206). Such elaborate hooks are drawn from the same repertoire as the animal heads used on contemporary strap-ends and are indicative of a 9th-century date.

In addition to their vestigial animal-headed hooks and scalloped plates, the non-ferrous hooked tags from Flixborough display a range of surface decoration. Nos 103–4 (RFs 6127 and 13067), the only sub-circular examples made of copper-alloy, are very closely related, though the comparatively crude execution of no. 104 suggests they were unlikely to have been worn as a pair. Both have pierced attachment lugs, a feature common on finer Trewhiddle-style examples made of silver, and engraved decoration consisting of an inner circular field occupied by 'spokes' enclosed by a billeted or 'cabled' outer border. The engraved patterns are in both cases inlaid with a chalky white material, most probably degraded enamel, a decorative technique recognised on some of Flixborough's strap-ends, including nos 55 and 58 (RFs 100 and 3744). Near-identical hooked tags, though apparently without an enamel inlay, have found at *Hamwic* (Hinton 1996, fig. 4, 32/170), Brandon, Suffolk (SF BRD 018 2552), and Wellington Row, York (Moulden *et al.* 1999).

Basic types such as nos 96 and 97 (RFs 6653 and 12777), elaborated with incised outer borders, in the latter instance in association with continuously nicked outer edges, can be widely paralleled, as, for example, by the hooked tags from the north-east bailey of Norwich Castle, Norfolk (Margeson and Williams 1985, fig. 24, no. 5), and Whitby, North Yorks. (Peers and Radford 1943, fig. 12, no. 10). A slightly more elaborate example, no. 98 (RF 6439), has intersecting double-contoured borders with additional incised detail on its hook.

The decoration on no. 99 (RF 3403) is also fairly simple, being restricted to pairs of concentric grooves which encircle its attachment holes. Beyond Flixborough, such decoration occurs on tags of both the sub-circular and sub-triangular variety, examples of the former have been found at Hereford (Shoesmith 1985, fig. 4, no. 6), and the latter at Thetford (A. R. Goodall 1984, fig. 111, nos 32–3) and Middle Harling, Norfolk (Margeson 1995a, fig. 39, nos 35–7).

Punched ring-and-dot decoration was very popular on this class of fitting and can be found on three of Flixborough's hooked tags. No. 100 (RF 10786) carries a single centrally placed motif, with additional 'rings' around its attachment holes, whereas on both nos 101 and 102 (RFs 346 and 6506), which are likely to have formed a pair despite their discovery in different contexts, three appear side-by-side in a vertical row. An identical arrangement of ring-and-dots reappears on hooked tags from Cottam, East Riding of Yorkshire (Haldenby 1994, fig. 3, no. 3), and

Brandon, Suffolk (sf BRD 018 4322), while the unusual provision of three attachment holes is paralleled by the silver Trehiddle-style duo from a grave on the Cathedral Green, Winchester, Hants. (Webster and Backhouse 1991, no. 200).

Three of Flixborough's hooked tags have undecorated plates, including a silver example, no. 92 (RF 375), which is closely related to the plain silver pair from the Tetney hoard (Lincs.), dated by associated coins to before 970 (Wilson 1964, nos 86–7).

Flixborough's significant total of 10 iron hooked tags, the greatest number recorded from a single site and covering both sub-circular and sub-triangular varieties, is an important reminder that dress-accessories may be under-represented at other Mid-Late Anglo-Saxon settlements with harsher depositional environments. In common with their non-ferrous counterparts, some of the iron hooked tags have scalloped upper edges, while no. 112 (RF 4255), has rudimentary decoration comprising a punched central boss and an incised outer border, also seen on copper-alloy examples from Middle Harling, Norfolk (Margeson 1995a, fig. 39, no. 42) and 16–22 Coppergate, York (Mainman and Rogers 2000, fig. 1273, no. 10436). Elsewhere the embellishment of iron hook-tags is restricted to surface applications of gilt or tin which may also have served as protective coatings; see, for example, the sub-circular hooked tag from St Oswald's, Gloucester (MacGregor 1999, 136, fig. 3.14, no. 42).

A number of anomalous characteristics including its scalloped oval form, thin curving profile, rectangular attachment slots and simplified repoussé decoration set no. 115 (RF 2198) apart from the general series of Anglo-Saxon hooked tags. The closest parallel for this tag is as a thin copper-alloy plate from Ipswich, Suffolk, of similar dimensions and also decorated with repoussé billeting around its edges (West 1998, 68, fig. 96, no. 20). While the exact function of the Ipswich plate remains unequivocal, due to the lack of a hook, possibly through breakage, its possession of three circular attachment holes together with a larger sub-triangular perforation through the middle of the plate, suggest that had a similar function to the traditional form of hooked tag. In advance of further parallels coming to light, it is advisable to keep an open mind on the date of this newly identified type of hooked fastener.

At face value, the total of 27 hooked tags from Flixborough appears more impressive than that of its strap-ends, given that the next most productive sites, excluding those with manufacturing evidence in the form of unfinished plates (see below), are Winchester (Hants.), with 22, Middle Harling (Norfolk), with 16, and Barham (Suffolk) with 12. However, as stated above, the comparative contribution of perishable iron hooked tags to these totals suggests that Flixborough's pre-eminence may be partly linked to exceptional post-depositional conditions.

Although the evidence is more equivocal than for urban sites in Lincoln (Hall 1981, G3 and 4) and Thetford, Norfolk (A. R. Goodall 1984, fig. 111, nos 34–9), where

unfinished plates from the manufacturing process have been discovered, the reworked hooked tags nos 90 and 91 (RFs 1816 and 11967) strongly hint at on-site production. The same may be said of the series of iron examples in light of the unprecedented range of evidence for ferrous metalworking at Flixborough. On-site production may have been supplemented by hooked tags imported from regional production/re-distribution centres, one possibility in view of its proximity and direct evidence for hooked tag production, being Lincoln.

Catalogue (Figs 1.7 and 1.8; Pls 1.3 and 1.5)

90. Silver-gilt hooked tag consisting of a sub-triangular plate terminating in a hook. The plate, which is scalloped at its upper edge, is pierced by a pair of circular attachment holes and decorated on its front face with a chip-carved zoomorphic interlace design. Placed at the apex is a profiled animal with an attenuated body which curves round in a tightly closed loop, its tail passing back through the animal's open jaws to terminate in a dotted lobe at the apex of the tag. The animal features a long flattened head with a dotted eye and long jaws which terminate in a small scroll at their rear. Opposite the head, behind a collared neck, a leg, which is bent and dotted at the ankle, and a pointed wing? (or possibly another leg), pierce the animal's body as they diverge outwards from a central 'pivoted' dotted hip. The ankle and wing-tip of the animal rest against a fine-meshed interlace pattern which loops across the rest of the tag in a haphazard fashion to its upper edge.

Several details reveal that the decoration belongs to an older object reworked into the tag. The interlace is truncated not only by the scalloping of the upper edge but also by the pair of attachment holes. In addition, the original gilding has been removed by later reworking both at the scalloped upper edge of the plate and on its sides towards the hook where the metal has been notched. The tapering sides of the tag incorporate the borders of the original decorative field, as indicated by its gilded edges, a fact that accounts for its unusually narrow dimensions. L.27.7mm, W.10.1mm, Th.1.4mm. (FIG. 1.7; PL. 1.5)

RF 1816, Context 1450. Area E, Phase 6iii occupation deposit.

91. Gilt copper-alloy hooked tag consisting of a sub-triangular plate terminating in a hook. The left-hand and upper edges of the plate maintain the borders of the original gilt, chip-carved object from which the tag was cut. Elsewhere the decoration on the plate has been truncated by the cutting of its right-hand edge and by the pair of circular attachment holes located towards its upper edge. The surviving interlace design incorporates finely-meshed looping strands, one of which terminates in a tear-shaped sub-foliate leaf in the top left-hand corner of the plate. The back is plain and ungilded. L.11.7mm, W.11.4mm, 0.65mm. (FIG. 1.7)

RF 11967, Unstratified.

92. Silver hooked tag with a sub-triangular plate which has slight corner protrusions and indented nicks at its upper edge. The plate is pierced by a pair of small circular attachment holes and the tip of the hook is missing. L.24.6mm, W.13.4mm, Th.0.2mm. (FIG. 1.7)

RF 375, Unstratified.

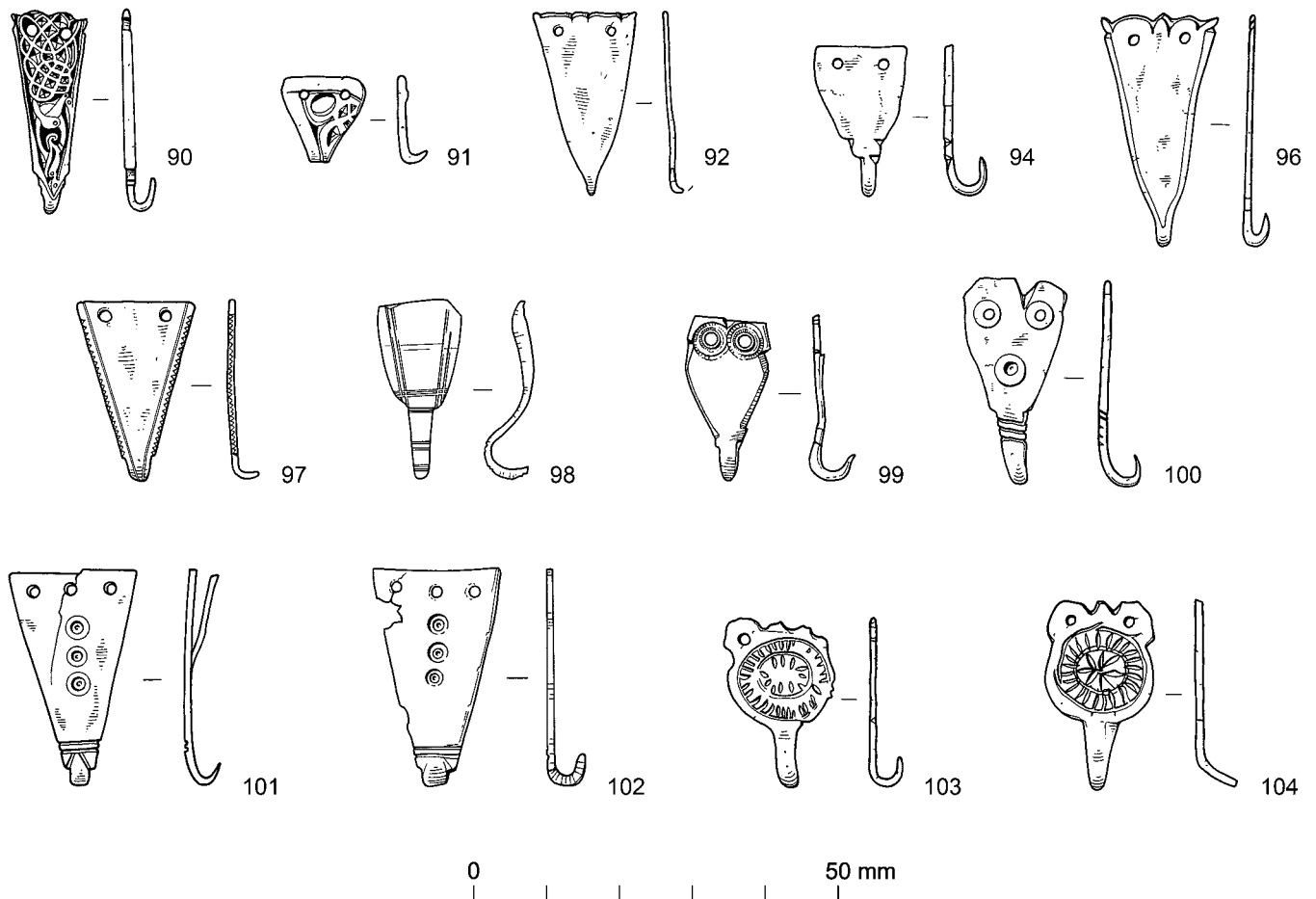


Fig. 1.7. Copper alloy and silver hooked tags. Scale 1:1.

- 93 Copper-alloy hooked tag consisting of an elongated sub-triangular plate terminating in a hook. The plate is pierced toward its scalloped upper edge by a pair of circular attachment holes. The plate is otherwise undecorated. L.24mm, W.9.8mm, Th.0.35mm.
RF 3477, Context 3107, Area G, Phase 4ii ditch fill.
- 94 Copper-alloy hooked tag consisting of a shield-shaped plate terminating in a hook. The plate is pierced by a pair of circular attachment holes towards its upper edge. Above the hook the sides of the plate have small oval protuberances, possibly representing the eyes of a stylised animal head. Very fine tooling-marks are evident on its front surface. L.20.8mm, W.12.6mm, Th.0.3mm. (Fig. 1.7)
RF 12752, Unstratified.
- 95 Copper-alloy hooked tag consisting of a sub-triangular plate terminating in a hook. The plate is pierced towards its upper edge by a pair of circular attachment holes with bevelled edges. The plate is otherwise undecorated and fine tooling marks are evident on its surface. L.18.7mm, W.11.1mm, Th.0.6mm.
RF 13256, Context 5503, Area E, Phase 4ii dumping deposit.
- 96 Copper-alloy hooked tag consisting of a sub-triangular plate terminating in a short hook. The plate, which is pierced by a pair of circular attachment holes, has a scalloped upper edge with a central sub-triangular projection and a pair of delicate ear-like lobes which extend diagonally from each corner. Its tapering sides, which are slightly concave, are decorated with a pair of incised borders which form an apex at the top of the hook. The back is plain. L.31.7mm, W.15.8mm, Th.0.45mm. (Fig. 1.7)
RF 6653, Context 6499, Area E, Phase 6ii–6iii dark soil.
- 97 Copper-alloy hooked tag comprising a triangular-shaped plate terminating in a hook. The plate is pierced towards its upper edge with a pair of circular attachment holes. Both of its tapering sides are decorated with closely spaced diagonal edge nicks and an inner incised border. Fine tooling-marks are evident on its front surface. L.23.5mm, W.16.1mm, Th.0.2mm. (Fig. 1.7)
RF 12777, Unstratified.
- 98 Copper-alloy hooked tag consisting of a sub-triangular plate, broken across its upper edge so the attachment holes are missing, terminating in a hook. The surface of the plate is decorated with pairs of incised double borders, comprising two along its tapering sides, intersected by a third transverse

example above the hook. Four more paired transverse grooves are located at the junction between the plate and the hook, and at regular intervals lower down the hook-shank; the lower groove of the third pair being bounded by three shorter perpendicular grooves. The back is plain. L.24.3mm, W.11.6mm, Th.0.7mm. (Fig. 1.7)

RF 6439, Context 5617, Area E, Phase 3bv dumping deposit.

- 99 Copper-alloy hooked tag consisting of an asymmetrical, diamond-shaped plate terminating in a hook. The plate is pierced by a pair of bevelled, circular attachment holes enclosed on both surfaces by pairs of incised or punched concentric grooves, of which those on the front overlap centrally. The tag is also decorated with three edge notches in the vicinity of the attachment holes and, immediately above the hook, with a pair of sub-rectangular protuberances, possibly representing the eyes of a stylised animal head. L.22mm W.11.5mm, Th.0.9mm. (Fig. 1.7)

RF 3403, Context 3107, Area G, Phase 4ii ditch fill.

- 100 Copper-alloy hooked tag consisting of a sub-triangular plate terminating in a hook. The plate is pierced by three circular attachment holes, a pair towards its upper edge, and a third placed centrally below. Each of the holes is enclosed within a punched 'ring' and the junction between the plate and the hook is marked by three parallel transverse incisions. The back is plain. L.27.9mm, W.14.2mm, Th.0.5mm. (Fig. 1.7)

RF 10786, Context 10772, Area G, Phase 2–4ii ditch fill.

- 101 Copper-alloy hooked tag with a triangular plate pierced towards its upper edge with three regularly spaced circular attachment holes. The front of the plate is decorated with a central column of three punched ring-and-dots, the upper two of which have pierced the thickness of the metal. Two incised transverse lines define the beginnings of the hook, which is emphasised further by two diagonal nicks either side of the shank above the bend. L.29.9mm, W.17.1mm, Th.0.2mm. (Fig. 1.7)

RF 346, Unstratified.

- 102 Copper-alloy hooked tag comprising a sub-triangular plate terminating in a hook. The plate is pierced towards its upper edge by three regularly spaced circular attachment holes and is decorated on its front surface with a central column of three punched ring-and-dots, the central one of which has pierced the thickness of the metal. Two incised transverse lines define the beginnings of the hook, which is emphasised further by two diagonal nicks either side of the shank. The back is plain. L.30.1mm, W.18mm, Th.0.3mm. (Fig. 1.7)

RF 6506, Context 6489, Areas, E, D, Phase 6ii–6iii dark soil.

- 103 Copper-alloy hooked tag consisting of a sub-circular plate terminating in a hook. The plate has a pair of pierced attachment-lugs and a central triangular protrusion at its upper edge, though damage has reduced the right-hand lug to a stub. Its front surface is decorated with incised decoration consisting of a central circular field of short radiating spokes enclosed within an outer concentric billeted border. Remains of a chalky-white inlay, most likely corroded enamel, survive within the incisions of the central motif. The hook is complete; the back is plain. L.23.4mm, W.15.2mm, Th.0.2mm. (Fig. 1.7)

RF 6127, Unstratified.

- 104 Copper-alloy hooked tag consisting of a sub-circular plate terminating in a hook. The former has a pair of pierced

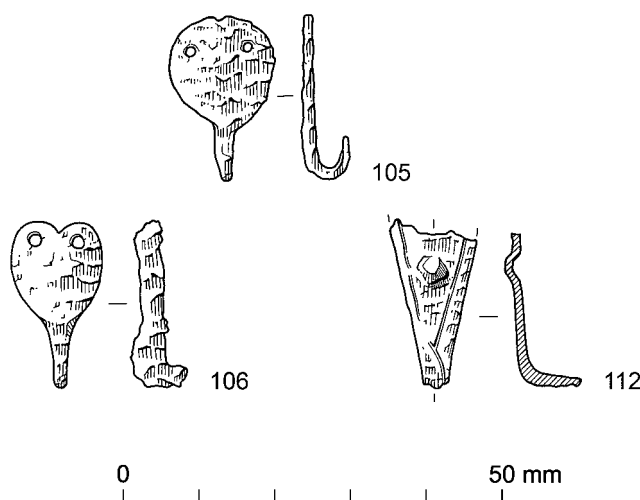


Fig. 1.8. Iron hooked tags. Scale 1:1.

attachment-lugs and a central triangular protrusion at its upper edge. Its front face is decorated with incised decoration consisting of a central circular field of short radiating spokes enclosed within an outer concentric billeted border. Remains of a chalky-white inlay, most likely corroded enamel, survive within the incisions of the central motif. The back is plain. L.25.7mm, W.15.2mm, Th.0.2mm. (Fig. 1.7)

RF 13067, Unstratified.

- 105 Plain iron hooked tag consisting of a sub-circular plate terminating in a hook. The plate is pierced towards its upper edge by a pair of circular attachment holes; the surface is badly corroded. L.22mm, W.14.2mm, Th.1.1mm. (Fig. 1.8)

RF 1753, Context 1670, Areas E, F; Phase 6iii.

- 106 Iron hooked tag consisting of a sub-circular plate terminating in a hook. The plate is pierced a pair of circular attachment holes, both partially obscured by corrosion. Decoration is restricted to a single scallop at the plate's upper edge. L.22.6mm, W.13.4mm, Th.1.8mm. (Fig. 1.8)

RF 2112, Context 2097, Area F, C, Phase 6iii occupation deposit.

- 107 Iron hooked tag consisting of a sub-circular plate terminating in a hook, the tip of which is missing. The upper edge of the plate is scalloped and heavily corroded, so that the surface of the metal including the attachment holes are obscured. L.21.4mm, W.16.5mm, Th.1.1mm.

RF 6605, Context 6499, Area E, Phase 6ii–6iii dark soil.

- 108 Iron hooked tag comprising a sub-circular plate terminating in a hook, the tip of which is missing. The plate is pierced towards its upper edge by a pair of attachment holes. Corrosion has obscured the surface of the metal. L.25.9mm, W.18.2mm, Th.0.7mm.

RF 7823, Context 7817, Area E, Phase 6iii dark soil.

- 109 Plain iron hooked tag comprising a sub-circular plate terminating in a hook. The plate, which is heavily corroded, is pierced towards its upper edge by a pair of circular attachment holes. L.23.9, W.18.5mm, Th.0.75mm.

RF 12310, Unstratified.

- 110 Iron hooked tag consisting of a sub-circular plate terminating in a hook. Corrosion has obscured the surface of the metal including the attachment holes. L.26mm, W.15mm, Th.0.8mm.
RF 12427, Context 10772, Area G, Phase 2–4ii ditch fill.
- 111 Iron hooked tag consisting of a sub-circular plate terminating in a hook, the tip of which is missing. The plate is pierced towards the upper edge by a pair of circular attachment holes. Corrosion has obscured the surface of the metal. L.21.1mm, W.17.1mm, Th.1.9mm.
RF 13050, Context 10772, Area G, Phase 2–4ii ditch fill.
- 112 Iron hooked tag, damaged across its sub-triangular plate so that its attachment holes are missing. The plate, which terminates in a hook, is decorated with an incised outer border and a central hollow boss punched from the back. The surface is heavily corroded. L.22.6mm, W.11.1mm, Th.1.1mm. (Fig. 1.8)
RF 4255, Context 3989, Area E, Phase 6iii dumping deposit.
- 113 Iron hooked tag consisting of a sub-triangular plate terminating in a hook, the tip of which is missing. The plate is pierced towards its upper edge by a single centrally-placed circular attachment hole. Corrosion has obscured the surface of the metal. L.27.8mm, W.11.7mm, Th.0.9mm
RF 7438, Context 6803, Area D, Phase 5b–6i dumping deposit.
- 114 Iron hooked tag comprising an elongated sub-triangular plate terminating in a pinched-out hook, now bent out of place. The original attachment holes have been lost due to a breakage across the top of the plate. Corrosion has obscured the surface of the iron, although an incised border is evident at the left-hand edge of the plate. L.33.1mm, W.13.9mm, Th.1mm.
RF 2249, Context 2024, Areas A, B, Phase 6iii dark soil.
- 115 Copper-alloy hooked tag consisting of a scalloped oval plate of curving profile terminating in a hook, the tip of which is missing. The plate is pierced by a pair of rectangular slots, placed one above the other within a plain oval border. The uppermost and larger of the slots interrupts the upper edge of the border suggesting that it could be a secondary feature. The scalloped areas surrounding the attachment slots are decorated with transverse bands of repoussé billeting. L.20.1mm, W.14.2mm, Th.0.5mm.
RF 2198, Unstratified.

1.4 Buckles

by Nicola Rogers and Patrick Ottaway

Non-ferrous buckles and other belt fittings

by Nicola Rogers, with contributions by
Glynis Edwards[†] and Jacqui Watson

Buckles (Fig. 1.9)

The oval frame is the commonest form found on the Flixborough non-ferrous buckles, which are remarkably uniform in shape, although varying slightly in size and detail. Three (nos 118–20: RFs 3135, 468 and 14029) have decorative rectangular plates; the upper plate on no. 118

(RF 3135) – which was recovered from a Phase 4ii ditch fill – has incised lines, as does no. 120 (RF 14029), which also has notched edges, while no. 119 (RF 468) has been gilded. No. 119 (RF 468) was found in topsoil, while no. 120 (RF 14029) was unstratified. Similar buckles have been found in numerous Saxon cemeteries including Uncleby, East Yorks. (Leeds 1936, 98–100, pl. XXVII, no. 37), and Burwell, Cambridgeshire (Lethbridge 1931, 18, fig. 14D; 30, fig. 13D), and on many Middle-Saxon sites such as Barham in Suffolk (West 1998, 6–8, fig. 4). An assemblage from Coddensham, another Middle-Saxon site in Suffolk contained a large number (*op. cit.*, 20–1, fig. 20).

Both no. 116 (RF 3036) and no. 121 (RF 12522) are oval buckles, with tapering buckle plates with rounded ends. No. 116 (RF 3036) has a pin with a tip which has been simply faceted to form the eyes and snout of an animal head. Marzinzik notes that this form is 6th- to 7th-century in date, and is found mainly in East Anglia and the East Midlands (Marzinzik 2007, 48–9). No. 116 (RF 3036) was found in a Phase 2i–4ii ditch fill, but no. 121 was unstratified.

The undecorated no. 117 (RF 2881) also has tapering plates. Also likely to be of Early–Middle Saxon date, no. 119 (RF 468) was found in topsoil, while no. 120 (RF 14029) was unstratified.

Another unstratified oval buckle no. 122 (RF 836) has decoratively shaped plates which suggest it may have been made to pair with a strap-end; the buckle plate tip has a well-defined stylised animal head with deeply moulded ears around a rivet, with eyes and snout defined by triangular notches.

Of a very different form from the oval-framed buckles, no. 123 (RF 1912) has a circular loop and an integral plate with a large rectangular slot; it was recovered from Phase 6iii (mid–late 10th to early 11th-century) dark soil. Buckles with integral plates have been found elsewhere in Mid–Late Saxon contexts, for example at Barham, Suffolk (West 1998, 7, fig. 4, no. 21), and 10th- to 11th-century deposits at Winchester (Hinton 1990a, 507), but the type may go on into the medieval period; an example very similar to no. 123 (RF 1912) was found in Canterbury in a medieval (12th–15th century) pit (Blockley *et al.*, 1995, 1048, fig. 446, no. 520).

Buckle plates (Fig. 1.9)

These are easily detached from their companion buckles, and, unless highly decorated, are unlikely to be very datable. The majority of the plates from Flixborough derive from 8th- to 9th-century dumps (no. 124: RF 7222) or ditch fills (nos 125–8: RFs 241, 6099, 11207 and 12754). No. 125 has been decorated with punched dots, and nos 124 and 127–8, and also the unstratified no. 129 (RF 12784), all have decoratively notched ends. This decorative notching bears some resemblance to that found on some triangular hooked tags and strap-ends (see for example Peers and Radford 1943, 56–8, fig. 11; 60, fig. 12, no. 10), which would indicate a possibly 9th century date for these plates. Another possible

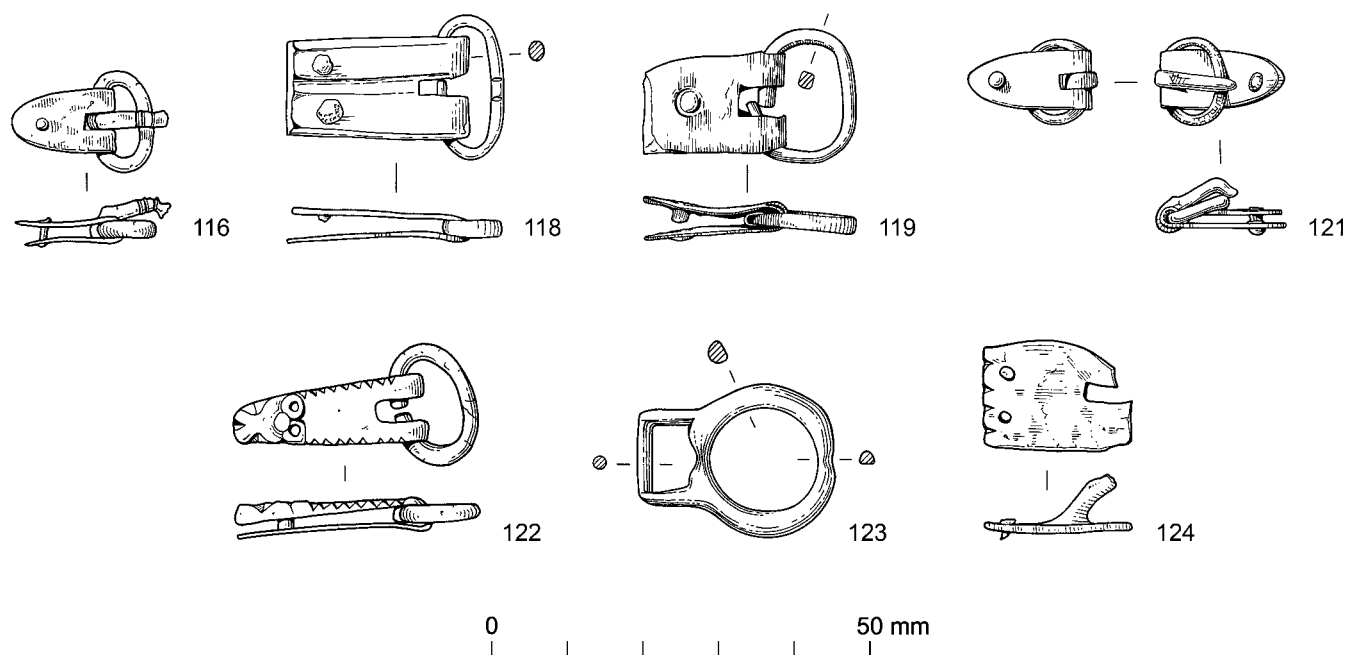


FIG. 1.9. Copper alloy buckles and buckle plate. Scale 1:1.

buckle plate fragment, also with decorative notching, is the unstratified no. 130 (RF 13616).

Nos 131–3 (RFs 744, 7361 and 7964) are fragmentary undecorated plates; nos 132–3 are unstratified, while no. 131 was found in Phase 6iii (mid–late 10th–early 11th century) dark soil.

Buckle pin

A buckle or brooch pin (no. 134; RF 6316) was recovered from a Phase 5a dump, and has notched decoration at the tip, recalling the decorated pin tip on buckle no. 116 (see above, RF 3036).

(?) Strap plate

No. 135 (RF 13481) is a rectangular plate, with rivet holes along the long sides, which was found in a Phase 5a–6ii pit. Its function is uncertain, but it is likely to be one of a pair of plates riveted together, perhaps on each side of a strap, and possibly to join two pieces of strap (Egan and Pritchard 1991, 226–7, fig. 141). A pair of plates found in Ipswich had the remains of a third plate riveted to one of the pair (West 1998, 56, fig. 68, no. 17).

Suspension loops (FIG. 1.10)

Of five non-ferrous suspension loops found, two (nos 136–7: RFs 12452 and 12263) were unstratified, the other three (nos 138–40; RFs 6241, 10943 and 11210) all coming from Phase 4ii (mid-9th century) dumps or ditch fill; nos 139–40 were retrieved from the same ditch fill as buckle plate fragments nos 127–8. There is little doubt that

these objects, sometimes made of iron, were used to hang personal items from belts or girdles; in the Anglo-Saxon cemetery at Holywell, Suffolk, such fittings were found with the remains of a leather case or pouch (Lethbridge 1931, 39, fig. 18, B3), while in a grave at Burwell, Cambridgeshire, they were associated with a chatelaine (*op. cit.*, 65, fig. 33, 8). In a male burial at Dunstable, Bedfordshire, a knife had lost its sheath, but three suspension loops survived; these had evidently attached the sheath to a belt (Matthews 1962, 30, fig. 2, 2). These have also been found in later contexts; two iron fittings were found in late 8th-century deposits at Fishergate, York (Rogers 1993a, 1352–3, fig. 653, nos 5050, 5052), and it seems probable that the Flixborough fittings are just slightly later in date, particularly as two of the fittings (nos 139–40; RFs 10943 and 11210) are from the same context as two buckle plates (nos 127–8; RFs 11207 and 12754), thought to be 9th century in date (see above).

Suspension rings

Miscellaneous copper alloy rings were found in deposits of Period 2 onwards (nos 142–56) and unstratified (nos 157–65). No. 141 (RF 5048) is an unstratified silver ring. All are of a remarkably similar size, ranging in diameter from c. 15mm (no. 159) to c. 25mm (no. 147), the majority being 18–23mm. The majority are likely to have acted as suspension rings for accessories on belts, hanging objects such as keys (see Ch. 5 below: nos 1953–4: RFs 3776, 3820), toilet implements such as tweezers (see below nos 215 and 217: RFs 10148 and 10217) and ear scoops (see

below no. 230: RF 5943), and other personal items such as knives or hones.

(?) Belt fitting

Also unstratified, and made of silver with possible gilding, no. 166 (RF 2971) is a narrow tube formed from rolled sheet with slightly projecting edges. Much larger tubes with projecting plates appear to have been used by the Romans on belts (Hawkes and Dunning 1961, 66–8, fig. 1, no. 3). Unlike no. 166, however, the Roman examples have rivet-holes on the projecting plates for attachment; if no. 166 were used as some type of belt fitting, its means of attachment is unclear.

Catalogue (Figs 1.9 and 1.10)

(Dimensions are in mm. L. = length; W. = width; Th. = thickness; Diam. = diameter)

Buckles (Fig. 1.9)

- 116 Copper alloy oval frame of sub-square section, pin looped through rectangular slot in tapering buckle plates with rounded ends, tip of pin notched and faceted to form stylised animal head, with incised line decoration above, plates with single copper alloy rivet, with traces of fine-spun threads between plates. Frame L.7.8 W.13.5 Section W.2.4 Th.2.1 Plates L.13.5 W.8.7 Th.0.8. (Fig. 1.9)
RF 3036, Context 2860, Phase 2i–4ii.
- 117 Copper alloy oval frame of sub-circular section, (? iron) pin survives, tapering plates with one copper alloy rivet at lower end. Frame L. 7.3 W. 13.7 Section Diam. 2.3 Plates

L.11.5, W.10, Th.0.7

RF 2881, Context 51, Phase 4ii.

- 118 Copper alloy oval frame, of sub-triangular section, broken at point where missing pin would have looped, upper face notched where pin tip lay, lower face faceted at that point; rectangular buckle plates with rectangular slot for pin, two iron rivets at lower end, upper face decorated with two broad rectangular fields flanking narrow central one defined by incised lines. Frame L.9 W.19.2. Section W.1.4 Th.2 Plates L.24, W.13.3, Th.1.1. (Fig. 1.9)
RF 3135, Context 3107, Phase 4ii.
- 119 Copper alloy frame sub-oval, of sub-rectangular section; rectangular buckle plate with rectangular slot for pin, copper alloy rivet *in situ*, gilding on plates and pin. Frame L. 13.4 W. 17.6 Section W.2.1, Th.2.6 Plates L.18.6, W.13.1, Th.0.8. (Fig. 1.9)
RF 468, Context 458, Period 7.
- 120 Copper alloy oval frame of sub-circular section, pin faceted at upper end; rectangular buckle plates with scalloped ends, decorated with incised lines below pin, edges decorated with notches, (?copper alloy) rivet *in situ*. Slight fibrous traces between plates. Frame L.9 W.16 Th.2.2 Plates L.15 W.10.9 Th.0.8
RF 14029, Unstratified.
- 121 Copper alloy oval frame of sub-circular section, with decorative faceting along upper face and at tip of pin; tapering buckle plates with rounded ends, rectangular slot for pin, single rivet. L.9.4 W.11.7 Section Diam. 1.8 Plates L.16.2 W.8, Th.0.5. (Fig. 1.9)
RF 12522, Unstratified.

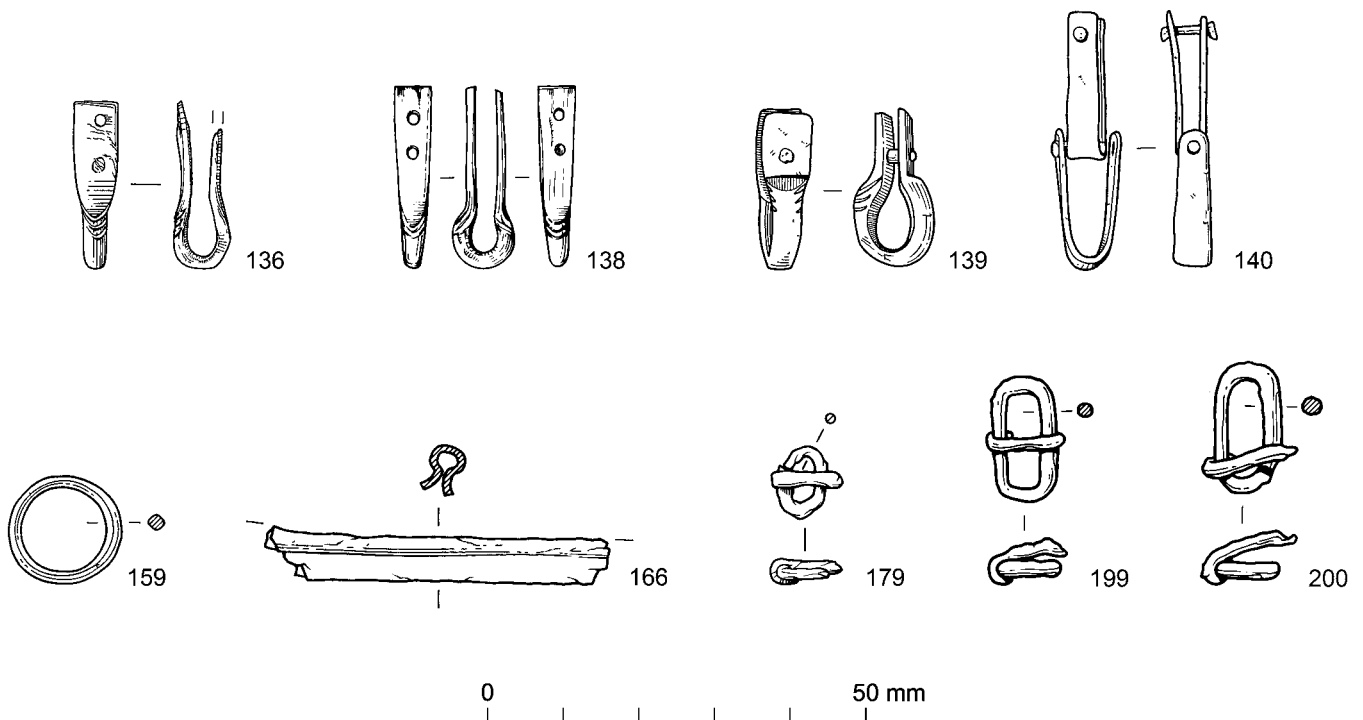


Fig. 1.10. Copper alloy suspension loops and suspension rings, and iron buckles and belt fittings. Scale 1:1.

- 122 Copper alloy strap-end buckle, oval frame broken at point at which pin now missing would have looped; notched for pin tip. Sub-triangular buckle plate with deep rectangular slot for pin, tapering to end which has stylised animal-head terminal with rounded deeply moulded ears on either side of copper alloy rivet; triangular notched eyes below, and triangular notched nose at tip, edges also notched, reverse undecorated. Frame L.10, W.16.2 Section W.2.3 Th.2.5 Plates L.25.5 W.8, T.2.2. (FIG. 1.9)
RF 836, Unstratified.
- 123 Copper alloy circular frame of sub-triangular section with integral rectangular attachment loop, groove on frame where pin tip sat; pin now missing. L.25.9. Frame diam. 19.8. Attachment loop W.13 Section W.3.3 Th. 2.7. (FIG. 1.9)
RF 1912, Context 1893, Phase 6iii.

Buckle plates (Fig. 1.9)

- 124 Copper alloy fragment, half only, broken at looped end, rectangular slot for pin, two rivet holes at lower end, one retaining rivet, decorative notching along lower edge. L.19, W.13.6, Th.0.6. (FIG. 1.9)
RF 7222, Context 7153, Phase 3biii.
- 125 Copper alloy fragment, sub-rectangular, broken at looped end, punched perforation close to other end, axial line of punched dots on upper face. L.16.3, W.11.3, Th.1.4
RF 241, Context 223, Phase 4ii.
- 126 Copper alloy fragment, both ends broken, upper end across rectangular slot for pin. L.23.8 W.11.9 Th.1
RF 6099, Context 5503, Phase 4ii.
- 127 Copper alloy fragment, broken across loop, sub-rectangular slot for pin, two rivet holes at lower end which has decorative triangular notch. L.15, W.10.3 Th.0.8
RF 11207, Context 10772, Phase 2–5a.
- 128 Copper alloy sub-rectangular buckle plate, with sub-rectangular slot for pin, single rivet hole at lower end, decorative triangular notch to each side of rivet along lower edge. L.19, W.11.4 Th.3.3
RF 12754, Context 10772, Phase 2–5a.
- 129 Copper alloy end fragment, two rivet-holes, decorative triangular cut-out between rivet-holes. L.14.3, W.15.8, Th.0.7
RF 12784, Unstratified.
- 130 Copper alloy (?) plate fragment, irregularly shaped, of plano-convex section, one end broken across rectangular perforation, tapering slightly to other end broken across circular perforation, edges with decorative triangular notches. L.10.5 W.9, Th.1.3
RF 13616, Unstratified.
- 131 Copper alloy fragment, sub-triangular, broken at upper end across rectangular slot for pin, three rivet-holes. L.16.3, W.10, Th.0.5
RF 744, Context 617, Phase 6iii.
- 132 Copper alloy fragment, rectangular, broken across looped end, rectangular slot for pin, single rivet hole towards lower end. L.24.6 W.10.1 Th.1.6
RF 7361, Unstratified.
- 133 Copper alloy fragment, one end broken across rectangular slot for pin, single rivet hole towards lower end which is also broken. L.11.3 W.9.8 Th.1.1
RF 7964, Unstratified.

Buckle or brooch pin

- 134 Copper alloy buckle or brooch pin of plano-convex section, shallow notches on sides and underside at tip. L.14.5, W.2.4, Th.2
RF 6316, Context 6312, Phase 5a.

(?) Strap plate

- 135 Copper alloy sub-rectangular (?) strap plate, with three equally spaced rivet-holes along long edges, two containing copper alloy rivet fragments. L.28.2, W.11.7, Th.0.7
RF 13481, Context 12243, Phase 5a–6ii.

Suspension loops (Fig. 1.10)

- 136 Copper alloy ring of circular section, ends flattened and expanded into sub-rectangular plates, with two rivet holes; one plate broken across second hole, decorative notches at top of plates. L.21.8 Plates W.5.7, Th.1.4. Loop Diam. 7.4 Section W.2.8 Th.2. (FIG. 1.10)
RF 12452, Unstratified.
- 137 Copper alloy ring of sub-circular section, passing through incomplete suspension loop with pair of plates, each with two rivets passing through black, fibrous organic material, possibly leather. Ring diam. 16.3 section 2.8. Plates L.17 W.5.5
RF 12263, Unstratified.
- 138 Copper alloy ring of circular section, both ends flattened into rectangular plates, with two rivet holes on each; triangular notched decoration at lower end on one side. L.23.9. Plates W.4.9 Th.1 Loop Diam.8 Section 2.6. (FIG. 1.10)
RF 6241, Context 5503, Phase 4ii.
- 139 Copper alloy ring of plano-convex section, ends flattened and expanded into sub-rectangular plates, with single copper alloy rivet joining them; three decorative incised notches on each side of loop at upper end of plates. L.20.1 Plates W.6.7, Th.1.6 Loop Diam. 10.5. Section W.4, Th.3. (FIG. 1.10)
RF 10943, Context 10772, Phase 4ii.
- 140 Two copper alloy loops formed from sub-rectangular strips, with rounded ends folded widthways; ends joined by copper alloy rivet; rivet of one loop passes through second loop. Largest L.19.3 W.5.7 Th.1.1. (FIG. 1.10)
RF 11210, Context 10772, Phase 4ii.

Suspension rings (Fig. 1.10)

- 141 Silver suspension ring of lozenge-shaped section, gilded. Diam. 19.9. Section W.1.5 Th. 1.4
RF 5048, Unstratified.
- 142 Copper alloy hoop formed by riveting flattened ends together; of sub-square section, incised hatching and transverse lines to each side of iron rivet. Diam. 22.6. Section W.1.6 Th.1.9
RF 3592, Context 3281, Period 2.
- 143 Copper alloy oval, of sub-rectangular section, ends overlapped. L.19.6 W.15.9
RF 867, Context 748, Phase 2–3a.
- 144 Copper alloy, circular, of rectangular section. Diam. 19.4. Section W.0.8 Th.1.4
RF 10925, Context 10772, Phase 2–5a.
- 145 Copper alloy, circular, ends sprung apart, of sub-rectangular section. Diam. 18.4. Section W.1.4, Th. 2
RF 7422, Context 7604, Phase 3bi–v.
- 146 Copper alloy, of rectangular section, distorted. L.25.2, W.13.1. Section W.0.9 Th.1.1

- RF 3132, Context 3107, Phase 4ii.
- 147 Copper alloy, of sub-circular section. Diam. 24.9. Section Diam. 2.2
RF 5944, Context 3107, Phase 4ii.
- 148 Copper alloy, sub-circular, of square section. Diam. 20.6. Section W.1, Th.1
RF 2793, Context 2562, Phase 5b.
- 149 Copper alloy, shape distorted, of sub-triangular section. L.25, W.12. Section W.1, Th.1.4
RF 7083, Context 7054, Phase 6ii–iii.
- 150 Copper alloy, sub-circular, of sub-rectangular section. Diam. 20.7. Section W.1.1, Th.1.4
RF 609, Context 618, Phase 6iii.
- 151 Copper alloy, oval, of sub-square section. L.22.8, W.19.1. Section W.1.1, Th.1.3
RF 2634, Context 2184, Phase 6iii.
- 152 Copper alloy, in four fragments, of rectangular section. Section W.0.7 Th.1.2
RF 2647, Context 2184, Phase 6iii.
- 153 Copper alloy, of rectangular section. Diam. 20.9. Section W.1, Th.1.4
RF 3849, Context 3989, Phase 6iii.
- 154 Copper alloy, oval, of sub-oval section. L.25, W.22.7. Section W.1.3, Th. 1.7
RF 6854, Context 6300, Phase 6iii–7.
- 155 Copper alloy, of rectangular section. Diam. 19.8. Section W.0.9, Th. 1.2
RF 7258, Context 6300, Phase 6iii–7.
- 156 Copper alloy, of rectangular section. Diam. 20.8. Section W.1.4, Th.0.9
RF 332, Context 1, Topsoil.
- 157 Copper alloy, of rectangular section. Diam. 21.2. Section W.1.1 Th. 1.3
RF 2751, Unstratified.
- 158 Copper alloy, of sub-circular section, distorted. L.23.6, W.13. Section diam. 1.1
RF 3446, Unstratified.
- 159 Copper alloy, of lozenge-shaped section of irregular thickness. Diam. 14.8. Section W.1.9, Th.1.8. (Fig. 1.10)
RF 7489, Unstratified.
- 160 Copper alloy, distorted oval, of rectangular section. L.24, W.9.3. Section W.1.5, Th.0.8
RF 7963, Unstratified.
- 161 Copper alloy, of sub-rectangular section. Diam. 20.2. Section W.1.4, Th.2.3
RF 10924, Unstratified.
- 162 Copper alloy, of irregular width, decorated with oblique grooves alternately angled. Diam. 22. Section W.2.3, Th.1.2
RF 12446, Unstratified.
- 163 Copper alloy, distorted. L.18, W.15.8. Section W.1.7, Th.1
RF 12610, Unstratified.
- 164 Copper alloy, sub-circular, of irregular width. Diam. 20.5. Section W.1.6, Th.1
RF 12630, Unstratified.
- 165 Copper alloy, of circular section. Diam. 18.5. Section Diam. 1.5
RF 14203, Unstratified.

(?) *Belt fitting*

- 166 Silver narrow tube formed from rolled sheet, with projecting edges, with possible gilding. L.44.4, W.5.9. Th.0.3. Diam of tube 2.4. (Fig. 1.10)
RF 2971, Unstratified.

Iron buckles and belt fittings

by Patrick Ottaway

Buckles (Fig. 1.10)

There are 38 iron buckles (17 unstratified) in varying states of completeness. The commonest form of frame, of which there are 24 examples, is oval or sub-oval. Nos 176 (RF 2772; Phase 5a) and 181 (RF 8361; Phase 6iii) are tin-plated, and the tongue of the former has three incised grooves at its head. Similar to the oval frames are two with straight sides and rounded ends: nos 198 (RF 8250; Phase 6iii) and 199 (RF 9862; Phase 6iii–7).

Eight buckles have D-shaped frames. No. 171 (RF 5252; Phase 4ii–5a) has a very corroded fragment of buckle-plate attached, and no. 170 (RF 1582; unstratified) is tin-plated. No. 172 (RF 9824; Phase 6iii–7) has leather, probably from belt loops, adhering to it.

Most of the buckles are small, but the largest (no. 196, RF 13675; Phase 2–4ii) which measures 34 × 58mm is comparable to the larger Anglo-Saxon buckles from elsewhere and may be from horse equipment rather than personal dress. There are two other relatively large buckles; one is D-shaped (no. 174, RF 12307; 36 × 46mm) and the other oval (no. 188, RF 12790; 14 × 70mm). Both are unstratified, but likely to be Anglo-Saxon.

All the buckle frame forms noted are well known in contexts of mid and late Anglo-Saxon date elsewhere. However, when compared with the assemblage of 61 buckles from Anglo-Scandinavian (mid 9th–mid 11th century) contexts at 16–22 Coppergate, York (Ottaway 1992, 681–4), it may be noted that, while all the frame forms found at Flixborough are found at Coppergate, the D-shaped buckle frames at the latter site make up almost 50% of the total, compared to 21% at Flixborough, and there are only five oval frames from Coppergate compared to 24 at Flixborough.

Buckle-plate

No. 201 (RF 13478) is a small buckle-plate found unstratified. While there are the remains of another attached to buckle no. 171 (RF 5286; Phase 4ii–5a), the near absence of buckle-plates is a striking point of difference between Flixborough and Anglo-Scandinavian contexts at 16–22 Coppergate, York where 38 were found (Ottaway 1992, 686–8). In the late Anglo-Saxon/Anglo-Scandinavian period buckle-plates were often associated with spurs of which, however, no examples were found at Flixborough.

Belt Slide (Fig. 1.11)

There is one probable belt-slide, or strap-guide, no. 202 (RF 2763; Phase 4ii). The clasp is largely missing, but the head is circular with a central rib. It is tin-plated. In the late

Anglo-Saxon period belt slides were frequently associated with spur leathers (Ottaway 1992, 688), and their virtual absence at Flixborough may be seen in the context of the complete absence of spurs already noted above. The rib across the head of no. 202 (RF 2763) recalls similar ribs across lozenge-shaped heads found at Coppergate (*ibid.*, fig. 297, 3778–80).

Catalogue

Buckles (Fig. 1.10)

D-SHAPED FRAMES

- 167 Incomplete. L.16, W.35mm
RF 391, Context 51, Phase 4ii.
- 168 L.24, W.18mm
RF 566, Context 535, Phase 6iii.
- 169 L.30, W.22mm
RF 983, Unstratified.
- 170 Plated (tin-lead). L.23, W.15mm
RF 1582, Unstratified.
- 171 Tongue survives, very corroded buckle plate attached. Charcoal present. L.15, W.33mm
RF 5286, Context 5252, Phase 4ii–5a.
172. Remains of leather from belt loops at the back on both sides. L.27, W.46mm
RF 9824, Context 6300, Phase 6iii–7.
- 173 Fragment. L.31, W.27mm
RF 9865, Context 6300, Phase 6iii–7.
- 174 L.36, W.46mm
RF 12307, Unstratified.
- ##### OVAL FRAMES
- 175 Tongue survives. L.19, W.13mm
RF 1897, Context 1889, Phase 6ii–6iii.
- 176 Tongue survives; at its head are three grooves. Plated (tin). L.14, W.18mm
RF 2772, Context 2611, Phase 5a.
- 177 Tongue survives. L.14, W.26mm
RF 5535, Context 1658, Phase 1a–2.
- 178 L.16, W.20mm
RF 6672, Context 6343, Phase 6ii–6iii.
- 179 Tongue survives. Possible textile, suggestion of spun threads on back. L.14, W.19mm (Fig. 1.10)
RF 6809, Context 6798, Phase 6i.
- 180 Tongue survives. Plant material present. L.20, W.25mm
RF 7075, Context 7054, Phase 6ii–6iii.
- 181 Incomplete. Plated (tin-lead). L.11, W.14mm
RF 8361, Unstratified.
- 182 Incomplete. L.23, W.39mm
RF 8427, Context 3107, Phase 4ii.
- 183 Incomplete. Traces of random organic material. L.15, W.30mm
RF 8979, Context 3107, Phase 4ii.
- 184 Tongue survives. L.12, W.21mm
RF 9630, Unstratified.

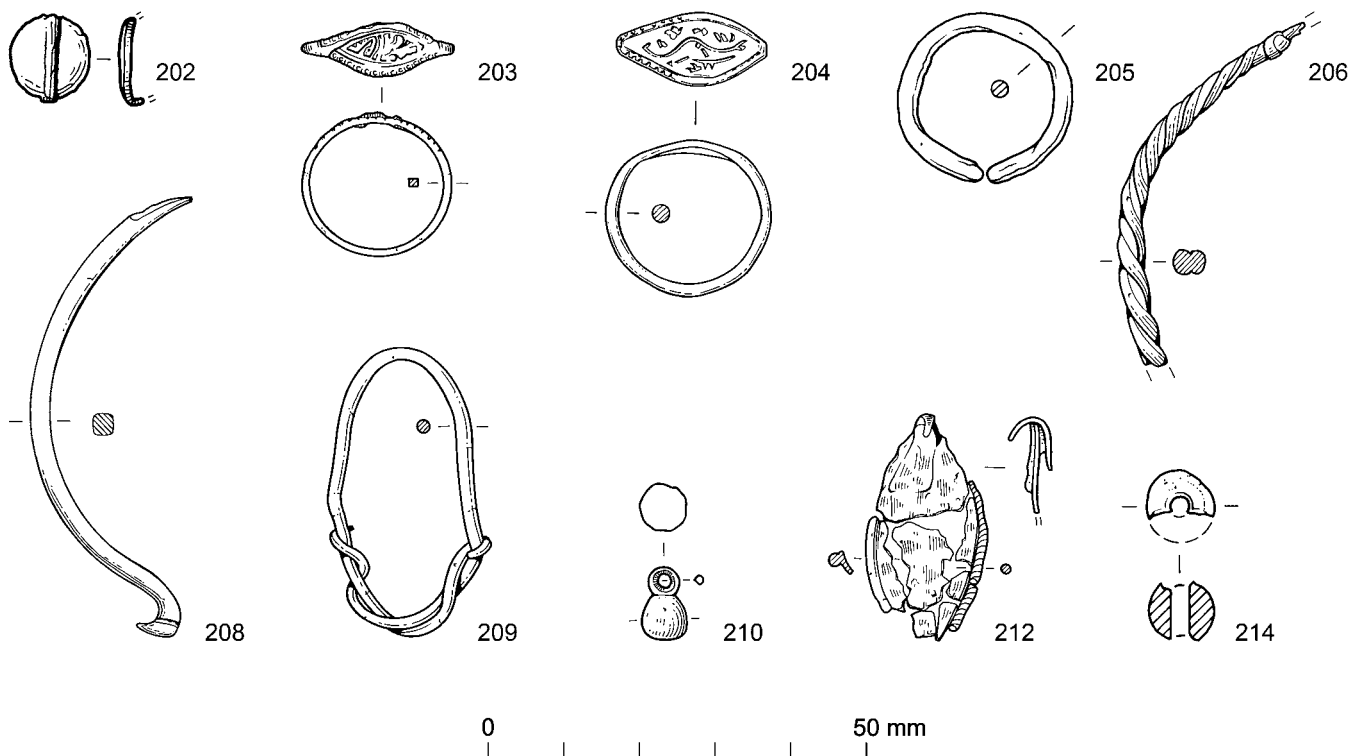


FIG. 1.11. Iron belt slide, silver and copper alloy finger-rings, arm-rings or bracelets, twisted wire ring, pendants, and a wooden bead. Scale 1:1.

- 185 Incomplete. L.16, W.30mm
RF 9681, Unstratified.
- 186 Tongue survives. Charcoal and random organic material present. L.23, W.36mm
RF 12309, Unstratified.
- 187 Tongue survives. Possible leather remains. L.17, W.23mm
RF 12316, Unstratified.
- 188 L.14, W.70mm
RF 12790, Unstratified.
- 189 Incomplete. Tongue survives. L.20, W.40mm
RF 12833, Unstratified.
- 190 Incomplete. L.65mm
RF 13049, Unstratified.
- 191 Incomplete. L. 18, W.11mm
RF 13258, Context 3891, Phase 6ii.
- 192 Tongue survives. Possible leather traces. L.14, W.26mm
RF 13333, Unstratified.
- 193 Tongue survives. Plant material present. L.17, W.24mm
RF 13455, Context 10772, Phase 2–4ii.
- 194 Tongue survives. Possible leather traces, and charcoal present. L.26, W.50mm
RF 13509, Unstratified.
- 195 Tongue survives. L.14, W.24mm
RF 13539, Unstratified.
- 196 Slight random organic traces. L.34, W.58mm
RF 13675, Context 10772, Phase 2–4ii.
- 197 L.20, W.33mm
RF 13754, Unstratified.
- FRAMES WITH STRAIGHT SIDES AND ROUNDED ENDS
- 198 Tongue survives. L.20, W.36mm
RF 8250, Unstratified.
- 199 Possible organic trace on tongue. L.17, W.33mm (Fig. 1.10)
RF 9862, Context 6300, Phase 6iii–7.
- 200 Tongue survives. Charcoal, also fibrous organic material. L.18, W.35mm (Fig. 1.10)
RF 10955, Context 10772, Phase 2–4ii.

Buckle-plate

- 201 L.19, W.21mm
RF 13478, Unstratified.

Belt Slide (Fig. 1.11)

- 202 Circular head with central rib, catch largely missing. Plated (tin-lead). D.23mm (Fig. 1.11)
RF 2763, Context 51, Phase 4ii.

1.5 Jewellery

**by Nicola Rogers, with a contribution
by Lisa M. Wastling**

Finger-rings (Figs 1.11)

All the finger-rings found at Flixborough were unstratified, two are of silver (nos 203 and 1018) and the third of silver/copper alloy (no. 204). The inscribed silver ring (no. 1018) is discussed in detail, with the other inscribed objects, in Ch. 3 (below).

The silver ring, no. 203 (RF 7243), and no. 204 (RF 12238), made of a silver/copper alloy, both have decorated lentoid or lozenge-shaped bezels; the bezel of no. 204 has incised curvilinear motifs which may have been inlaid, although analysis did not indicate different material within the decorated area (see analysis). Analysis of the bezel of no. 203 (RF 7243), which appears to have Trewhiddle style leaf motifs, did indicate possible silver inlay within the decoration, and a higher level of copper on the bezel which would have resulted in a more golden appearance in contrast to the silver of the rest of the ring. Both rings have notched borders around the decoration, and resemble a ring found at Whitby Abbey which had Trewhiddle style animal ornament on its bezel and was dated to the early 9th century by Wilson (Peers and Radford, 1943, 58, fig. 12, no. 5; Wilson 1964, 27 and 200, pl. XL, no. 130).

Ear-ring/finger-ring

A penannular ring of copper alloy, no. 205 (RF 5439) was recovered from the Phase 4ii dump which also produced the silver disc brooch (no. 25, RF 5467; see above). Similar rings found at Fishergate, York (Rogers 1993a, 1370–1, fig. 668, nos 5411–14), and from an Anglo-Saxon site at Elveden, Norfolk (West 1998, 26, fig. 24, no. 7) were identified as possible ear-rings, while at Middle Harling, Norfolk they were called finger-rings (Margeson 1995a, 56, fig. 38, nos 26–31).

Arm-rings or bracelets (Fig. 1.11)

Three copper alloy arm-ring or bracelet fragments were found (nos 206–8); only no. 206 (RF 755) was found in a stratified context in Phase 6iii (mid-late 10th–early 11th century) dark soil. These objects appear to be uncommon in the Saxon period; Hirst noted only one at Sewerby (Hirst 1985, 62, fig. 57, no. 7), and a corpus of Anglo-Saxon material from Suffolk recorded only three examples from the whole county (West 1998, 368). Single and cabled multi-strand wire armlets such as nos 206 and 208 are well-known Roman arm-ring types (Crummy 1983, 37–8, figs 41–2), but simple base-metal hoops with twisted ends are also known from the Viking period (Mainman and Rogers 2000, 2583–4, fig. 1277, nos 10608–9, and 10618).

Twisted wire ring (Fig. 1.11)

Made of silver, no. 209 (RF 10784) is a ring made of wire with the ends twisted, a ring form found commonly

throughout the Saxon period, and seen on other Flixborough objects, for example as suspension loops on the latch lifters (nos 1970–1; RFs 3776, 3820) and slide key (no. 1969; RF 11020). Other applications include arm-rings (Roesdahl *et al.* 1981, 109, YD51), finger-rings (Rogers 1993a, 1374, fig. 668, nos 5417–8), and components of necklaces (Hyslop 1963, 198–9). The function of no. 209 (RF 10784) is uncertain; it is too small to be an arm-ring (see above), but too large to be a finger-ring (see above), and it is considerably larger than most suspension rings. During the Viking period, such forms were used to store silver; for example, large rings were found in the early 10th-century Cuerdale silver hoard (Graham-Campbell 1980, 87, no. 301). The silver ingot (no. 3289; RF 12198), unfortunately unstratified, provides an indication that silver was worked on at Flixborough. No. 209 (RF 10784) was recovered from Phase 4ii (mid-9th century) ditch fill.

Pendants (Fig. 1.11)

Four pendants (nos 210–13) may have been parts of necklaces. Nos 210–11 (RFs 4166 and 14205) are small globular pendants or “bullae”; both are made of silver, which in the case of no. 210 has been gilded, to make it look like gold, and both are made up of two hollow hemispheres soldered together with the ends of the suspension loop gripped by the seam. Two similar silver bullae formed part of a gold and silver necklace recovered from a Saxon burial at Lower Brook Street in Winchester (Hawkes 1990, 622–9, fig. 168, nos 1961–2), and these pendants have a suggested date range of the second half of the 7th century possibly going into the 8th century (Geake 1997, 37). Slightly larger and solid, no. 213 (RF 3095) is made of copper alloy. Now rather fragmentary, no. 212 (RF 11674) is an oval droplet pendant, made of copper alloy with a convex amber setting with an imitation beaded wire edging; its loop has been lost. The amber has been identified as ‘Baltic’ amber (Ian Panter, pers. comm.), either imported from Scandinavia or other Baltic regions, or possibly collected from a beach on the east coast of England, where amber can appear, after being washed across from the north European continent (Panter in Mainman and Rogers 2000, 2501).

The wooden bead (by Lisa M. Wastling)

Just two certain beads were recovered from the site: one of wood (no. 214), which had been preserved by burning, and one of glass. The glass bead is discussed in Vera Evison’s glass report and can be seen in Fig. 2.3, no. 946 (see Ch. 2, below). A possible bone bead is discussed on p. 235 (no. 2323).

The wooden bead (no. 214; Fig. 1.11) was recovered from Phase 5a occupation deposit, 72. It represents a rare survival of a class of bead which may have been common, but is generally absent from the archaeological record due to the paucity of surviving wooden artefacts.

Catalogue (Fig. 1.11)

(Dimensions are in mm. L. = length; W. = width; Th. = thickness; Diam. = diameter)

Finger-rings (Fig. 1.11)

- 203 Silver hoop of sub-square section, flat lozenge-shaped bezel, slightly damaged on one side, decorated with central lozenge-shaped field with relief motif now illegible, possibly inlaid, notched border extending to shoulders. Diam. 19, Bezel W.7.2, Th.0.9. (Fig. 1.11)
RF 7243, Unstratified.
- 204 Silver/copper alloy hoop of sub-circular section with flat lozenge-shaped bezel decorated with incised curvilinear motifs. Diam. 20.7. Section W.2, Th.1.7. (Fig. 1.11)
RF 12238, Unstratified.

Ear-ring/finger-ring

- 205 Copper alloy penannular of circular section. Diam. 22.5. Section diam. 2.4. (Fig. 1.11)
RF 5439, Context 3758, Phase 4ii.

Arm-rings or bracelets (Fig. 1.11)

- 206 Copper alloy arm-ring or bracelet fragment, of triple strand cable twisted wire, terminal formed by one strand being twisted twice around second, third strand having been cut short, other end broken. L.49.7, W.4, Th.3.3. Wire Section Diam. 2.1. (Fig. 1.11)
RF 755, Context 636, Phase 6iii.
- 207 Copper alloy arm-ring or bracelet fragment, of sub-rectangular section, bevelled to flattened terminal, end cut obliquely, other end broken. Orig. Diam. c.80. Section W.5.1. Th.3.2.
RF 7497, Unstratified.
- 208 Copper alloy arm-ring or bracelet fragment, of sub-circular section, one hooked terminal of square section, other broken off. L.58.9. Section diam. 2.7. (Fig. 1.11)
RF 11920, Unstratified.

Twisted wire ring (Fig. 1.11)

- 209 Silver, of circular section, oval, ends tapering and twisted to form ring. L.38.5, W.19.3. Section diam. 1.6. (Fig. 1.11)
RF 10784, Context 10772, Phase 4ii.

Pendants (Fig. 1.11)

- 210 Silver, globular with projecting circular loop of bi-convex section, mercury gilded all over, worn in some places. Diam.6, L.9.6. Loop diam.4.2, Th.1.2. (Fig. 1.11)
RF 4166, Context 3107, Phase 4ii.
- 211 Silver, globular with projecting loop of bi-convex section. Diam.5.5, L.9.5. Loop diam.3.5.
RF 14205, Unstratified.
- 212 Copper alloy, in many fragments, originally oval with domed open front with notched wire border, flat back plate, containing oval Baltic amber setting. Largest fragment L.12.4. W.11.7. Th. 2.2. Setting L.16.6, W.10.4, Th. 4.5. (Fig. 1.11)
RF 11674, Context 11673, Phase 2–3a.
- 213 Copper alloy, sub-globular, with convex lower face, upper end with suspension loop of rectangular section. Diam.9.7 L.10.5.
RF 3095, Context 2860, Phase 2i–4ii.

Wooden bead (Fig. 1.11)

- 214 Bead. Globular, incomplete. Wood, burnt and surviving as charcoal. L. 7mm, diam. 8.5mm. (Fig. 1.11)
RF 520, Context 72, Phase 5a.

1.6 Toilet implements

by Nicola Rogers, with contributions by
Glynis Edwards[†], Gabor Thomas and
Jacqui Watson

Tweezers (Fig. 1.12)

Tweezers form one of the larger groups of objects amongst the personal items, with six pairs found in stratified deposits (nos 215–21) and four found unstratified (nos 222–5). Although they are two parts of the same pair, nos 220 and 221 (RFs 11688 and 11590) were found in different deposits, the former coming from context 10179 (a Phase 3bii–iii occupation level), the latter from context 11461 (a Phase 4i–ii trench fill). A further three possible copper alloy tweezers fragments (nos 226–8; RFs 79, 4152 and 5807), and a solitary iron example (no. 229; RF 12601) were also recovered.

The typical Saxon form of tweezers has expanded triangular tips with inturned edges, and apart from nos 219 and 224 (RFs 10423 and 12751), all the Flixborough tweezers are of this type. Several are decorated; for example, the tips on nos 215 and 218 (RFs 10148 and 7242) have stamped ring-and-dot motifs, and those on no. 222 (RF 12443) have dots, while arms are also decorated with incised lines (e.g. nos 217 and 222; RFs 10217 and 12443) or ring-and-dot (nos 220–21; RFs 11688 and 11590). This form has been recovered from both cemetery and settlement sites – see for example Buckland, Dover (Evison 1987, 118, fig. 24, 41/5), *Hamwic* (Hinton 1996, 44–6, fig. 18), Barham and Lakenheath, Suffolk (West 1998, 6, fig. 6, no. 51; 77, fig. 110, no. 6), Middle Harling, Norfolk (Margeson 1995a, 62, fig. 43), York (Rogers 1993a, 1387, fig. 678, no. 5420) and Whitby (Peers and Radford 1943, 62–3, fig. 13). At Flixborough, the earliest dated contexts in which these tweezers occur are Phase 3b (no. 220 in context 10179, and no. 215 in context 6235: both mid 8th–early 9th century), and the latest Phase 5b–6i (no. 218 in context 6344).

The fragmentary no. 219 (RF 10423) appears to be of the simpler straight-sided form of tweezers, found on Roman, Anglo-Saxon and medieval sites (Biddle 1990, vol. 2, 690), and essentially undatable. It was recovered from Phase 6ii–iii dark soil, and thus must date to the early 11th century at the latest.

A third form of tweezers is represented by the unstratified no. 224 (RF 12751), the unusual tips on which are paralleled by examples found at Shakenoak, Oxfordshire (Brodrigg *et al.*, 1972, 69, fig. 30, no. 133), *Hamwic* (Hinton 1996, 44–6, fig. 18, no. 24/12), and North Elmham (I. H. Goodall 1980, 502, fig. 263, no. 5). A similar pair from Reculver (Kent) have been dated to the 8th/9th century (Wilson 1964, 161, no. 62), and this seems a possible date for no. 224 (RF 12751) also.

Various uses for these commonly found implements have been suggested; the fact that they are sometimes found in male graves, often unaccompanied by other toilet implements such as ear scoops and nail cleaners (Scull

1992, 236), indicates that they are unlikely to have had a solely cosmetic function. Other suggested uses include pulling out thorns and splinters (Webster and Backhouse 1991, 85), and handling precious metal embroidery threads (Roesdahl *et al.* 1981, YD29). The more robust nature of no. 224 (RF 12751) may indicate an application requiring a greater use of force.

Ear scoop (Fig. 1.12)

Ear scoops such as no. 230 (RF 5943) are sometimes found in a set with tweezers or other toilet implements, which would also have looped over a ring, and come from sites similar to those from which the triangular-tipped tweezers have been recovered (see above). No. 230 (RF 5943) was found in context 3107, a mid 9th century ditch fill which contained significant amounts of 8th- to 9th-century material, including buckle no. 118 (RF 3135) and silver pendant no. 210 (RF 4166: see above).

Catalogue (Fig. 1.12)

(Dimensions are in mm. L. = length; W. = width; Th. = thickness; Diam. = diameter. Entry no. 227 by Gabor Thomas)

Tweezers (Fig. 1.12)

- 215 Complete copper alloy example with fragment of twisted wire suspension ring (not illustrated), arms of sub-rectangular section, faceting and file marks along edges, terminating in triangular tips decorated with four ring-and-dot motifs, lower edges of tips inturned. L.49.9. W.19.4. Th.4.1. Ring section Diam. 1. (Fig. 1.12)
RF 10148, Context 6235, Phase 3bv.
- 216 Copper alloy fragments (2), adjoining from one arm, upper end broken at loop, broadening slightly to lower end with trapezoidally-shaped tip with inturned edge. L.52.3. W.12.1. Th.1.5.
RFs 6225 & 6230, Context 5503, Phase 4ii.
- 217 Complete copper alloy example with fragment of wire suspension ring, arms of rectangular section, terminating in triangular tips with inturned lower edge; incised line decoration along edges of arms and transversely at top of tips and below loop. L.46. W.16.2. Th.2.8. Ring section diam.1.2.
RF 10217, Context 6491, Phase 5a.
- 218 Copper alloy example with expanded tips with lower edges inturned; tips decorated with ring-and-dot motifs, incised lines along edges. L.50.5. W.14.5. Th.3.3.
RF 7242, Context 6344, Phase 5b–6i.
- 219 Copper alloy arm fragment, broken across inturned edge at one end, other end broken across arm. L.18.8. W.6.8. Th.0.9.
RF 10423, Context 7056, Phase 6ii–iii.
- 220 Copper alloy arm and loop; second arm (RF 11590) broken off; arm rectangular with expanded triangular tip with inturned lower edge, decorated with incised lines along each edge and ring-and-dot motifs on arm. L.51. W.20.1. Th.1.9 (Fig. 1.12).
RF 11688, Context 10179, Phase 3bii–iii.
- 221 Copper alloy arm, broken at loop; rectangular with expanded triangular tip with inturned lower edge, incised lines along

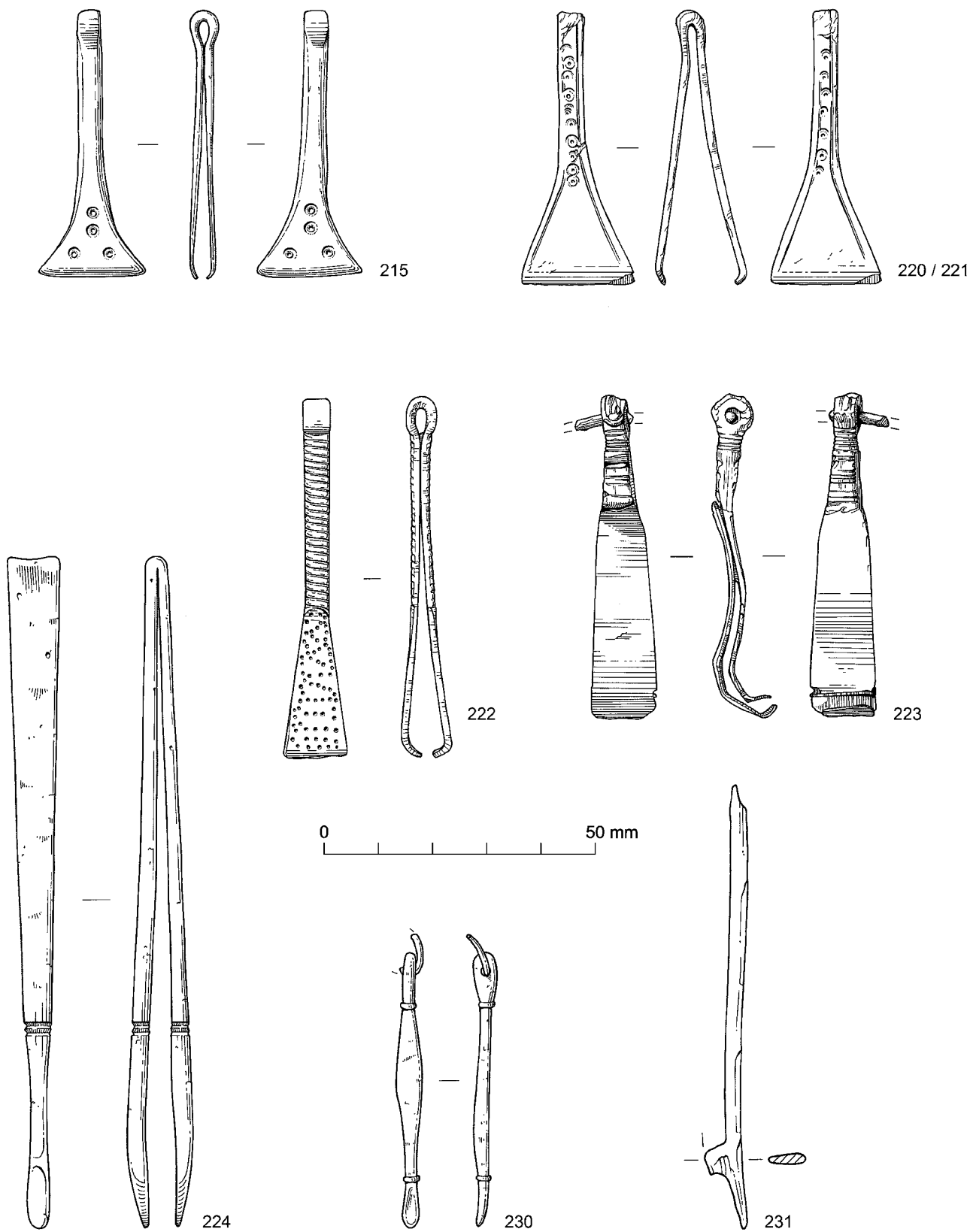


FIG. 1.12. Copper alloy tweezers and ear scoop, and an iron fleam. Scale 1:1.

- each edge with ring-and-dot motifs (joins no. 220, RF 11688). L.48. W.20.1. Th.1.9. (Fig. 1.12)
RF 11590, Context 11461, Phase 4i–ii.
- 222 Complete copper alloy example with thickened loop; arms of plano-convex section, expanding to sub-triangular tips with inturned end; arms decorated with transverse incised lines, tips with apparently random pattern of punched dots. Random organic material on outside. L.66.1. W.11.7. Th.1.9. (Fig. 1.12)
RF 12443, Unstratified.
- 223 Copper alloy example attached to fragment of suspension ring; upper stem of rectangular section, decorated with bands of incised transverse lines, split transversely to form sub-triangular arms; both tips bent up. L.58.8. W.11.5. Th.4.6. Ring section diam. 1.8. (Fig. 1.12)
RF 12476, Unstratified.
- 224 Copper alloy tweezers or forceps, upper end rectangular and compressed; arms of rectangular section, tapering from upper end and changing to plano-convex section below pair of incised transverse lines, and bevelled from outer face to rounded tips; file-marks. L.125.8. W.10. Th.5. (Fig. 1.12)
RF 12751, Unstratified.
- 225 Copper alloy fragment; one arm only, broken across loop; arm rectangular with triangular tip, part of inturned lower edge broken off, with incised lines along edges. L.48. W.14.8. Th.1.3.
RF 12753, Unstratified.
- (?) *Tweezers*
- 226 Copper alloy arm fragment, broken at both ends, curving and tapered. L.21. W.9.6. Th.1.7.
RF 79, Context 929, Phase 6ii.
- 227 Copper alloy arm fragment, of rectangular section; one end flattened, other end bent up. L.37.7. W.6.5. Th.1.5.
RF 4152, Context 3891, Phase 6ii.
- 228 Copper alloy arm fragment; one expanded sub-triangular tip, edge inturned. L.26. W.8.6. Th.1.
RF 5807, Context 5139, Phase 5a.
- 229 Tweezers? Triangular iron object fabricated from a folded iron strip, one end of which is now missing. Due to its folded construction and lack of attachment holes, this may have served another function, perhaps as a small pair of tweezers. L.36mm. W.12.7mm. Th.1.3mm.
RF 12601, Unstratified.

Ear scoop (Fig. 1.12)

- 230 Copper alloy ear scoop, looped around incomplete ring; stem of rectangular section, single collars below loop and above scoop which is at 90° to loop. L.50.8. W.5. Th.2.1. (Fig. 1.12)
RF 5943, Context 3107, Phase 4ii.

1.7 Medical items

by Patrick Ottaway

Fleams (Fig. 1.12)

There are two probable examples of knives used for blood letting, known as fleams: nos 231 (RF 11676; Phase 3biii) and 232 (RF 12327; unstratified). They have or had tangs

which tapered to the tip where there is a small semicircular blade. This basic form has remained current until recent times, but no other Anglo-Saxon fleams are known, except for an example from *Hamwic* (SOU177.326, unpublished, excavated by Southampton City Council).

Catalogue

Fleams (Fig. 1.12)

- 231 Incomplete tapering tang; a small U-shaped blade projects just before the tip. L.76mm. (Fig. 1.12)
RF 11676, Context 11631, Phase 3bii.
- 232 Tang narrows towards one end where a small U-shaped blade is projecting. L.104mm.
RF 12327, Unstratified.

1.8 The pins

by Nicola Rogers, with contributions by Sonia O'Connor, Patrick Ottaway and Ian Panter

Introduction

A total of 562 pins, made of non-ferrous metals, of iron and of bone that were recovered at Flixborough have been studied for this report; together they must constitute the largest group of Anglo-Saxon pins ever found on one site. By far the biggest component of this group of pins is the non-ferrous metal pins which total 407, and comprise 20 silver pins and 387 copper alloy pins. 114 iron pins were also recovered, certainly the largest group of iron pins identified from this period. Finally, 41 bone pins were also found.

As the largest group, the non-ferrous pins are commented upon first; it should be noted that three non-ferrous pins were unavailable for study, but had been drawn (cat. nos. 254, 437 and 438; RFs 14132, 14041 and 14045), and comments upon these are based solely on the illustrations.

Within the non-ferrous pins, a series of types were identified, primarily defined by head shape; when the iron pins were investigated, it became clear that their similarities in form to the non-ferrous pins necessitated typing them in the same way. The bone pins, being made of a completely different type of material, and differing less in form than their metal counterparts have been grouped into just two types.

Non-ferrous pins

Typology

The non-ferrous pins have been classified primarily by their head shape. The main types are: Type 1: globular; Type 2: polyhedral; Type 3: biconical; Type 4: spiral-headed; Type 5: headless; Type 6: disc-headed; Type 7: flat triangular or trapezoidal headed; Type 8: inverted conical; Type 9: faceted dome-shaped head. Type LIN refers to linked pins, Type 00 comprises pins with unidentifiable heads, and Type 000 is composed of individual pins belonging to no broad type.

In addition, other characteristics of the forms of the

typed pins were recorded; these are the presence/absence of a collar below the head, the shank form, and the presence/absence of decoration on the head and/or on the shank. Four shank forms were recorded. These are: unidentifiable, the shank section unvaried along the whole length of the shank, swelling on part of the shank, and hiping or a square section at the end of the shank. Pins which were missing heads were typed according to shank form only. All the pins in Types 1–9, and also the pin shanks, have a three digit code number according to the combination of the characteristics of their form (see Appendix 1, pp. 44–5 for pin type codes).

The pin types identified have been broken down numerically in FIG. 1.13 below:

Type	Total	%age of typed pins
Type 1	78 (2)	21.5
Type 2	66 (4)	18.2
Type 3	79 (1)	21.8
Type 4	14 (6)	3.8
Type 5	67 (3)	18.5
Type 6	3 (11)	0.8
Type 7	15 (5)	4.1
Type 8	6 (10)	1.6
Type 9	2 (12)	0.5
Type LIN1 and 2	12 (=7)	3.3
Type 00	8 (9)	2.2
Type 000	12 (=7)	3.5
Total	362	
Shanks	45	
Total (pins and shanks)	407	

FIG. 1.13. Non-ferrous pins by type.

Type 1 Globular-headed pins

This type formed the second most commonly recovered type on the site, and was the most common form of the silver pins. The pins may be broadly divided into those with plain heads (Types 100–113) and those with decorated heads (Types 120–133), the former comprising *c.*75% of the Type 1 pins. By far the most common form, making up *c.*33% of all Type 1 pins, is Type 112 which has an undecorated head, a ring collar and a swollen shank. Ten of the pins are of silver, two of which have been gilded (cat. nos 665 and 667, RFs 1127 and 622: both **Type 112**). Two copper alloy pins (no. 252, RF 7244, **type 111**; no. 293, RF 11942, **type 130**), have heads which have been gilded; a third copper alloy pin (no. 254, RF 14132, **type 111**) appears to have been gilded all over. Two pins (nos 277–8, RFs 3721–2 **both type 113**) are so similar in size and form that they must represent a pair – they were found in the same Phase 6ii dump deposit. Whether they were originally linked in some way, as pairs of pins with chains are linked, is unclear (see Linked pins below). The earliest dated deposits from which Type 1 pins were recovered are mid-7th to early 8th century (Phase 1b–2, No. 665, RF 1127, **type 112**; no. 284, RF 3875, **type 121**); approximately 21% came from Period 1–4 levels, with 16% from Period 5 contexts, almost a third (30%) from Period 6 levels and the same from Period 7 levels and unstratified (see FIG. 1.14 above).

While being the second most common type of non-ferrous pin found at Flixborough, globular-headed pins, or spherical-headed as they are also termed, have been the commonest form found on many other Middle Saxon sites, including *Hamwic*, which produced a similar number, although considerably more (approx. 50% of the total) were decorated (Hinton 1996, 14–21). As at Flixborough, a possible pair of pins was identified (*op. cit.*, 20–1). More locally to Flixborough, in York, they formed the most common type found in Anglian levels at 46–54 Fishergate

	Period 0	Periods 1–4	Period 5	Period 6	Period 7 and U/S	Total
Type 1	1 (1.3)	16 (20.5)	13 (16.6)	24 (30.7)	24 (30.7)	78 (100%)
Type 2		19 (28.7)	11 (16.6)	15 (22.7)	21 (31.8)	66 (100%)
Type 3	1 (1.2)	11 (13.9)	5 (6.3)	26 (32.9)	36 (45.6)	79 (100%)
Type 4		5 (35.7)	4 (28.6)	2 (14.3)	3 (21.4)	14 (100%)
Type 5		26 (38.8)	16 (23.9)	17 (25.4)	8 (11.9)	67 (100%)
Type 6		2	-		1	3
Type 7		6	1	7	1	15
Type 8		2	1	1	2	6
Type 9				1	1	2
Type LIN1 and 2		3	2	5	2	12
Type 00		4	2	2	-	8
Type 000		3		6	3	12
Total	2	97	55	106	102	362

FIG. 1.14. Typed non-ferrous pins by type and period. NB Numbers in bold are percentages of pin type.

(Rogers 1993a, 1361–3), and early Anglo-Scandinavian levels at 16–22 Coppergate (Mainman and Rogers 2000, 2577), as well as occurring elsewhere in the city (Waterman 1959, 78–9). Other sites in the north of England that have produced these pins include Whitby, North Yorkshire (Peers and Radford 1943, 63–4), and two sites in East Yorkshire – South Newbald (Leahy 2000, 65–71) and Cottam (Haldenby 1990, 53; 1992, 27; 1994, 52).

Type 2 – polyhedral-headed pins

This form – the fourth most numerous – includes all pins with cuboidal and other polygonally shaped heads; one silver pin falls into this category (no. 672, RF 5451, **Type 212**). No. 349 (RF 7245; **Type 232**) is a copper alloy pin with a gilded head.

As with the Type 1 pins, a broad distinction can be made between those with undecorated (Types 200–213) and those with decorated heads (Types 220–253); unlike the Type 1 pins, the vast majority of the Type 2 pins (*c.*76%) have decorated heads, and the commonest form within this type (*c.*21% of all Type 2 pins) is Type 232 with a decorated head, ring collar and swollen shank. The earliest deposit from which a Type 2 pin derives is a Period 2 floor level (late 7th–early 8th century: no. 335, RF 3628, **Type 231**), with *c.*29% of Type 2 pins coming from Periods 2–4 levels. Period 5 produced *c.*16%, and Period 6 *c.*23%, while *c.*32% were from Period 7 levels and unstratified (see FIG. 1.14).

This pin form encompasses a range of head forms, all polyhedral but of various sizes and sections. The most common is the square-sectioned faceted head, which is typically decorated, and this has been found on all the sites noted above as producing Type 1 pins. A few pins were recognised which have a narrow rectangular section to the head, producing a flattened appearance; these have also been noted at *Hamwic* (Hinton 1996, 24, fig. 9, nos 169/1747, 349/148), South Newbald (Leahy 2000, figs 6.7, 1–4; 6.8, 6–8) and at Riby Crossroads, Lincolnshire (Drinkall 1994, 264, illus. 16, 4). Of the seven recovered at Flixborough, only three came from phased contexts, the earliest being late 9th–early 10th century (Phase 5b: no. 359, RF 1803), so use of this type, at least at Flixborough, may possibly have extended from the Middle Saxon into the Late Saxon period, although all could be residual (see below for discussion of the chronology of pin types). One further head form within this group which is of particular interest is the baluster head, of which no. 316 (RF 4207) is the sole example; it has previously been identified in predominantly 9th- to 10th-century levels in York, and has been suggested to be unique to that city (Mainman and Rogers 2000, 2577). The Flixborough pin derives from Phase 6iii (mid-10th–early 11th century) dark soil or dumping.

Type 3 – biconical-headed pins

This form, the most commonly recovered, includes all heads of biconical shape, which may be broadly divided into those with a conical top (Types 300–333) = 59

(*c.*75%), and those with a flatter or rounded top (Types 340–373) = 20 (*c.*25%). There were no silver pins of this type. Of those with a conical top, the most common forms included a medial band (Types 320–333), and these types represented *c.*43% of all the pins with biconical heads. Only eight pins (*c.*10%) had decorated heads, most having designs incorporating stamped ring-and-dot motifs (e.g. no. 408, RF 1858, **Type 331**). Shanks with grooves around them were noted on 11 pins (*c.* 14%); on two pins (nos 369 and 371, RFs 6588 and 11990, both **Types 302**), the grooves were positioned just below the head, but on all the others, they appeared towards the tip, sometimes at the point of swelling on the shank (e.g. no. 414, RF 8525, **Type 332**) or at the point where the shank became hipped (e.g. no. 390, RF 3847, **Type 313**). Whether these are decorative grooves, or had some other function, is unclear. The earliest deposit from which Type 3 pins derive is a Period 2 post-hole (late 7th century: no. 430, RF 3918, **Type 352**); *c.*14% come from deposits of Periods 2–4, only *c.*6% from Period 5 levels, with *c.*33% Period 6 deposits and *c.*47% from Period 7 levels and unstratified (see Table 2).

Elsewhere, Type 3 pins have been found on the same sites as Types 1 and 2, although it does not appear as the most common type at any of these. At *Hamwic*, it was the third most frequently found type (Hinton 1996, 28), but none had decorated heads, although grooves on shanks were occasionally noted (*ibid.*). As at Flixborough, no silver pins were identified (*ibid.*). A single example was found at Riby Crossroads, Lincolnshire (Drinkall 1994, 264, illus. 16, 3).

Type 4 – spiral-headed pins

Fourteen pins of this type were recovered, their heads formed of opposed inwardly spiralled wires; all were made of copper alloy. The heads on most have been made by splitting the upper end of a shank into two, but occasionally, pins have been cast as a Y-shape for example nos 445 and 447, RFs 3475 and 4729 (Ross 1991, 220). They are equal fifth in terms of their frequency on the site; only one was found to be decorated (no. 458, RF 5218, **Type 411**) with grooves on the shank just below the head. The type found in most numbers is Type 401 with an unvaried shank section of which there were 9 (*c.*64%). The earliest dated deposit from which this pin type comes is a Phase 1b post-hole fill (mid–late 7th century: no. 446, RF 3732, **Type 401**), and the highest percentage of these pins come from Periods 1–4 (see FIG. 1.14). Their appearances in Anglo-Saxon graves, such as at Eccles, Kent (Hawkes 1973, 281–5) suggest an origin in the 7th century, or just possibly the 6th (*op. cit.*, 283), while their occurrence in some numbers at *Hamwic* indicates their continued use into the 8th century (Hinton 1996, 30). Closer to Flixborough, they have been found at Brandon, Suffolk (Webster and Backhouse 1991, 84, 66h; West 1998, 12), Ipswich (West 1998, 67, 96, 6), Lincoln (Meaney 1964, 157), Riby Crossroads (Drinkall 1994, 265, illus. 16, 2) and Hartlepool (Jackson 1988, 182, fig. 33, 8), and in York, at Fishergate (Rogers 1993a, 1363) and

Coppergate (Mainman and Rogers 2000, 2578). Although few in number, the pins derived mainly from 9th- to 10th-century levels at both York sites (*ibid.*), which may suggest a period of use extending slightly beyond the previously assumed *floruit* of 7th–8th centuries (Leahy 1991, 97, 69j, k); despite noting the York examples, at *Hamwic* these pins were thought nevertheless to date primarily to the 7th–8th centuries (Hinton 1996, 37).

Type 5 – headless pins

Sixty-seven pins of this type were recovered, all made of copper alloy. They are characterised by an upper end which has been cut square, or occasionally slightly rounded, and are broadly divided into those with grooves on their shanks, usually close to the upper end (43 pins; c.64%), and those without (24; c.36%). The most numerous type is Type 511, with an unvaried shank section, and grooves, of which there are 37 (55.2%). Twenty-six pins were analysed at the upper end in an attempt to determine whether there was any solder present, as a means of attaching a separately made head; it was impossible, however, to positively identify solder on any of the pins, as it was considered equally possible that any white or grey deposits could be the result of preferential corrosion (see Appendix 3, below, pp.46–7). These shanks, all lacking identifiable heads, almost certainly did originally have separately made heads which have somehow been lost; if the analysis of corrosion of a different nature at the upper end of the pins is accepted, this implies that when deposited, the pins were complete with a head made perhaps of some organic material such as bone. Glass heads may also have been used, such as that found on no. 563, RF 3481, **Type 000**; as with many of the other headless shanks, there are grooves around the shank, here just below the glass head. Another clearly headless pin was found with the separate remains of a head (no. 490, RF 3293, **511**) while a fragmentary pin of uncertain type has part of a separately made head still attached (no. 564, RF 613, **Type 000**); the heads of both require analysis to identify their material, but it seems likely both may be of glass.

The earliest context from which a headless pin derives is a Phase 1a (mid-7th century) occupation deposit (no. 459, RF 6403, **Type 501**). Overall, Type 5 is the third most common pin type found on the site, being marginally ahead of Type 2, and marginally behind Types 3 and 1 (see FIG. 1.13). But by phase, it is the most common in Periods 1–4 (7th–mid-9th century; see discussion below). This pin type has been recognised elsewhere on Anglo-Saxon sites, but may be an under-reported type, perhaps sometimes being mistaken in the past for incomplete pin shanks.

At Shakenoak, Oxfordshire, 15 were identified, many with grooves (Brodrick *et al.*, 1972, 70, fig. 31, nos 158–61, 163–73) and it was suggested that they were probably 8th century in date (Dickinson 1972, 72). At *Hamwic*, five were identified but not clearly distinguished from pins where heads had been lost, of which there were many more (Hinton 1996, 34–5). Closer to Flixborough, a rare

example from a grave was recovered at the Castledyke cemetery (Ross 1998, 269), while Fishergate in York produced 15 headless pins from Anglian and later deposits (Rogers 1993a, 1364–6, fig. 664); several had shank grooves (*ibid.*). The glass-headed pin form has rarely been found on Anglo-Saxon sites, and on those where they have e.g. Cheddar, Somerset (Rahtz 1979, 280, no. CA81), and West Stow, Suffolk (Evison 1985, 75, fig. 277, nos 2,3), there is also evidence of Roman activity, from which this pin type might also derive (see Cool 1990, 165, Group 16). The example from Flixborough (no. 563, RF 3481, **Type 000**) is surely an Anglo-Saxon type, however; the grooves on the shank link it securely to the headless pins, and it comes from a mid 8th- to early 9th-century post-hole.

Type 6 – disc-headed pins

Only three pins, all incomplete, were identified as this type. The heads are flat, circular or sub-circular, and all are decorated with ring-and-dot motifs. All three ring-and-dots are perforated on no. 526 (RF 417, **Type 600**); no. 527 (RF 2838) also has three perforations, all surrounded by ring-and-dot on one face, but with only two ring-and-dot on the other face, the third perforation left plain (**Type 600**). The third pin (no. 528, RF 13908, **Type 602**) has only two perforations, and only traces of a single ring-and-dot around one of them on one face; a third perforation appears unfinished. Unlike the larger linked pins, also with discoidal heads (see below), the perforations on these pins appear decorative only. The pins were found in ditch fills of Phase 2i–4ii (no. 526), and Phase 4ii (no. 527), the third (no. 528) being unstratified.

These pins tend to occur individually or in small numbers at other sites, such as Whitby (Peers and Radford 1943, 63, fig. 13, nos 7, 7a), South Newbald (Leahy 2000, 62, fig. 6.5.2) and York (Waterman 1959, 78–9, fig. 11, no. 3), although Cottam produced seven (Haldenby 1990, 53, fig. 3; 1992, 28, fig. 2, 13; 1994, 52, fig. 1, 2–4). This type appears to be predominantly from northern England (Ross 1991, 337).

Type 7 – Triangular/trapezoidal-headed pins

These pins totalled 14, and may be related to the very similar Type 6 pins; as with the Type 6 examples, these pins have flat heads, and all but one, which is possibly unfinished (no. 543, RF 7256, **Type 713**), are decorated with ring-and-dot motifs which are often perforated.

As with Type 6, the earliest examples of this pin type derive from Phase 2i–4ii ditch fills (no. 531, RF 2890, **Type 701**; no. 536, RF 11931, **Type 702**), and they are found on several of the same sites including South Newbald (Leahy 2000, 70, fig. 6.8.16–17) and York (Waterman, 1959, 78–9, fig. 11, 1,2,4), but also in small numbers at *Hamwic* (Hinton 1996, 31–2), and individually at Hartlepool (Jackson 1988, 182, fig. 33, no.7), and Coppergate (Mainman and Rogers 2000, 2578, 10471) and Fishergate, York (Rogers 1993a, 1363, 5370).

Type 8 – Inverted conical-headed pins

Six pins of this type were recovered, the earliest coming from Phase 4ii (mid-9th century) deposits (nos 545–6, RFs 5047 and 6270, **Type 811**). Two of the pins have decorated heads (nos 548–9, RFs 2031 and 12762, **Type 832**), and a third has grooves on its shank (no. 547, RF 6861, **Type 811**). Elsewhere, as at Flixborough, these pins tend to be found in small numbers; both Fishergate and Coppergate in York produced three pins of this type, the earliest also deriving from mid-9th century deposits (Rogers 1993a, 5363–5; Mainman and Rogers 2000, 10465–7), and South Newbald also produced three, described as tear-shaped (Leahy 2000, 65–70, figs 6.6–6.8).

Type 9 – faceted dome-shaped headed pins

Only two examples of this type were identified (nos 550–51, RFs 1639 and 11996, **Type 902**), the former coming from Phase 6iii dark soil, the latter being unstratified. No parallels for this type have so far been noted.

Linked pins

The linked pins – that is pins which were evidently used in sets of two or more, connected together by lengths of metal chain – have been divided into two sub-types, these being largely differentiated by their size.

Type LIN1

This sub-type consists of the smaller pins, which have circular or trapezoidal-shaped heads with a perforation for the chain, part of which has survived in all seven pins that were found. The earliest context from which a linked pin comes is an early to mid 9th-century dump (Phase 3bv–4ii, no. 552, RF 6076), and three of the seven come from Periods 3–4 levels, the other four coming from Periods 5–6 contexts. But this pin type is particularly known elsewhere from Anglo-Saxon cemeteries, and is generally dated from 7th–8th centuries, indicating that all of the Flixborough pins of this type are likely to be residual. In fact, five of the seven pins were recovered from 9th- to 10th-century dumped deposits, some of which contained considerable amounts of other residual 7th- to 9th-century material (nos 552–5 and 557; RFs 6076, 9973, 5213, 5750 and 3675); a pair of pins (no. 556; RF 3454) was found in a late 9th- to early 10th-century occupation layer, and a single pin (no. 558; RF 1815) was retrieved from Phase 6iii dark soil. These pins are simpler and cheaper versions of the elaborate pin suites of precious metals, sometimes set with precious stones, which have been found in late 7th- to early 8th-century graves at, for example, Chamberlain's Barn, Leighton Buzzard, Beds. (Hyslop 1963, 198, figs 13a, 16c), and Roundway Down, Wilts. (Youngs 1989, 53–4, no. 40). Elsewhere, less ornate examples, more akin to those from Flixborough, have had rings through the perforations to which chains were attached, as at Winnall, Hampshire (Meaney and Hawkes 1970, 36–7, fig. 9), and the Castledyke South cemetery, Barton-upon-Humber (Ross 1998, 269). A pair of copper alloy circular-headed

linked pins, like those from Flixborough, was found at *Hamwic* (Hinton 1996, 34, 30 266), while parallels to the trapezoidally-headed Flixborough pins come from a mid to late 8th-century deposit at the monastery at Hartlepool (Jackson 1988, 182, fig. 33, no. 5), and late 8th-century deposits at Fishergate, York (Rogers 1993a, 1363, 5366–7).

Type LIN2

Typified by their large decorative heads, which in three pins of this sub-type is the only part to survive, these five pins include one silver example (no. 673; RF 2068). As with the other sub-type, all must be residual, coming as they do from Period 6 (10th century) and unstratified deposits. All the pins incorporate a cross-shape into the designs on their heads; the simplest design has expanded terminals, outlined with dots (no. 559; RF 4157), and with its lentoid cut-outs, is strongly reminiscent of the replacement pin on the extremely elaborate late 8th-century linked triple set of pins from the River Witham, Lincs. (Webster and Backhouse 1991, 227–8, 184). The most complete pin of this type from Flixborough, no. 559 (RF 4157) still retains a length of chain attached via a perforation to one side of the head. The central cross and border on the other complete pin (no. 560; RF 7835; PL. 1.8) are also dotted, and define quadrants filled with chip-carved interlace, the whole having been gilded. As with no. 559, this pin appears to have been cast in one piece, and also has a perforation to one side of the head. A head of very similar design is all that survives of pin no. 561 (FX 88, R3); this has a plain central cross, with quadrants filled with almost identical interlace, and also gilded. Unlike no. 560 (RF 7835), the head has separated from its shank to which it appears to have been riveted – the line of the two surviving rivets suggests that the orientation of the perforation to the shank would not have been at 90° as usual, but closer to 150°. It is, however, unclear if both the rivets and the perforation belong to a linked pin, as there is evidence of an attempt to reuse the pin head to serve another function; part of the border of the pin head close to the perforation has been notched, and one of the rivets interrupts the interlace in one quadrant, suggesting that it may not be original to the pin.

The remaining two discoidal heads also originate from pins made from separately cast heads and shanks; no. 673 (RF 2068) is made of silver and is clearly the central pin of a three-pin suite, having two linking holes, one each in the east and west terminals of the central cross. As with the other pins, chip-carved decoration fills the fields between the cross arms, and there is a plain border around the edge. A central iron rivet and a copper alloy rivet in the border below originally attached the shank. Made of copper alloy, no. 562 (RF 50006) may similarly be the central pin of three; one linking hole is clearly visible, but a second is hinted at in the breakage of the disc edge opposite this hole, possibly across a second linking hole. Two rivets for attachment of the shank survive. On this pin, the central cross-shaped motif is maintained, although rather than

interlace, the decoration is provided by the cross itself, with its scrolled terminals.

The recovery of five disc-headed linked pins from one site is remarkable, as these are usually found singly; only Cottam on the Yorkshire Wolds (Haldenby 1990, 51–3; 1992, 28) and Meols, Cheshire (Bu'lock 1960, 9–10, fig. 3c; Griffiths 2007, 66, pl. 9) have produced similarly sized collections. Individual examples have also been found at Pontefract (Bailey 1970, 405–6, pl. II), Roos, East Yorks. and South Ferriby, North Lincs. (Kitson Clark 1941, 333–4). The use of chip-carved interlace and gilding on many of these pins dates the majority to the 8th century (Bailey 1970, 406), an appropriate date for all these Flixborough pins.

Other pins

A silver pin with a discoidal head (no. 674; RF 5334), found in a Phase 6ii dump, differs from the other discoidally headed pins in having a composite head; the shank and back of the head have been made in one piece, with a second decorative element being superimposed. The added piece appears to have a silver backing and border, with a chip-carved and gilded interlace filling, attached via a rivet at the top of the shank; it may originally have been soldered to the back plate, but it has now partially split away. The composite nature of the head recalls other disc-headed pins, such as a pair found at *Hamwic* each of which had a convex centre formed by the attachment of a thin decorated bossed sheet (Hinton 1996, 30, nos 169/568, 169/634; Wilthew 1996, 67). Despite the lack of attachment loops, Hinton relates the *Hamwic* pins to linked pin sets such as those from Roundway Down (Youngs 1989, no. 40), suggesting a 7th-century date for them; an 8th-century date seems more appropriate for no. 674 (RF 5334), which is not linked, and has chip carving and gilding typical of that date.

Two pins (nos 566 and 675; RFs 822 and 2294), both with gilding, have heads taking the form of an animal's head – in both cases, probably a dog's head (PL. 1.7). Both pins derive from Phase 6ii–iii levels in which, as with no. 674 (RF 5334), they are clearly residual. No. 675 (RF 2294) is made of silver and is the more delicate and stylised of the two, the gilded head being of triangular section and depicting an open-mouthed beast with an upturned snout and upright ears. The more clearly dog-like head on no. 566 (RF 822) has eyes set with blue glass, although one setting is now lost, and a collar separates the head from the shank; the whole pin which is probably of copper alloy (see Appendix 3, pp. 46–7), has been gilded. Comparable pins include one in the British Museum (unprovenanced; Webster and Backhouse 1991, 226, no. 182), and another pin from Brandon, Suffolk (*op. cit.*, 83, no. 66d); both date to the 8th century, to which period the two Flixborough pins must also belong.

Four pins, three of silver (nos 676–8; RFs 324, 2631 and 7240) and one of copper alloy with silver plating and mercury gilding (no. 565; RF 4163), have large heads all depicting beasts, singly on nos 676–7 (RFs 324 and 2631) and in pairs on nos 565 and 678 (RFs 7240 and 4163). On

both nos 676 and 677 (RFs 324 and 2631), the beast is carved into both faces; on no. 677 (RF 324), he is backward-looking with the tip of his beak touching the tip of his wing (PL. 1.6); on no. 676 (RF 2631), which has broken off from its shank, the small ear, circular eye and rounded snout of the beast rest on part of an extended leg. On both pins, the head appears to have been gilded. No. 678 (RF 7240) has a pair of confronted beasts, their gaping mouths swallowing the tip of their companion's tail, the edges of their wings following the edge of the pinhead, and their clawed legs crossed; this face of the head and the collar below are gilded, and triangular punch-marks speckle the bodies (PL. 1.6). With a head of a similar triangular shape to no. 678 (RF 7240), the slightly cruder no. 565 (RF 4163) has a pair of addorsed beasts, with prominent ears but no eyes, and long entwined tongues; their elongated necks and large heads result in little space for the lower parts of their bodies which meet at the rumps. The shank and back of the head of no. 565 (RF 4163) have been silvered, and the front of the head and collar are gilded.

No. 565 (RF 4163) was found in a mid 9th-century ditch fill, and the silver pins from late 10th-century dark soil no. 676 (RF 2631), topsoil (no. 677; RF 324), and an unstratified level (no. 678; RF 7240), but all are likely to date from the 8th century; the use of gilding, the speckling as seen on no. 678 (RF 7240), and the depiction of beasts of various forms can all be seen on other 8th-century dress accessories, including pins from Brandon, Suffolk (Webster and Backhouse 1991, 82, no. 66b), St. Mary's Abbey, York (*op. cit.*, 227, no. 183), South Newbald (Leahy 2000, 62, fig. 6.5.1), and the Flixborough disc brooch (cat. no. 25, RF 5467).

Found unstratified, the semi-quadrant shaped head of no. 681 (RF 12755) is made of debased silver, which has been mercury-gilded; it is attached to the remains of an iron shank by two copper alloy rivets. The head has punched dot borders and a central band also with punched dots which together define two fields, both decorated with chip-carved interlace. The closed circuit motifs in each field differ slightly; the asymmetrical figure-of-eight in the left field is echoed on the right, but here an extra loop laces through the upper loop of the figure-of-eight. The fields are joined by a looped interlace which crosses from one field to the other, via the top of the central dotted band. The original function of this object is uncertain, but it is possible that it represents a repair or replacement head for a pin, perhaps cut-down from a discoidally headed pin; such pieces have been found elsewhere, for example at Brandon (Webster and Backhouse 1991, 84, fig. 66f), and Wharram-le Street (Garrison *et al.* 2001, 30, no. 38). What is certain is that the combination of different metals – silver-gilt head, iron shank and copper alloy rivets – in addition to the carved interlace, would have resulted in a striking appearance. While the function of no. 681 (RF 12755) may remain unclear, there is little doubt that it is contemporary with other decorative metalwork from the site; the use of punched dot decoration and deeply carved interlace is closely paralleled on the plaque (no. 1017; RF

6767) which itself echoes the designs on the Witham pins, and thus indicates a later 8th-century date for no. 681 (RF 12755).

Only the gilded head survives of silver pin no. 679 (RF 1241; PL. 1.9) which was found in Phase 6iii dark soil. The spherical head is decorated with six small cylindrical settings with beaded collars – two of the settings having an additional plain collar; five of the settings contain red glass, the sixth surrounds the top of the shank (PL. 1.9). The pin head may perhaps be imitating a type set with garnets, such as one found in a grave at the Buckland cemetery, Dover (grave 134) which had settings on four sides and one on top (Evison 1987, fig. 55, no. 134/5), and may suggest a 7th–8th century date for the Flixborough pin.

Also incomplete, but retaining part of its shank is no. 680 (RF 1887) which is also of silver with gilding; it was found in a Phase 5b dump. The open-work terminal appears to be unparalleled amongst Anglo-Saxon pins, but there is some similarity between its tendrilled appearance and that on the elaborately decorated sword pommel found at Beckley, Oxon. (Webster 2001b, fig. 18.6). There is a strong likelihood that this pin is contemporary with the other silver-gilt pins from the site, and probably dates from the late 8th century.

Iron pins

A total of 115 iron pins were identified, of which 40 were represented only by shanks. As many of the features noted on the non-ferrous metal pins such as head types, presence/absence of collars and decoration, were also identified on the iron pins, these were typed using similar criteria. One major difference, however, is that the shanks were of two forms only, that is of circular section or of square section; none of the pins had shanks with swellings, and none was hipped. This is reflected in the coding (see Appendix 2, pp.45–6).

Type FE01 – pins with lead alloy heads

A dozen pins had iron shanks and separately made lead alloy heads; where the heads have been analysed, they are

either of lead (e.g. no. 693; RF 13432), a tin/lead alloy (no. 682; RF 5505) or a lead/tin alloy (no. 690; RF 8241). Where it is possible to see, the head appears to have been wrapped around the upper end of the shank; sometimes, the top of the shank protrudes above (e.g. no. 692; RF 11308). Five of the pins had tin or tin/lead plating on the shanks (nos 683, 685 and 688–90; RFs 5765, 4225, 3826, 3833, and 8241). Plating would provide a surface resistant to corrosion (Wilthew and Ottaway, 1992, 486), but the most likely function of the plating would have been to make the pin appear more attractive; pure tin would have produced a better decorative effect than the tin/lead alloys (*ibid.*). The lead alloy heads might also have been applied in imitation of silver. As FIG. 1.16 below shows, the pins were retrieved from Phase 4ii (mid-9th century) to Phase 6iii (mid–late 10th–early 11th century) levels; three were unstratified.

Types FE1 – FE3

As FIG. 1.15 below shows, **Types FE1 – FE3** are the main iron pin types, accounting for 75% of the typed pins. They copy many of the elements of their non-ferrous counterparts (**Types 1–3**) which represent three of the four most common copper alloy and silver pin types (see pp.33–4). They are generally plainer than their non-ferrous equivalents, although ring collars feature on some (e.g. **Type 111**), and others have heads with wrythen decoration (**Type 123**). While not generally employing the same decorative motifs as the non-ferrous pins, presumably because these were not easily applied to iron, other means of decoration in the form of plating was used quite consistently, appearing on over 50% of both Types FE1 and FE2 pins, and over 25% of Type FE3 pins. Most commonly, tin/lead platings were laid over the whole pin, but occasionally it appears on the head and top of the shank only (e.g. no. 712; RF 1697). Tin platings were found on only three pins (nos 711, 719 and 727; RFs 3150, 7349 and 7066). As with Type FE01, all these pin types occurred in greater numbers in Periods 5–6 than in Periods 1–4 (see FIG. 1.16 opposite).

Pin type	Number of pins	%age of all typed pins
FE01 – lead alloy head	12	16
FE1 – integral globular head	19	25.3
FE2 – integral polyhedral head	17	22.6
FE3 – integral biconical head	20	26.6
FE8 – integral inverted conical head	1	1.33
Miscellaneous	6	8
Total	75	c.100
Shanks	40	
Total	114	

FIG. 1.15. Iron pins by type.

FE8 – inverted conical-headed pin

A single example of this pin type (no. 750; RF 2606) was found in a Phase 6iii dark soil or occupation level; it has been tin-plated all over.

Miscellaneous pins

Two pins have separately made blue glass heads (nos 751–2; RFs 12234 and 5123); like their copper alloy counterpart (no. 563; RF 3481), they both come from 8th- to 9th-century deposits. Two unstratified pins (nos 754 and 755; RFs 12581 and 13430), the latter being plated, are unlike any contemporary non-ferrous pins, but may be Roman; both are similar to copper alloy pins described by Cool as having simple grooved heads, and dating mainly to the 2nd century (Cool 1990, 157, Group 5). Also unstratified, no. 753 (RF 11241) is incomplete, with a flattened and perforated end; its identification as a pin is uncertain, but two somewhat similar objects found at Coppergate were interpreted thus (Ottaway 1992, 695–6, 3808, 3812).

Patrick Ottaway comments that no 757 (RF 1956) is a small pin with a head resembling a shepherd's crook. Iron pins with this distinctive form are also known at Helgö, Sweden (Lundström and von Heland 1964, pl. 32, 3–4/9) and Ribe, Denmark (e.g. Dommerhaven and Kunstmuseets Have sites; Ottaway 2005) in contexts contemporary with the Middle Anglo-Saxon period.

Shanks

There is little comment to be made about these, apart from noting that seven had platings (nos 769, 774, 778, 788–9, 795 and 797; RFs 13410, 13414, 13578, 10491, 9455, 12417, and 11011).

Iron pins with non-ferrous heads as seen on Type FE01 have rarely been identified in the past, but they have been found at both Fishergate and Coppergate in York, at the former in 8th–9th century deposits (Rogers 1993a, 1367) and the latter in mid 9th- to early 10th-century contexts (Ottaway 1992, 693). A single example is also known from a Middle Saxon level at Wicken Bonhunt (Goodall and Ottaway forthcoming, sf375). Types FE1–3 have also been found at the same York sites (Ottaway 1992, 693; Rogers 1993a, 1367), and also at Cottam (Richards 1999b, 77); at all these sites, a number of pins had been plated. Other sites that have produced similar pins include Shakenoak (Brodribb *et al.*, 1972, 106), and Riby Crossroads (Ottaway 1994, 261, nos 65–6).

Bone pins

A total of 41 bone pins were studied, and they can be divided into two broad groups according to the bone types from which they were made (the bone identifications are by Sonia O'Connor).

The largest group, here termed Type B1, is made up of 33 pins, each fashioned from a cut strip of longbone compact tissue from a medium-sized animal; in one instance, the animal species is identified as possibly sheep (no. 627; RF 12341). Type B2 comprises eight pins, each made from the fibula bone of a pig.

Type B1

Apart from all being made from the same type of bone, these pins also share very similar head forms; apart from the spatulate head of no. 637 (RF 10977), the pins mainly comprise those with globular heads (e.g. no. 634; RF 12061) or with inverted conical heads (e.g. no. 635; RF

	Periods 2–4	Periods 5–6	Period 7 and U/S
FE01	3	6	3
FE1	2	10	7
FE2	5	7	4
FE3	1	8	11
FE8	-	1	-
Miscellaneous	2	-	3
Shanks	7	9	24
Total	20	41	52

FIG. 1.16. All iron pins by period.

	Periods 1–4	Periods 5–6	Period 7 and U/S	Total
Type B1	7	20	6	33
Type B2	3	3	2	8
Total	10	23	8	41

FIG. 1.17. Bone pins by period.

7323). The earliest deposit from which these pins derive is Phase 1b–2 (no. 621; RF 1118), but the majority (over 60%) were found in Periods 5–6 levels (see FIG. 1.17).

The Type B1 pins may best be compared to the type described as “spherical-headed” by MacGregor (1985, 117), a type which, he notes elsewhere, includes heads of varying regularity (MacGregor *et al.*, 1999, 1950), as do the Flixborough examples. A popular type in Roman Britain, they also occur sporadically throughout the Anglo-Saxon period, possibly enjoying something of a renaissance in the 8th–10th centuries (MacGregor 1985, 117). Apart from Coppergate, York where 17 were recovered – the majority from mid 9th- to late 10th-century deposits (MacGregor *et al.*, 1999, 1949–50) – they have also been found at Flaxengate, Lincoln in similarly dated contexts (Mann 1982, 10), while a single pin of this type was recovered from a grave at the 6th- to early 7th-century cemetery at Norton, Cleveland (Sherlock and Welch 1992, 188, Grave 104, fig. 63).

Type B2

These pins, somewhat ubiquitous on Anglo-Saxon sites, make use of a bone naturally shaped to act as a pin; all have been perforated at the head, and occasionally the head has been slightly shaped. These pins correlate to the Group 2 pig fibula pins from Coppergate, York where more than 70 were recovered (MacGregor *et al.*, 1999, 1950–1).

At Flixborough the earliest example came from a Phase 2–3bv level (no. 654; RF 901/7646), and although few in number, they appear scattered throughout all phases.

Pin dimensions and shank forms: the non-ferrous pins

Comparison of the dimensions and shank forms amongst the most numerous non-ferrous pin types (i.e. Types 1–5) reveals some clear differences apart from the obvious one of head shape.

As FIG. 1.18 illustrates, Type 4 and 5 pins exhibit a much smaller range of lengths and hence smaller average lengths, than the other three types, although the average shank diameters of all the types vary much less. Thus, though not apparently pins of a more delicate nature, the Types 4 and 5 pins were generally shorter. A study of the shank forms of all five types also reveals significant variations.

As FIGS 1.19 and 1.20 (below and opposite) demonstrate, the shape of the shank is much more consistently the same amongst the Type 4 and 5 pins; in both types, shanks of unvaried section, that is with no swelling or hipping, have been used in over 70% of the pins. Amongst Types 1–3, the most popular shank form in all types incorporates a swelling, although the unvaried section is also often used. Hipped shanks, where the shank may assume a square section usually close to the tip, form the smallest percentage. The significance, if any, of these differences in shank form, is not clear; it is unlikely to be linked to the manufacture of the pins, as almost certainly, pins of all these types would have been cast (Ross 1991, 112). It seems more likely that the swollen and hipped shanks, as opposed to those with no variation, relate to the particular application of these pins (see below).

Functions of the pins

Various possible applications of non-ferrous pins such as those from Flixborough have been suggested over the years; in some early types, clues as to their function have been given by the positions in which they have been found in burials. Linked pins similar to the Flixborough Type LIN1 were found in late 7th-century graves at Winnall, Hampshire; in one a pair was located at the shoulder, while in a second an individual pin was found close to the head (Meaney and Hawkes, 1970, 37). Elsewhere, they have also been found in the upper chest area, and all

Pin type	Range of lengths	Av. Length	Av. Shank diameter
Type 1	29–102	57.7	2.1
Type 2	37–95.5	59.25	2.2
Type 3	43–95	63.6	2
Type 4	52–57	53.9	1.9
Type 5	41–61	51.3	1.8

FIG. 1.18. Comparative dimensions of complete pins of Types 1–5.

Shank form	As %age of Type 1 shanks	As %age of Type 2 shanks	As %age of Type 3 shanks
Uncertain	20.8	9.1	27.3
Unvaried	18.2	33.3	24.7
Swollen	48.0	47.0	32.5
Hipped	13.0	10.6	15.6

FIG. 1.19. Pin Types 1–3 and shank forms.

Shank form	As %age of Type 4 shanks	As %age of Type 5 shanks
Uncertain	7.1	3.0
Unvaried	71.4	82.1
Swollen	21.4	10.4
Hipped	-	4.5

FIG. 1.20. Pin types 4 and 5 and shank forms.

were possibly securing head-dresses or veils (Ross 1991, 403). Found in similar locations, spiral-headed pins (Type 4) may also have been used to fasten head coverings (see for example Hawkes 1973, 283), although whether the pins were used in the same fashion during life as during burial is a moot point (Ross 1991, 409). It has also been noted by Hinton that spiral-headed pins are not specifically sex-linked in graves, and he suggests neither linked pins nor spiral-headed pins can be assumed to be exclusively female dress accessories (Hinton 1996, 36).

It has often been suggested that the swelling or hipping on a shank would prevent a pin slipping out of position once it had pierced the textiles on which it was being used (e.g. Rogers 1993a, 1361); the lack of such a feature on the shanks of most Type 4 and 5 pins may indicate that these pins were being used on different textiles, or in a different way, to the Type 1–3 pins. The slighter nature of the Types 4 and 5 pins revealed by the dimensional comparisons suggests that these could have been used on textiles in a manner which did not demand a robust or large pin, as on a veil for instance, or perhaps as hair pins. The larger and probably heavier Type 1–3 pins may have been used on more heavyweight textiles; Ross suggests that the flattened polyhedral-headed pins (Types 240–253), in particular, might have been used on clothing, as the head would lie flat against it (Ross 1991, 411). Another advantage of the larger pins with their large heads was the increased size of the area that could be decorated; at Flixborough, this was particularly made use of amongst the Type 2 pins (see above). Not surprisingly, the silver pins, being made of a more valuable metal, are on average smaller and more delicate than the copper alloy pins of similar forms.

A study of the dimensions of the complete iron pins reveals a range of lengths from 27mm (no. 698; RF 1935) to 75.5mm (no. 722; RF 11010), a somewhat smaller length range than their copper alloy counterparts, some of which reached lengths in excess of 95mm. It seems likely that the iron pins were nevertheless used in similar ways to the non-ferrous pins; examples of different forms recovered from 6th- to early 7th-century graves at Norton, Cleveland, came from areas close to the neck and chest, but also from beside the pelvis and the waist (Sherlock and Welch 1992, 42). An iron pin with spangles found in a grave at the Castledyke cemetery, and dating from the first half of the

6th century (Ross, 1998, 267) was positioned just below the throat when found, indicating that it may have pinned the front of a gown (Walton Rogers 1998, 276).

The complete Type BON1 pins range in length from 41mm (no. 628; RF 13906) to 89mm (no. 643; RF 819), the average length being 53.9mm. The pin from a grave in the Norton cemetery was found behind the skull, indicating that it may have acted as a hair pin, or to fix a veil (Sherlock and Welch 1992, 42). The Type BON2 pins are, on average, a much larger pin than Type BON1, although only five complete pins survive, ranging in length from 81mm (no. 654; RF 901/7646) to 110.5mm (no. 656; RF 5511). Whether these bone objects indeed were pins rather than needles has been a matter of debate for some time (see MacGregor 1985, 120–1); what is clear from those found at Flixborough is that the very different nature of their size and finish to the well-made Type B1 pins must indicate a different application, perhaps as fastenings for different types of garment, and perhaps using thread attached to the pin via the perforation. A pin of this type found in a grave at the Castledyke cemetery was interpreted as pinning the front of a gown (Walton Rogers 1998, 276). Such pins could have been made by the inhabitants on the site, as their manufacture clearly involved no craft skills (Mann 1982, 10).

Evidence for the manufacture of non-ferrous pins

Analysis of a large number of the copper alloy pins revealed evidence of manufacturing methods and/or techniques of finishing off roughly-made pins. Ross noted that the late 7th century saw the beginnings of the mass production of pins by pin makers, who would cast pins which would then be worked up into finished products (Ross 1991, 110).

Sometimes, heads on roughly cast pins might be forged or hammered (*op.cit.*, 136), and sometimes the spiral heads of the Type 4 pins were made by splitting the end of a shank and curling the two sides inwards (*op.cit.*, 269) but casting was the main method in use during the Middle Saxon period; there is no evidence for folding and rolling, an earlier method which had ceased to be used by this time (*op.cit.*, 136), or for widespread use of strip drawing, primarily a medieval method of manufacture (*op.cit.*, 140). Marks noted on the shanks of some of the Flixborough pins were interpreted as possible evidence that some pins

had been held in either a vice-like device or by some form of tongs whilst being worked during the final stages of manufacture, for example, removal of casting-flash lines, or creating faceting and other decoration on pin heads, using a file (see Appendix 3). Analysis also suggested that some pins **had** been drawn, e.g. no. 522 (RF 632; **Type 512**) (see Appendix 3, pp.46–7). Marks seen on the pins revealed methods of decoration and the tools used to make them (*ibid.*). Although some of the tool-marks observed on some of the pins may suggest they were incompletely finished off, there is very little evidence to suggest that the pins were actually being made on the site. There are three possibly unfinished pins: no. 527 (RF 2838; **Type 600**) has a head decorated on both faces with perforating ring-and-dot motifs, but one face has three ring-and-dot, the other two, the third perforation being undecorated. No. 543 (RF 7256; **Type 713**) may have been discarded before being finished; it is the only one of all the surviving Type 7 pins to be undecorated. Finally, the irregular head shape and faceting of no. 243 (RF 7517; **Type 110**) suggest that this pin may also have been discarded unfinished. Nonetheless, all three of these pins, imperfect as they were, could have been used, as could the pins with poor finishing, such as those with tool-marks; without moulds and other tools used in the manufacture of non-ferrous pins, it is impossible to prove manufacture on the site. The small range of types, and the predominance of just three types (**Types 1–3**) which make up over 60% of all the typed pins, and which appear on numerous sites across the country in the Middle Saxon period, also argue for production elsewhere.

Chronological distribution of the non-ferrous pins

Three pin types (Types 1–3) together represent approximately 62% of all the typed pins recovered (see FIG. 1.13 above) and as three of the four most frequently found types at Flixborough, they reflect a pattern seen at many other sites of the Anglo-Saxon period across the country: at Middle Saxon *Hamwic*, these types dominated the large assemblage of pins (Hinton 1996, 35), and at both Anglian Fishergate and Anglo-Scandinavian Coppergate in York they formed approximately 50% of all the non-ferrous pins (Rogers 1993a, 1361–7; Mainman and Rogers 2000, 2582). At

smaller sites, they have also been frequently recovered; at South Newbald, Leahy noted that 72 of the 81 non-ferrous pins (c.88%) were of these types (Leahy 2000, 79), and at Cottam, they represented almost 65% of the pins (*ibid.*). Indeed, Hinton suggests that the ubiquity of these pin types “is an argument for a considerable degree of uniformity of material culture in mid-Saxon England” (Hinton 1996, 36). As FIG. 1.21 (below) shows, however, at Flixborough, they were not the most frequently found types in the Middle Saxon period; Type 5 was the most frequently recovered type in Periods 1–4 (7th to mid 9th centuries), representing almost one-quarter of all the pins found in those phases. By contrast, Types 1 and 3 represent a higher percentage of the pin types found during Periods 5–6 (late 9th–11th centuries), while Type 5 decreased as a percentage of the pins recovered, and formed a very small percentage of the pins assemblage of Period 7 and the unstratified pins. It appears that Type 5 was one of the main Middle Saxon types used at Flixborough, its use decreasing in Periods 5–6, as Types 1 and 3 in particular are more commonly found.

Circumspection must be maintained, however, in any interpretation of the chronological spread of the non-ferrous pins at Flixborough; analysis of the chronological distribution of some of the well-known and apparently most securely dated types, such as both types of linked pins, indicated that every one of the dozen identified must have been recovered residually (see above). This also appeared to be the case with the zoomorphic-headed pins and the other elaborately decorated pins (see above). The large percentage of unstratified pins and those from topsoil (approx. 25%) must also affect the accuracy of any distributional analysis. Finally, it must be noted that none of the pins found in Period 5 onwards, that is the Later Saxon period, is of a type not found earlier, and no pins of a known Late Saxon type, such as those with the flat lozenge-shaped heads with knops as found in York (Rogers 1993a, 1363–4, 5370–1), were recovered. If it was accepted that all the pin types are indeed Middle Saxon, then the overall percentage of pins found residually could be as high as 57%. This must lead to great caution in any interpretation of the pattern of distribution amongst the other, apparently well stratified, pins.

	Periods 1–4	% of all pins in Periods 1–4	Periods 5–6	% of all pins in Periods 5–6	Period 7 and U/S	% of all pins in Period 7 and U/S
Type 1	16	14.8	37	20.1	23	23
Type 2	19	17.6	26	14.1	21	21
Type 3	11	10.2	31	16.8	36	36
Type 4	5	4.6	6	3.3	3	3
Type 5	26	24	33	17.9	8	8

NB Two pins (one **Type 1**, one **Type 3** were recovered from phase 0 = natural)

FIG. 1.21. Non-ferrous pin types 1–5 by period.

Amongst the iron pins, the percentage which is from topsoil or unstratified (45.6%) is almost twice as high as that for the non-ferrous metal pins (c.25%). It is interesting to note that the iron pin types 1–3 produce a similar chronological distribution to that of their non-ferrous counterparts, that is occurring more frequently in the later phases, although all types occur more commonly in Periods 5–6 than in earlier levels (see FIG. 1.16).

Pins as evidence of high status

As noted above, twenty silver pins were found, of which ten were gilded; eleven copper alloy pins were also gilded, the majority gilded on the head only. The gilt pins thus form approximately 5% of the whole non-ferrous pin assemblage, and imply a certain amount of high status living and wealth amongst the occupants. One silver-gilt pin (no. 665; RF 1127) comes from a Phase 1b–2 (mid-7th–early 8th century) occupation deposit, with which it is likely to be contemporary. All the other pins found in pre-Period 5 deposits derive from Phase 4ii ditch fills or dumps known to have contained considerable amounts of other high quality residual material, including metalwork. The highly decorative pins, including a linked pin, all came from deposits dated to Phase 5b (late 9th–early 10th century) or later, although, as the previous discussion makes clear, all are likely to date to the 8th century (see above), so all must be residual.

Conclusions

The pin assemblage from Flixborough has produced some important new information about Middle Saxon dress pins. First of all, certain pin types previously found rarely, and often overlooked in previous studies, have been found in considerable numbers; in particular, iron pins (previously found singly or in very small numbers), which make up approximately 20% of the whole pins assemblage, and amongst the non-ferrous pins, the headless type (Type 5), which has been shown to be the most frequently found type in the Middle Saxon period at the site, despite again being rarely identified elsewhere. In both these instances, it is likely that the absence of these types elsewhere is more apparent than real; Ross noted in 1991 that iron pins were probably far more widely employed than recovered material suggests, their absence from the archaeological record being the result of the poor survival of the material

in the ground (Ross 1991, 15). While headless pins have occasionally been identified elsewhere (e.g. Rogers 1993a), it seems very probable that, in the past, they have often been speedily added to the broken pins groupings; even in the 1990s study of non-ferrous material from *Hamwic*, no attempt was made to distinguish between ‘shafts that lack heads, and deliberately headless pins’ (Hinton 1996, 35). Analysis of the upper ends of the headless pin shanks has so far produced equivocal results, unable to distinguish between the presence of solder, and preferential corrosion (see above), and more work needs to be done, particularly on other headless pin assemblages, to identify what type of heads these pins would have had. The glass-headed pin (no. 563; RF 3481) shows that glass was certainly one type of material used, but it is possible that other materials may also have been employed.

Intimations of wealth and high status of a proportion of the population at the site, during the 8th century in particular, are afforded by the highly decorated large headed pins, and the use of silver and of gilding for a small number of pins. These add to the picture already provided by some of the other quality metalwork associated with dress, including brooches and jewellery; much of this metalwork, as with the pins, appears to have been retrieved from mainly residual contexts. But the majority of the non-ferrous pins fit into the most typical pin types of the Middle Saxon period, seen across the country on contemporary sites from Yorkshire to East Anglia to Hampshire; only two types occurring in small numbers at Flixborough (Type 6 Disc-headed; Type 8 Inverted conical-headed) can be said to be particular to the north of England.

Evidence for the use of pins in the Late Saxon period is confusing; virtually all the pin types found at Flixborough occur in Middle Saxon as well as later deposits, but most occur in higher numbers in Periods 5–6 and later. Ross has noted, however, that excavations at Late Saxon cities such as London, Ipswich and Winchester have produced very few pins, leading him to suggest that this form of dress fastening was much less commonly used in the later Saxon period (Ross 1991, 455). Flixborough’s lack of any of the limited number of later pin types, such as the lozenge-shaped head with knops found in London (Pritchard 1991, 150), and 11th-century levels in York (Mainman and Rogers 2000, 2580, 10473), as well as significant amounts of well-dated pins being found residually, do point to the

Pin material	Periods 1–4	Period 5	Period 6	Period 7 and U/S	Total
Silver	2	2	4	2	10
Silver with gilding	1	1	5	3	10
Copper alloy with gilding	3	-	3	5	11
Total	6	3	12	10	31

FIG. 1.22. Silver and gilt pins by period.

likelihood that the bulk of the Flixborough non-ferrous pins originated in the Middle Saxon period. Amongst the iron pins, most parallels also appear to be mainly Middle Saxon; it is really only amongst the small assemblage of bone pins, particularly those of Type BON1, that use in Periods 5–6 is a strong possibility.

Appendix 1 Non-ferrous pin types – coding

Type 1 Globular head

- 100 No collar, shank form unknown, no decoration on head
- 101 No collar, shank section unvaried, no decoration on head
- 102 No collar, shank swollen, no decoration on head
- 103 No collar, shank hippled/square at tip, no decoration on head
- 110 Collar, shank form unknown, no decoration on head
- 111 Collar, shank section unvaried, no decoration on head
- 112 Collar, shank swollen, no decoration on head
- 113 Collar, shank hippled/square at tip, no decoration on head
- 120 No collar, shank form unknown, decoration on head
- 121 No collar, shank section unvaried, decoration on head
- 122 No collar, shank swollen, decoration on head
- 123 No collar, shank hippled/square at tip, decoration on head
- 130 Collar, shank form unknown, decoration on head
- 131 Collar, shank section unvaried, decoration on head
- 132 Collar, shank swollen, decoration on head
- 133 Collar, shank hippled/square at tip, decoration on head

Type 2 Faceted (polyhedral) head

- 200 Polyhedral head, no collar, shank form unknown, no decoration on head
- 201 Polyhedral head, no collar, shank section unvaried, no decoration on head
- 202 Polyhedral head, no collar, shank swollen, no decoration on head
- 203 Polyhedral head, no collar, shank hippled/square at tip, no decoration on head
- 210 Polyhedral head, collar, shank form unknown, no decoration on head
- 211 Polyhedral head, collar, shank section unvaried, no decoration on head
- 212 Polyhedral head, collar, shank swollen, no decoration on head
- 213 Polyhedral head, collar, shank hippled/square at tip, no decoration on head
- 220 Polyhedral head, no collar, shank form unknown, decoration on head
- 221 Polyhedral head, no collar, shank section unvaried, decoration on head
- 222 Polyhedral head, no collar, shank swollen, decoration on head
- 223 Polyhedral head, no collar, shank hippled/square at tip, decoration on head
- 230 Polyhedral head, collar, shank form unknown, decoration on head
- 231 Polyhedral head, collar, shank section unvaried, decoration on head
- 232 Polyhedral head, collar, shank swollen, decoration on head
- 233 Polyhedral head, collar, shank hippled/square at tip, decoration on head

Type 3 Biconical head

- 300 Biconical head, conical top, no medial band, no collar, shank form unknown
- 301 Biconical head, conical top, no medial band, no collar, shank form unknown
- 302 Biconical head, conical top, no medial band, no collar, shank swollen
- 303 Biconical head, conical top, no medial band, no collar, shank hippled/square at tip
- 310 Biconical head, conical top, no medial band, collar, shank form unknown
- 311 Biconical head, conical top, no medial band, collar, shank section unvaried
- 312 Biconical head, conical top, no medial band, collar, shank swollen
- 313 Biconical head, conical top, no medial band, collar, shank hippled/square at tip
- 320 Biconical head, conical top, medial band, no collar, shank form unknown
- 321 Biconical head, conical top, medial band, no collar, shank section unvaried
- 322 Biconical head, conical top, medial band, no collar, shank swollen
- 323 Biconical head, conical top, medial band, no collar, shank hippled/square at tip
- 330 Biconical head, conical top, medial band, collar, shank form unknown
- 331 Biconical head, conical top, medial band, collar, shank section unvaried
- 332 Biconical head, conical top, medial band, collar, shank swollen
- 333 Biconical head, conical top, medial band, collar, shank hippled/square at tip
- 340 Biconical head, flat head, no medial band, no collar, shank form unknown
- 341 Biconical head, flat head, no medial band, no collar, shank section unvaried
- 342 Biconical head, flat head, no medial band, no collar, shank swollen
- 343 Biconical head, flat head, no medial band, no collar, shank hippled/square at tip
- 350 Biconical head, flat head, no medial band, collar, shank form unknown
- 351 Biconical head, flat head, no medial band, collar, shank section unvaried
- 352 Biconical head, flat head, no medial band, collar, shank swollen
- 353 Biconical head, flat head, no medial band, collar, shank hippled/square at tip
- 360 Biconical head, flat head, medial band, no collar, shank form unknown
- 361 Biconical head, flat head, medial band, no collar, shank section unvaried
- 362 Biconical head, flat head, medial band, no collar, shank swollen
- 363 Biconical head, flat head, medial band, no collar, shank hippled/square at tip
- 370 Biconical head, flat head, medial band, collar, shank form unknown

- 371 Biconical head, flat head, medial band, collar, shank section unvaried
- 372 Biconical head, flat head, medial band, collar, shank swollen
- 373 Biconical head, flat head, medial band, collar, shank hippled/square at tip

Type 4 Spiral-headed

- 400 Spiral-headed, shank form unknown, no decoration
- 401 Spiral-headed, shank section unvaried, no decoration
- 402 Spiral-headed, shank swollen, no decoration
- 403 Spiral-headed, shank hippled/square at tip, no decoration
- 410 Spiral-headed, shank form unknown, decoration
- 411 Spiral-headed, shank section unvaried, decoration
- 412 Spiral-headed, shank swollen, decoration
- 413 Spiral-headed, shank hippled/square at tip, decoration

Type 5 Headless

- 500 Headless, shank form unknown, no grooves
- 501 Headless, shank section unvaried, no grooves
- 502 Headless, shank swollen, no grooves
- 503 Headless, shank hippled/square at tip, no grooves
- 510 Headless, shank form unknown, grooves
- 511 Headless, shank section unvaried, grooves
- 512 Headless, shank swollen, grooves
- 513 Headless, shank hippled/square at tip, grooves

Type 6 Disc-headed

- 600 Disc-headed, no collar, shank form unknown, decoration
- 601 Disc-headed, no collar, shank section unvaried, decoration
- 602 Disc-headed, no collar, shank swollen, decoration
- 603 Disc-headed, no collar, shank hippled/square at tip, decoration

Type 7 Triangular/trapezoidal-headed

- 700 Flat triangular/trapezoidal head, shank form unknown
- 701 Flat, triangular/trapezoidal head, shank section unvaried
- 702 Flat triangular/trapezoidal head, shank swollen
- 703 Flat triangular/trapezoidal head, shank hippled/square at tip

Type 8 Inverted conical

- 800 Inverted conical head, no collar, shank form unknown, no decoration on head
- 801 Inverted conical head, no collar, shank section unvaried, no decoration on head
- 802 Inverted conical head, no collar, shank swollen, no decoration on head
- 803 Inverted conical head, no collar, shank hippled/square at tip, no decoration on head
- 810 Inverted conical head, collar, shank form unknown, no decoration on head
- 811 Inverted conical head, collar, shank section unvaried, no decoration on head
- 812 Inverted conical head, collar, shank swollen, no decoration on head
- 813 Inverted conical head, collar, shank hippled/square at tip, no decoration on head
- 820 Inverted conical head, no collar, shank form unknown, decoration on head
- 821 Inverted conical head, no collar, shank section unvaried, decoration on head

- 822 Inverted conical head, no collar, shank swollen, decoration on head
- 823 Inverted conical head, no collar, shank hippled/square at tip, decoration on head
- 830 Inverted conical head, collar, shank form unknown, decoration on head
- 831 Inverted conical head, collar, shank section unvaried, decoration on head
- 832 Inverted conical head, collar, shank swollen, decoration on head
- 833 Inverted conical head, collar, shank hippled/square at tip, decoration on head

Type 9 Faceted dome headed

- 900 Faceted dome-shaped head, no collar, shank form unknown
- 901 Faceted dome-shaped head, no collar, shank section unvaried
- 902 Faceted dome-shaped head, shank swollen
- 903 Faceted dome-shaped head, shank hippled/square at tip

Shanks

- Type 090 – shank form unknown
- Type 090 – shank section unvaried
- Type 092 – shank swollen
- Type 093 – shank hippled/square at tip

Appendix 2 Ferrous pin types – coding

Type FE01 – lead heads

- FE010 Lead head, shank form unknown
- FE011 Lead head, shank section unvaried
- FE013 Lead head, shank of square section

Type FE1 – globular heads

- FE100 Globular head, no collar, shank form unknown
- FE101 Globular head, no collar, shank section unvaried
- FE103 Globular head, no collar, shank of square section
- FE110 Globular head, collar, shank form unknown
- FE111 Globular head, collar, shank section unvaried
- FE113 Globular head, collar, shank of square section
- FE120 Globular head, no collar, shank form unknown, decoration on head
- FE121 Globular head, no collar, shank section unvaried, decoration on head
- FE123 Globular head, no collar, shank of square section, decoration on head

Type FE2 – polyhedral heads

- FE200 Polyhedral head, no collar, shank form unknown
- FE201 Polyhedral head, no collar, shank section unvaried
- FE203 Polyhedral head, no collar, shank of square section
- FE210 Polyhedral head, collar, shank form unknown
- FE211 Polyhedral head, collar, shank section unvaried
- FE213 Polyhedral head, collar, shank of square section
- FE220 Polyhedral head, no collar, shank form unknown, decoration on head
- FE221 Polyhedral head, no collar, shank section unvaried, decoration on head
- FE223 Polyhedral head, no collar, shank of square section, decoration on head
- FE230 Polyhedral head, collar, shank form unknown, decoration on head

- FE231 Polyhedral head, collar, shank section unvaried, decoration on head
 FE233 Polyhedral head, collar, shank of square section, decoration on head

Type FE3 – Biconical heads

- FE300 Biconical head, conical top, no collar, shank form unknown
 FE301 Biconical head, conical top, no collar, shank section unvaried
 FE303 Biconical head, conical top, no collar, shank of square section
 FE310 Biconical head, conical top, collar, shank form unknown
 FE311 Biconical head, conical top, collar, shank section unvaried
 FE313 Biconical head, conical top, collar, shank of square section

Type FE8 – Inverted conical head

- FE800 Inverted conical head, no collar, shank form unknown
 FE801 Inverted conical head, no collar, shank section unvaried
 FE803 Inverted conical head, no collar, shank of square section
 FE810 Inverted conical head, collar, shank form unknown
 FE811 Inverted conical head, collar, shank section unvaried
 FE813 Inverted conical head, collar, shank of square section

Type FE09 – shanks

- FE090 Shank form unknown
 FE091 Shank section unvaried
 FE093 Shank of square section

Type 000 – Miscellaneous pins

Appendix 3 Investigative conservation of the pins by Ian Panter

The copper alloy pins

A detailed study of a sample of the copper alloy pins (180 out of 445) revealed the presence of enigmatic marks within the patinated surface. These consist of a series of “ladder”-like marks running along the shanks. Two broad groups have been identified: the first comprised of sets of fine lines running parallel to the shank with a series of feint grooves at right-angles within these lines, and the second group is much coarser, with usually a series of deeper lines/grooves at right angles to the shank, but without the parallel lines. Furthermore, similar features were observed on a number of other objects, in particular a silver stylus (no. 1006; RF 6143), illustrated in PL. 1.10. A clear example of the coarser type of mark is seen on the pin of brooch no. 15 (RF 11043) which is illustrated in PL. 1.11.

What these marks represent is still open to debate. Given that the majority of pins examined had very little surface corrosion and required only the removal of surface sand with a soft brush, then the marks must relate to some stage of the fabrication process, rather than the effects of conservation. The marks were observed on pins with both straight and hipped shanks, as well as those which

had either been cast or pulled through a draw-plate. The most plausible explanation to date is that the pin had been cramped in either a vice-like device, or held tight by some form of tongs whilst being worked during the final stages of manufacture, for example, removal of casting flash lines or creating faceting and other decoration on pin heads, using a file. Until practical experiments are undertaken attempting to replicate these marks, their precise function must remain unknown.

Evidence preserved within the patinas suggests that tools such as an awl or drill, a scribe and a draw-plate were employed either to produce that actual pin, or to add decoration. When a metal rod is pulled through a draw-plate, characteristic striations running along its length remain within the surface. Similar features were observed in a few pins, for example cat.no. 522 (RF 632) which is illustrated in PL. 1.12.

Many of the heads have been decorated, either by use of files to create facets (see pin head no. 417; RF 2643; PL. 1.13), or by more specialist tools such as a “scribe”, which is used to fashion the typical ring-and-dot design. The concentric cuts made by such a tool are still visible within the ring scribed onto the top of the cuboid pin head (no. 336; RF 711), shown in PL. 1.14, for example. The use of a drill or awl will also leave characteristic striations, and such a tool was used making the design on pin head no. 535 (RF 7106; PL.1.15).

The evidence to suggest that pins were being made on site is rather ambiguous. Only one example of an unfinished pin was recorded (no. 527, RF 2838; PLs 1.16 and 1.17). Here, one side of the flattened head has three inscribed ring and dots, whilst the other side has only two, suggesting that the head was not completed. This alone does not imply that it was made at Flixborough. The rough appearance of many of the pins, with tool-marks clearly visible, may imply that a certain amount of fine polishing was required before the article could be considered complete. Or was it the fashion to wear such items that appear crude to the naked eye? The finding of such items as an iron file (no. 3092; FIG. 10.1), still with copper traces within its teeth, certainly indicates some form of metal-working, but not necessarily on a large scale. Without the presence of moulds and draw-plates, it is impossible to state with certainty that Flixborough was a centre of pin production.

Further Analysis of pins using XRF

To complete the programme of investigative conservation, a small number of artefacts were analysed by energy dispersive X-ray Fluorescence, using the M/C EDAX Eagle 2 system at the Centre for Archaeology, English Heritage, Portsmouth.

X-ray fluorescence is a standard investigative technique, but will only analyse the surface of an artefact and therefore must be considered as a qualitative technique, rather than a quantitative one. Nevertheless, the technique is useful in that it provides a rapid identification of a material.

Copper alloy pins with traces of ?solder

Traces of white metal or deposit were observed on a number of headless copper alloy pins (nos 469, 471, 478, 490, 506, 513 and 516). In an attempt to confirm the presence of solder, an area of the pin shank and the head was analysed using EDXRF, looking for the presence of tin and lead, working on the assumption that the solder would be a tin/lead alloy. In almost all cases, the base alloy was a tertiary one, being composed of copper, tin and lead. As the proportions for tin and lead were very similar along the shank and the head, it was impossible to prove by XRF that solder was present. The one exception is pin no. 516 (RF 2311), where there was a higher proportion of tin around the head region compared to the shank, and a corresponding lower copper concentration. But whether this indicates the presence of solder is still unclear. The affect may be the result of preferential corrosion.

Copper alloy pins with ?glass heads

It was not possible to use XRF for the analysis of pins nos 490 and 564 (RFs 3293 and 613).

Iron pins with lead heads

No. 691 (RF 9891) – a high proportion of tin was identified, and traces of lead.

No. 692 (RF 11308) – a high proportion of lead and lower amounts of tin.

There are two possibilities – either a pinhead of another material has been soldered onto the iron shank using a lead/tin solder, or that pin no. 691 had a tin head, whilst no. 692 had a lead one. It is more likely that the residues are traces of solder, rather than that the actual pinhead remains.

Catalogue of the copper alloy pins

(Figs 1.23–1.27; Pls 1.6–1.9)

NB All shanks are of circular section unless otherwise stated

Type 1 pins – globular heads (Fig. 1.23)

TYPE 100 GLOBULAR HEAD, NO COLLAR, SHANK FORM UNKNOWN

233 Incomplete, lower part of shank broken away, globular head **100**

L.38.5 Head D.6.5 Shank section D.2mm

RF 12416, Context 10772, Phase 2–4ii.

234 Incomplete, lower part of shank broken off, globular head **100**

L.39.5 Head D.4 Shank section D.2mm

RF 5994, Context 5930, Phase 6i.

235 Incomplete, end of shank broken off, irregularly globular head **100**

L.32 Head D.8.5 Shank section D.2mm

RF 943, Unstratified.

TYPE 101 GLOBULAR HEAD, NO COLLAR, SHANK SECTION UNVARIED

236 Complete apart from shank tip, globular head, shank section unvaried **101**

L.56.5 Head D.7.5 Shank section D.2mm

RF 10948, Context 10772, Phase 2–4ii.

237 Complete, globular head, shank section unvaried **101**

L.47 Head D.3 Shank section D.1.5mm

RF 1124, Context 968, Phase 3bi–3bv.

238 Complete apart from extreme tip, small globular head, grooves on shank just below head, shank section unvaried **101a**

L.49 Head D.3.5 Shank section D.2mm

RF 5353, Context 3758, Phase 4ii.

TYPE 102 GLOBULAR HEAD, NO COLLAR, SHANK SWOLLEN

(Fig. 1.23)

239 Complete but with concretion making identification uncertain, globular head, shank swelling towards tip **102**

L.64 Head D.4.5 Shank section D.2.5mm

RF 8817, Context 8787, Phase 4ii.

240 Complete, sub-globular head, shank swollen towards tip **102**

L.57 Head D.4 Shank section D.2mm. (Fig. 1.23)

RF 6328, Context 5930, Phase 6i.

241 Complete, flattened globular head, shank swollen towards tip **102**

L.49 Head D.4 Shank section D.2mm

RF 3822, Context 3989, Phase 6iii.

TYPE 110 GLOBULAR HEAD, COLLAR, SHANK FORM UNKNOWN

(Fig. 1.23)

242 Incomplete, part of shank broken away, globular head, ring collar **110**

L.26.5 Head D.6.5 Shank section D.2mm

RF 3407, Context 3107, Phase 4ii.

243 Incomplete, most of shank broken off, irregularly globular head shaped by faceting, collar **110**

L.40 Head D.7.5 Shank section D.2mm. (Fig. 1.23)

RF 7517, Context 7506, Phase 6i.

244 Incomplete, lower end of shank broken off, globular head, ring collar. Analysis: Cu/Pb/Sn detected, high lead content may account for white deposit – lead corrosion products. **110**

L.26.5 Head D.6 Shank section D.2mm

RF 7228, Context 7152, Phase 6i–6ii.

245 Incomplete, globular head, double ring collar, shank broken off **110**

L.24.5 Head D.4.5 Shank Section D.2mm

RF 235, Context 1, Topsoil.

246 Incomplete, globular head, ring collar, part of shank broken away **110**

L.32 Head D.7 shank section D.2.5mm

RF 328, Context 1, Topsoil.

247 Incomplete, part of shank broken away, globular head, ring collar **110**

L.29 Head D.8 Shank section D.1.5mm

RF 3408, Unstratified.

248 Incomplete, most of shank broken away, globular head, ring collar **110**

L.17 Head D.8 Shank section D.1.5mm

RF 12808, Unstratified.

249 Incomplete, most of shank broken off, globular head, ring collar **110**

L.26 Head D.6 Shank section D.1.5mm

RF 13467, Unstratified.

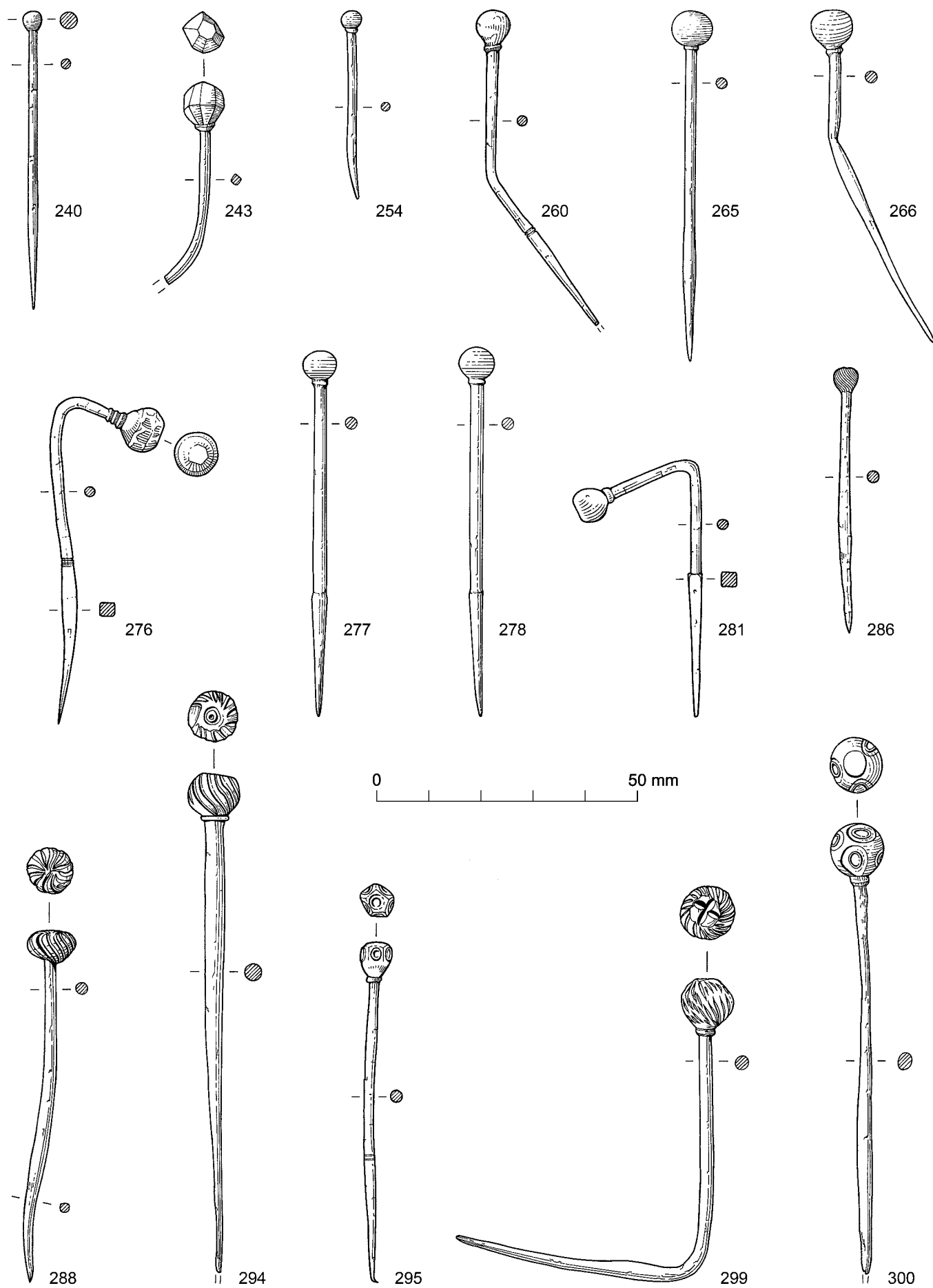


FIG. 1.23. Copper alloy pins of Type 1. Scale 1:1.

TYPE 111 GLOBULAR HEAD, COLLAR, SHANK SECTION

UNVARIED (FIG. 1.23)

- 250 Complete, globular head, irregular ring collar, shank section unvaried **111**
L.42 Head D.4 Shank section D.2mm
RF 2839, Context 4, Phase 0.
- 251 Complete, globular head shaped by faceting, ring collar, shank section unvaried **111**
L.61 Head D.5.5 Shank section D.2mm
RF 3447, Context 3107, Phase 4ii.
- 252 Complete, globular head, gilt, ring collar, shank section unvaried. Analysis: XRF—brass, with mercury-gilded head. **111**
L.43 Head D.4.5 Shank section D.1.5mm
RF 7244, Unstratified.
- 253 Complete, sub-globular head, ring collar, shank section unvaried **111**
L.63 Head D.6 Shank section D.2mm
RF 12456, Unstratified.
- 254 (*described from illustration only*) Complete, globular head, ring collar, shank section unvaried, whole gilded. Analysis: XRF – main alloy is bronze with added lead, and a trace of silver. The pin has been mercury-gilded. **111**
L.36 Head D.4 Shank section D.2mm. (FIG. 1.23)
RF 14132, Unstratified.

TYPE 112 GLOBULAR HEAD, COLLAR, SHANK SWOLLEN

(FIG. 1.23)

- 255 Complete, globular, ring collar, shank swollen towards tip **112**
L.67 Head D.6.5 Shank section D.2.5mm
RF 4257, Context 3107, Phase 4ii.
- 256 Complete, globular head, double ring collar, shank slightly swollen towards tip **112**
L.29 Head D.3 Shank section D.1.5mm
RF 6117, Context 3107, Phase 4ii.
- 257 Complete apart from extreme tip, globular head with flat top, ring collar, shank swollen towards tip **112**
L.52.5 Head D.7.5 Shank section D.2mm
RF 3133, Context 3107, Phase 4ii.
- 258 Complete, globular head, irregular collar, shank slightly swollen towards tip **112**
L.55.5 Head D.4.5 Shank section D.2mm
RF 6012, Context 5140, Phase 5a.
- 259 Complete, globular head, ring collar, shank swollen towards tip **112**
L.52 Head D.6.5 Shank section D.2.5mm
RF 2694, Context 2611, Phase 5a.
- 260 Complete, globular head, ring collar, shank slightly swollen towards tip at point where there are two incised grooves **112**
L.66.5 Head D.6.5 Shank section D.2mm. (FIG. 1.23)
RF 3268, Context 2718, Phase 5a–6ii.
- 261 Complete, globular head, ring collar, shank swollen towards tip **112**
L.75 Head D.6 Shank section D.3mm
RF 2436, Context 1728, Phase 5b.
- 262 Complete, globular head, ring collar, shank swollen towards tip which has leather attached **112**
L.53.5 Head D.4 Shank section D.2mm
RF 5781, Context 5553, Phase 5b.

- 263 Complete, globular head, double ring collar, shank swollen towards tip **112**

L.75 Head D.4 Shank section D.2.5mm
RF 1986, Context 1672, Phase 5b–6i.

- 264 Complete apart from extreme tip, globular head, ring collar, shank swollen towards tip **112**
L.38.5 Head D.4 Shank section D.2.5mm
RF 4247, Context 4044, Phase 6ii.

- 265 Complete, globular head, ring collar, shank swollen towards tip **112**
L.67 Head D.7.5 Shank section D.2.5mm. (FIG. 1.23)
RF 4229, Context 3891, Phase 6ii.

- 266 Complete, globular head, ring collar, shank slightly swollen towards tip **112**
L.69 Head D.8 Shank section D. 2mm. (FIG. 1.23)
RF 4875, Context 3610, Phase 6ii.

- 267 Complete apart from extreme tip, sub-globular head, double ring collar, shank slightly swollen towards tip **112**
L.47 Head D.4.5 Shank section D.2.5mm
RF 4174, Context 3891, Phase 6ii.

- 268 Complete, globular head, ring collar, shank swollen towards tip **112**
L.59.5 Head D.6.5 Shank section D.2mm
RF 4275, Context 3891, Phase 6ii.

- 269 Complete, globular head, ring collar, shank swollen towards tip **112**
L.53.5 Head D.5 Shank section D.2mm
RF 4488, Context 3989, Phase 6iii.

- 270 Complete, sub-globular head, ring collar, shank slightly swollen **112**
L.52.5 Head D.5 Shank section D.2mm
RF 476, Context 458, Topsoil.

- 271 Complete apart from extreme tip of shank, globular head, ring collar, shank slightly swollen towards tip **112**
L.54 Head D.6 Shank section D.2mm
RF 11941, Unstratified.

- 272 Complete, globular head, irregular ring collar, very slight swelling of shank towards tip **112**
L.53 Head D.6 Shank section D.2mm
RF 2599, Unstratified.

- 273 Complete, irregular globular head, ring collar, shank swollen towards tip **112**
L.41.5 Head D.6.5 Shank section D.2mm
RF 838, Unstratified.

- 274 Incomplete, lower part of shank broken away, globular head, ring collar, slight swelling on shank close to break **112**
L.36 Head D.7.5 Shank section D.2mm
RF 50012, Unstratified.

TYPE 113 GLOBULAR HEAD, COLLAR, SHANK HIPPED/SQUARE AT TIP (FIG. 1.23)

- 275 Complete, globular head, double ring collar, shank hipped slightly towards tip **113**
L.68 Head D.7 Shank section D.2mm
RF 5185, Context 3758, Phase 4ii.
- 276 Complete, globular head, shaped by faceting, flat top, triple collar, shank hipped below four incised grooves **113**
L.82 Head D.8.5 Shank section D.2mm. (FIG. 1.23)
RF 3646, Context 3610, Phase 6ii.

- 277 Complete, globular head, ring collar, lowest third of shank hipped, paired with RF 3722 **113**
L.70 Head D.6.5 Shank section D.2.5mm. (FIG. 1.23)
RF 3721, Context 3610, Phase 6ii.
- 278 Complete, globular head, ring collar, lowest third of shank hipped, paired with RF 3721 **113**
L.71 Head D.6.5 Shank section D.2.5mm. (FIG. 1.23)
RF 3722, Context 3610, Phase 6ii.
- 279 Complete, globular head, ring collar, lower end of shank hipped **113**
L.60.5 Head D.8 Shank section D.2mm
RF 3230, Context 3242, Phase 6iii.
- 280 Incomplete, lower part of shank broken away just below point where shank changes to square section, globular head, faceted, ring collar **113**
L.59.5 Head D.8.5 Shank section D.2.5mm
RF 4389, Context 3989, Phase 6iii.
- 281 Complete, globular head flat-topped, ring collar, hipped shank **113**
L.73 Head D.6 Shank section D.2mm. (FIG. 1.23)
RF 329, Context 1, Topsoil.
- 282 Complete, globular head, top flattened, sides faceted, ring collar, shank changes to square section just below three incised grooves **113**
L.61.5 Head D.6.5 Shank section D.2mm
RF 12454, Unstratified.
- TYPE 120 GLOBULAR HEAD, NO COLLAR, SHANK FORM UNKNOWN, DECORATION ON HEAD
- 283 Incomplete, part of shank broken off, globular head with wrythen decoration **120**
L.20 Head D.4 Shank section D.1.5mm
RF 5680, Context 5139, Phase 5a.
- TYPE 121 GLOBULAR HEAD, NO COLLAR, SHANK SECTION UNVARIED, DECORATION ON HEAD
- 284 Complete, globular head, wrythen decoration, groove below head, shank section unvaried **121**
L.60.5 Head D.5.5 Shank section D.2mm
RF 3875, Context 3322, Phase 1b–2.
- 285 Complete, globular head with ring-and-dot decoration, shank section unvaried **121**
L.61 Head D.5.5 Shank section D.2mm
RF 11213, Unstratified.
- TYPE 122 GLOBULAR HEAD, NO COLLAR, SHANK SWOLLEN, DECORATION ON HEAD (FIG. 1.23)
- 286 Complete, globular head with wrythen decoration, shank swollen towards tip **122**
L.50.5 Head D.4.5 Shank section D.2.5mm. (FIG. 1.23)
RF 12424, Context 10772, Phase 2–4ii.
- 287 Complete, globular head with wrythen decoration, shank swollen towards tip **122**
L.61 Head D.5.5 Shank section D.2mm
RF 1734, Context 1439, Phase 6iii.
- TYPE 123 GLOBULAR HEAD, NO COLLAR, SHANK HIPPED/SQUARE AT TIP, DECORATION ON HEAD (FIG. 1.23)
- 288 Complete, flattened globular head, wrythen decoration, shank section changes to square towards tip **123**
L.67 Head D.9 Shank section D.2.5mm. (FIG. 1.23)
RF 6856, Context 6300, Phase 6iii–7.
- 289 Complete, sub-globular head with wrythen decoration, shank hipped towards tip, lower part of shank bent up **123**
L.61 Head D.9 Shank section D.2.5mm
RF 11969, Unstratified.
- TYPE 130 GLOBULAR HEAD, COLLAR, SHANK FORM UNKNOWN, DECORATION ON HEAD
- 290 Incomplete, lower end of shank broken off, globular head with wrythen decoration, irregular collar, **130**
L.46 Head D.5 shank section D.2mm
RF 6031, Context 5885, Phase 5a.
- 291 Incomplete, most of shank broken away, sub-globular head, top flat, decorated with stamped ring-and-dot, ring collar **130**
L.29.5 Head D.10 Shank section D.2mm
RF 4258, Context 3989, Phase 6iii.
- 292 Incomplete, end of shank broken off, globular head with wrythen decoration, ring collar **130**
L.34.5 Head D.8.5 Shank section D.2mm
RF 844, Unstratified.
- 293 Incomplete, part of shank broken off, globular head with wrythen decoration, gilded, ring collar. Analysis: bronze pin, head mercury gilded **130**
L.26 Head D.8.5 Shank section D.2.5mm
RF 11942, Unstratified.
- TYPE 131 GLOBULAR HEAD, COLLAR, SHANK SECTION UNVARIED, DECORATION ON HEAD (FIG. 1.23)
- 294 Complete apart from extreme tip which has broken off, globular head, wrythen decoration, ring-and-dot on top, ring collar, shank section unvaried **131**
L.96 Head D.10 Shank section D.3mm. (FIG. 1.23)
RF 6838, Context 6803, Phase 5b–6i.
- 295 Complete, sub-globular head, top flattened, top and sides decorated with stamped ring-and-dot, ring collar, shank section unvaried with two incised lines towards tip **131**
L.64.5 Head D.6 Shank section D.2mm. (FIG. 1.23)
RF 2616, Context 2488, Phase 5b–6ii.
- 296 Complete, globular head decorated with stamped ring-and-dot motifs, ring collar, shank section unvaried **131**
L.59 Head D.6 Shank section D.2mm
RF 12459, Unstratified.
- TYPE 132 GLOBULAR HEAD, COLLAR, SHANK SWOLLEN, DECORATION ON HEAD (FIG. 1.23)
- 297 Complete apart from extreme tip, globular head, with wrythen decoration, ring collar, slight swelling on shank towards tip **132**
L.50 Head D.6.5 Shank section D.2.5mm
RF 4390, Context 3107, Phase 4ii.
- 298 Complete, globular head, upper half with wrythen decoration, ring collar, shank swollen towards tip **132**
L.41 Head D.4.5 Shank section D.2mm
RF 2712, Context 2668, Phase 5a–5b.
- 299 Complete, large, globular head, top flat with incised saltire, with wrythen decoration, ring collar, shank swollen towards tip **132**
L.102 Head D.10 Shank section D.2.5mm. (FIG. 1.23)
RF 2194, Context 2023, Phase 6iii.
- 300 Complete apart from extreme tip of shank, large globular head with flat top, decorated with ring-and-dot motifs all

round, ring collar, shank swollen towards tip **132**
 L.86 Head D.10.5 Shank section D.3mm. (Fig. 1.23)
 RF 1580, Unstratified.

Type 2 pins – polyhedral heads (Fig. 1.24)

TYPE 200 POLYHEDRAL HEAD, NO COLLAR, SHANK FORM UNKNOWN

301 Incomplete, most of shank broken away, small polyhedral head, of square section, lozenge-shaped facets on top and sides, triangular corner facets **200**

L.24.5 Head L.3.5 W.3 Shank section D.2mm

RF 11927, Context 3758, Phase 4ii.

302 Incomplete, part of shank broken off, polyhedral head, of squarish section, lozenge-shaped facets on top and sides, triangular corner facets **200**

L.33 Head L.4.5 W.3 Shank section D.1.5mm

RF 5711, Context 5139, Phase 5a.

303 Incomplete, shank broken off, head distorted and corroded but appears polyhedral and faceted **200**

L.17.5 Head W.10 Shank section 3mm

RF 7968, Unstratified.

TYPE 201 POLYHEDRAL HEAD, NO COLLAR, SHANK SECTION

UNVARIED

304 Complete, polyhedral head, of square section, irregular lozenge-shaped facets on top and sides, triangular corner facets, shank section unvaried **201**

L.44.5 Head L.5 W.5 Shank section D.2mm

RF 5735, Context 5373, Phase 5a–5b.

TYPE 202 POLYHEDRAL HEAD, NO COLLAR, SHANK SWOLLEN

305 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, triangular corner facets, slight swelling on shank towards tip **202**

L.57 Head L.5.5 W.3.5 Shank section D.2.5mm

RF 11992, Unstratified.

TYPE 210 POLYHEDRAL HEAD, COLLAR, SHANK FORM UNKNOWN

306 Incomplete, lower part of shank broken off, polyhedral head of square section, lozenge-shaped facets on top and sides, triangular corner facets, ring collar **210**

L.34 Head L.6 W.6.5 Shank section D.1.5mm

RF 12462, Unstratified.

TYPE 211 POLYHEDRAL HEAD, COLLAR, SHANK SECTION

UNVARIED (Fig. 1.24)

307 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, triangular corner facets, ring collar, shank section unvaried **211**

L.59 Head L.5.5 W.5 Shank section D.2.5mm. (Fig. 1.24)

RF 3037, Context 2860, Phase 2i–4ii.

308 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, triangular corner facets, ring collar, shank section unvaried **211**

L.57 Head L.4 W.3 Shank section D.2mm

RF 2078, Context 2015, Phase 6iii.

TYPE 212 POLYHEDRAL HEAD, COLLAR, SHANK SWOLLEN

309 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, triangular corner facets, triple ring collar, shank swollen towards tip **212**

L.59 Head L.3.5 W.4 Shank section D.2mm

RF 5451, Context 3758, Phase 4ii.

310 Complete, polyhedral head of square section, lozenge-

shaped facets on top and sides, triangular corner facets, ring collar, shank swollen towards tip **212**

L.52 Head L.5 W.5 Shank section D.2mm

RF 11833, Context 8652, Phase 5b.

311 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, triangular corner facets, ring collar, shank swollen towards tip **212**

L.57 Head L.5 W.4 Shank section D.2.5mm

RF 6837, Context 6798, Phase 6i.

312 Complete, polyhedral head of square section, lozenge-shaped facets on sides and top, triangular corner facets, ring collar, shank swollen towards tip **212**

L.54 Head L.4 W.3.5 Shank section D.2mm

RF 6911, Context 6907, Phase 6i.

313 Complete, polyhedral head of square section, lozenge-shaped facets on sides and top, double ring collar, shank swelling towards tip **212**

L.52.5 Head L.3.5 W.3 Shank section D.2.5mm

RF 6975, Context 5988, Phase 6i.

314 Incomplete, lower part of shank broken off, polyhedral head of square section, lozenge-shaped facets on top and sides, triangular corner facets, ring collar, shank swollen towards break **212**

L.48 Head L.6 W.4 Shank section D.2.5mm

RF 50018, Unstratified.

315 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, triangular corner facets, double ring collar, shank swollen towards tip **212**

L.55 Head L.4 W.3.5 Shank section D.2.5mm

RF 12760, Unstratified.

TYPE 220 POLYHEDRAL HEAD, NO COLLAR, SHANK FORM UNKNOWN, DECORATION ON HEAD (Fig. 1.24)

316 Incomplete, part of shank broken away, baluster-shaped head, top square, lozenge-shaped side facets each with dot **220**

L.33.5 Head L.7.5 W.2 Shank section D.2mm. (Fig. 1.24)

RF 4207, Context 3989, Phase 6iii.

TYPE 221 POLYHEDRAL HEAD, NO COLLAR, SHANK SECTION

UNVARIED, DECORATION ON HEAD (Fig. 1.24)

317 Complete apart from shank tip, small, polyhedral head, of square section, lozenge-shaped facets on top and sides, triangular corner facets, sides decorated with ring-and-dot, shank section unvaried **221**

L.37 Head L.5 W.4 Shank section D.1.5mm

RF 10947, Context 10772, Phase 2–4ii.

318 Complete apart from shank tip which has broken off, polyhedral head, of sub-square section, lozenge-shaped facets on sides and top, sides decorated with ring-and-dot, triangular corner facets, shank section unvaried **221**

L.56 Head L.7.5 W.7.5 Th.6.5 Shank section D.2.5mm

RF 3473, Context 3349, Phase 3bi–3bv.

319 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets, deep groove below head, shank section unvaried **221**

L.66.5 Head L.5.5 W.4 Shank section D.1.5mm

RF 3406, Context 3107, Phase 4ii.

320 Complete apart from extreme tip, polyhedral head of square section, top and sides lozenge-shaped, each side with

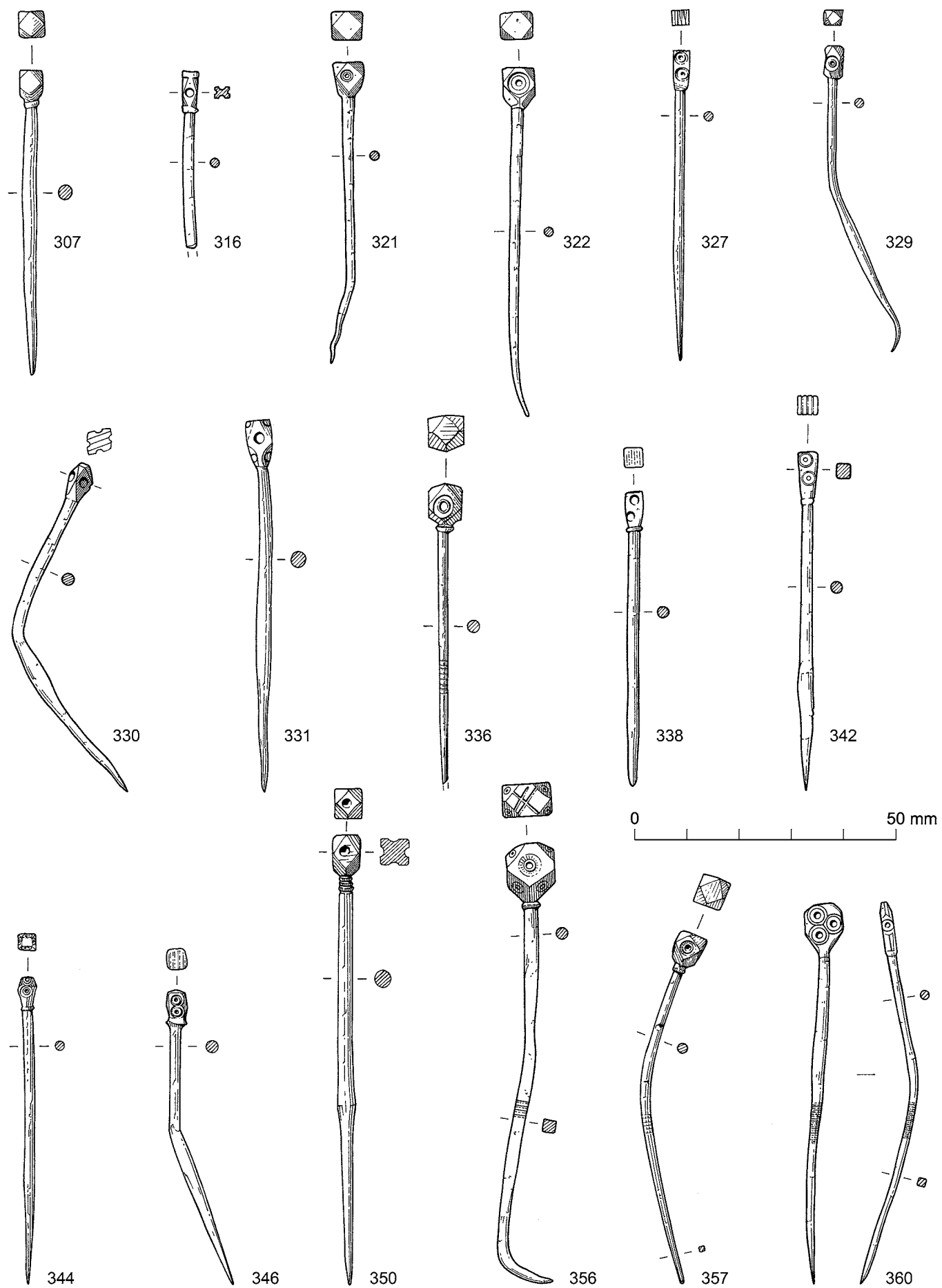


FIG. 1.24. Copper alloy pins of Type 2. Scale 1:1.

- stamped dot, triangular corner facets, shank section unvaried **221**
L.52 Head L.4 W.4 Shank section D.3mm
RF 5459, Context 3758, Phase 4ii.
- 321 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets, shank section unvaried **221**
L.58.5 Head L.6 W.5.5 Shank section D.2mm. (Fig. 1.24)
RF 8464, Context 8189, Phase 5b.
- 322 Complete, polyhedral head, of squarish section, lozenge-shaped facets on top and sides, side facets decorated with ring-and-dot, corner triangular facets, shank section unvaried **221**
L.67.5 Head L.8.5 W.6.5 Th.6 Shank section D.2mm. (Fig. 1.24)
RF 1376, Context 1307, Phase 6iii.
- 323 Complete apart from extreme tip, polyhedral head of square section, lozenge-shaped facets on head and sides, side facets decorated with ring-and-dot, triangular corner facets, shank section unvaried **221**
L.55 Head L.7.5 W.5 Shank section D.1.5mm
RF 1630, Context 1454, Phase 6iii.
- 324 Complete, small polyhedral head of square section, lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets, shank section unvaried **221**
L.58 Head L.5.5 W.3 Shank section D.2mm
RF 1641, Context 1456, Phase 6iii.
- 325 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets some with file marks, shank section unvaried **221**
L.57 Head L.4.5 W.3.5 Shank section D.1.5mm
RF 3505, Context 3451, Phase 6iii.
- TYPE 222 POLYHEDRAL HEAD, NO COLLAR, SHANK SWOLLEN, DECORATION ON HEAD (Fig. 1.24)
- 326 Complete, polyhedral head, of square section, trapezoidal sides, top decorated with irregular incised cross-hatching, sides with pairs of ring-and-dot, shank swollen towards tip **222**
L.58.5 Head L.7.5 W.4 Shank section D.2.5mm
RF 2878, Context 2861, Phase 2i–4ii.
- 327 Complete, polyhedral head of square section, top with decorative grooves, sides sub-rectangular, each side decorated with two rings-and-dots, shank slightly swollen towards tip **222**
L.59 Head L.7 W.3 Shank section D.2mm. (Fig. 1.24)
RF 5457, Context 3758, Phase 4ii.
- 328 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets, shank swollen towards tip **222**
L.62.5 Head L.5 W.4 Shank section D.2mm
RF 7684, Context 7551, Phase 5a–5b.
- 329 Complete, polyhedral head of square section, irregular lozenge-shaped facets on top and sides, triangular corner facets, sides decorated with ring-and-dot, shank swollen towards tip **222**
L.63 Head L.5.5 W.3.5 Shank section D.2mm. (Fig. 1.24)
RF 11021, Context 6472, Phase 5b–6i.
- 330 Complete with narrow polyhedral head, of square section, lozenge-shaped facets on sides and top, sides decorated with dots, triangular corner facets, shank swollen towards tip **222**
L.73 Head L.7 W.3.5 Th.3.5 Shank section D.3mm. (Fig. 1.24)
RF 1967, Context 1812, Phase 6iii.
- 331 Complete, polyhedral head of square section, lozenge-shaped facets on sides and top, triangular corner facets, every facet decorated with punched dot, swollen shank **222**
L.71 Head L.8, W.5 Shank section D.3mm. (Fig. 1.24)
RF 35, Context 1, Topsoil.
- 332 Complete, polyhedral head, of square section, octagonal facet on top, sub-lozenge shaped facets on sides, all decorated with ring-and-dot, triangular corner facets, shank slightly swollen towards tip **222**
L.64.5 Head L.8 W.5 Shank section D.2mm
RF 11968, Unstratified.
- 333 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, top and sides with ring-and-dot, triangular corner facets, shank swells towards tip **222**
L.66 Head L.9 W.5.5 Shank section D.2mm
RF 8572, Unstratified.
- TYPE 223 POLYHEDRAL HEAD, NO COLLAR, SHANK HIPPED/SQUARE AT TIP, DECORATION ON HEAD
- 334 Complete, polyhedral head of square section, top and side facets unclear but appear hexagonal, each side with single ring-and-dot, triangular corner facets, shank section changes to square towards tip **223**
L.58 Head L.5 W.4 Shank section D.2mm
RF 7 398, Unstratified.
- TYPE 231 POLYHEDRAL HEAD, COLLAR, SHANK SECTION UNVARIED, DECORATION ON HEAD (Fig. 1.24)
- 335 Complete, polyhedral head, of square section, trapezoidal sides each decorated with pair of ring-and-dot, ring collar, shank section unvaried **231**
L.52.5 Head L.4.5 W.3 Shank section D.2mm
RF 3628, Context 3346, Period 2.
- 336 Complete apart from extreme tip, polyhedral head of square section, lozenge-shaped facets on top and sides, side facets decorated with single ring-and-dot, triangular corner facets, ring collar, shank section unvaried with eight incised grooves towards tip **231**
L.57 Head L.7 W.7 Th.5.5 Shank section D.2mm. (Fig. 1.24)
RF 711, Context 750, Phase 2–3a.
- 337 Incomplete, in two fragments and very corroded, polyhedral head, of square section, top broken away, sides appear trapezoidal but obscured, stamped ring-and-dot on each side, possible collar, shank section unvaried **231**
L.56.5 Shank section D.2mm
RF 5975, Context 3758, Phase 4ii.
- 338 Complete, polyhedral head of square section, sides sub-rectangular and each decorated with pair of ring-and-dot, top square with two shallow grooves, collar, shank section unvaried **231**
L.56.5 Head L.7.5, W.4 Shank section D.2.5mm. (Fig. 1.24)
RF 2364, Context 1728, Phase 5b.

- 339 Complete, polyhedral head of rectangular section, lozenge-shaped facets on top and sides, each side decorated with single ring-and-dot, irregular collar, shank section unvaried **231**
L.68.5 Head L.9 W.7 Shank section D.2mm
RF 7131, Context 7054, Phase 6ii–6iii.
- 340 Complete, polyhedral head of rectangular section, lozenge-shaped facets on top and sides, each side decorated with single ring-and-dot, triangular facets in corners, ring collar, shank section unvaried with decorative incised lines **231**
L. 71.5 Head L.8 W.6 Shank section D.2mm
RF 549, Context 535, Phase 6iii.
- 341 Complete apart from extreme tip of shank, polyhedral head of square section, irregular lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets, ring collar, shank section unvaried **231**
L.55.5 Head L.7 W.5.5 Shank section D.1.5mm
RF 12339, Unstratified.
- TYPE 232 POLYHEDRAL HEAD, COLLAR, SHANK SWOLLEN, DECORATION ON HEAD (FIG. 1.24)
- 342 Complete, polyhedral head of square section, trapezoidal sides, top of head decorated with incised grooves, sides with pairs of ring-and-dot, collar, shank swollen towards tip **232**
L.64 Head L.8 W.3.5 Shank section D.3mm. (FIG. 1.24)
RF 3383, Context 3331, Phase 3bi–3bv.
- 343 Complete, but very corroded, elongated polyhedral head, biconical, upper sides smaller than lower, of square section, top square, sides trapezoidal, all eight faces decorated with ring-and-dot, collar, shank swollen towards tip **232**
L.57 Head L.6 W.3.5 Shank section D.2.5mm
RF 7682, Context 7681, Phase 3bi–3bv.
- 344 Complete, elongated polyhedral head, biconical, upper faces smaller than lower, of square section, top square, sides trapezoidal, all eight faces decorated with ring-and-dot, ring collar, shank swollen towards tip **232**
L.58.5 Head L.5.5 W.3 Shank section D.2mm. (FIG. 1.24)
RF 4252, Context 3107, Phase 4ii.
- 345 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, top with deeply stamped dot, sides with stamped ring-and-dot, triangular corner facets, triple ring collar, shank swollen towards tip **232**
L.64.5 Head L.5.5 W.4 Shank section D.2.5mm
RF 6129, Context 5503, Phase 4ii.
- 346 Complete, polyhedral head, biconical, of square section, top squared with decorative grooves, sides trapezoidal, all eight faces decorated with ring-and-dot, shank swollen towards tip **232**
L.59 Head L.6.5 W.4 Shank section D.2.5mm. (FIG. 1.24)
RF 8801, Context 8787, Phase 4ii.
- 347 Complete, polyhedral head, of square section, top with incised cross-hatching, trapezoidal sides each with three stamped ring-and-dot, collar, shank swollen towards tip **232**
L.60.5 Head L.8 W.3.5 Shank section D.2.5mm
RF 5953, Context 5885, Phase 5a.
- 348 Complete, polyhedral head of squarish section, head much corroded, lozenge-shaped facets on top and sides, sides each appear to have four stamped dots, ring collar, slight swelling on shank **232**
L.69.5 Head L.8 W.6 Shank section D.2.5mm
RF 6561, Context 6489, Phase 6ii–6iii.
- 349 Complete, polyhedral head of square section, gilt, lozenge-shaped facets on top and sides, upper corner facets triangular, lower lozenge-shaped, all facets decorated with punched dots, ring collar, shank swollen close to tip. Analysis: XRF – bronze alloy with mercury-gilded head. Spots of gilding on shank – (?) splashes from head **232**
L.65 Head L.8 W.6 Shank section D.2.5mm
RF 7245, Context 6300, Phase 6iii–7.
- 350 Complete, polyhedral head of square section, lozenge-shaped facets on sides and top, all decorated with stamped ring-and-dot, triangular corner facets, triple collar, swelling on shank towards tip **232**
L.86.5 Head L.7 W.6 Shank section D.3.5mm. (FIG. 1.24)
RF 7447, Context 7533, Period 7.
- 351 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets, one cutting into ring collar below, shank swollen towards tip **232**
L.53 Head L.5.5 W.3.5 Shank section D.2mm
RF 30, Unstratified.
- 352 Complete, polyhedral head of sub-square section, lozenge-shaped facets on top and sides, triangular corner facets, sides decorated with ring-and-dot, ring collar, shank slightly swollen towards tip **232**
L.63 Head L.7.5 W.6 Th.5 Shank section D.2mm
RF 10922, Unstratified.
- 353 Complete apart from extreme tip, polyhedral head, of squarish section, lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets, ring collar, shank swollen towards tip **232**
L.55.5 Head L.9 W.6.5 Shank section D.2mm
RF 11970, Unstratified.
- 354 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, sides decorated with ring-and-dot, triangular corner facets, ring collar, shank swollen towards tip **232**
L.64 Head L.9 W.6 Shank section D.2mm
RF 12455, Unstratified.
- 355 Complete, polyhedral head of square section, top with irregular pattern of incised lines, sides sub-trapezoidal and all decorated with line of three rings-and-dots, ring collar, shank slightly swollen towards tip **232**
L.52.5 Head L.9 W.3 Shank section D.2mm
RF 50020, Unstratified.
- TYPE 233 POLYHEDRAL HEAD, COLLAR, SHANK HIPPED/SQUARE AT TIP, DECORATION ON HEAD (FIG. 1.24)
- 356 Complete, polyhedral head of rectangular section, hexagonal facets on top and sides, top with incised cross-hatching, sides and triangular corner facets all with ring-and-dot, ring collar, four incised grooves on shank where section changes to square **233**
L.95.5 Head L.10 W.9 Th.6.5 Shank section D.3mm. (FIG. 1.24)
RF 10369, Context 3107, Phase 4ii.
- 357 Complete, polyhedral head of square section, lozenge-shaped facets on sides and top, sides decorated with ring-and-dot, ring collar, shank changes to square section at tip **233**

L.68 Head L.7 W.5.5 Shank section D2mm. (Fig. 1.24)
RF 1992, Context 1707, Phase 5a–5b.

- 358 Complete, polyhedral head, of square section, lozenge-shaped facets on sides and top, each side decorated with single stamped ring-and-dot, triangular corner facets, ring collar, pair of incised lines on shank as section changes to square towards tip **233**

L.65 Head L.8 W.6.5 Shank section D.2mm
RF 7328, Unstratified.

TYPE 240 FLATTENED POLYHEDRAL HEAD, NO COLLAR, HEAD DECORATED, SHANK UNKNOWN

- 359 Incomplete, lower end of shank broken off, polyhedral head of rectangular section, hexagonally-shaped facets on sides and top, sides decorated with double-ring-and-dot, triangular corner facets **240**

L.35.5 Head L.7 W.7.5 Th.5 Shank section D.2mm
RF 1803, Context 1728, Phase 5b.

TYPE 243 FLATTENED POLYHEDRAL HEAD, HEAD DECORATED, SHANK HIPPED/SQUARE AT TIP (Fig. 1.24)

- 360 Complete, polyhedral head, of narrow rectangular section, octagonal faces, small hexagonal facets on sides, faces and facets decorated with ring-and-dot, slight collar, incised lines on shank at point where section becomes square **243**

L.74 Head L.8 W.7.5 Th.3 Shank section D.2mm. (Fig. 1.24)
RF 10621, Context 3421, Phase 5b–6.

TYPE 251 FLATTENED POLYHEDRAL HEAD, RING COLLAR, HEAD DECORATED, SHANK SECTION UNVARIED

- 361 Complete, polyhedral head of rectangular section, lozenge-shaped facet on top, hexagonal facets on sides which each have single ring-and-dot, triangular corner facets, ring collar, shank section unvaried with two incised lines close to tip **251**

L.61.5 Head L.7 W.5.5 Th.4 Shank section D.2mm
RF 7329, Unstratified.

- 362 Complete, polyhedral head, of rectangular section, lozenge-shaped facets on sides and top, broad sides decorated with ring-and-dot, triangular corner facets, ring collar, shank section unvaried **251**

L.66.5 Head L.8 W.7 Th.3 Shank section D.2mm
RF 12758, Unstratified.

TYPE 253 FLATTENED POLYHEDRAL HEAD, RING COLLAR, HEAD DECORATED, SHANK HIPPED/SQUARE AT TIP

- 363 Complete, polyhedral head of rectangular section, hexagonal-shaped facets on top and sides, sides each have single ring-and-dot, triangular corner facets, collar, most of shank has square section, with four incised lines close to tip **253**

L.65 Head L.8.5 W.7 Th.4.5 Shank section D.2mm
RF 7397, Context 6300, Phase 6iii–7.

- 364 Complete, polyhedral head, of narrow rectangular section, octagonal faces, small hexagonal facets on sides and top, faces and facets decorated with ring-and-dot, slight collar, shank section becomes square towards tip **253**

L.67 Head L.9.5 W.7 Th.3.5 Shank section D.2mm
RF 12763, Unstratified.

- 365 Complete, polyhedral head of rectangular section, hexagonal facet on top, irregular polygonal facets on sides, one of narrow sides with ring-and-dot, irregular collar, shank changes to square section towards tip, incised lines at point of section change **253**

L.68 Head L.7.5 W.6 Th.3 Shank section D.2mm
RF 13197, Unstratified.

Type 3 pins – biconical heads (Fig. 1.25)

TYPE 300 BICONICAL HEAD, CONICAL TOP, SHANK FORM UNKNOWN

- 366 Incomplete, most of shank broken off, biconical head, conical top **300**

L.16 Head D.9 Shank section D.3mm
RF 7950, Unstratified.

- 367 Incomplete, lower part of shank broken off, biconical head, conical top **300**

L.49.5 Head D.8 Shank section D.2mm
RF 12461, Unstratified.

- 368 Incomplete, shank completely broken off, biconical head, conical top **300**

Head D.7.5mm
RF 12468, Unstratified.

TYPE 302 BICONICAL HEAD, CONICAL TOP, SHANK SWOLLEN

- 369 Complete, biconical head, conical top, two grooves on shank below head, shank swollen towards tip **302**

L.47 Head D.4 Shank section D.1.5mm
RF 6588, Context 6489, Phase 6ii–6iii.

- 370 Complete, biconical head, conical top, shank swollen towards tip **302**

L.55.5 Head D.6 Shank section D.2mm
RF 6712, Context 6499, Phase 6ii–6iii.

- 371 Complete, biconical head, flattened conical top, shallow broad groove around shank below head, slight swelling on shank **302**

L.59.5 Head D.6 Shank section D.2.5mm
RF 11990, Unstratified.

TYPE 310 BICONICAL HEAD, CONICAL TOP, COLLAR, SHANK FORM UNKNOWN

- 372 Incomplete, lower end of shank broken off, biconical head, conical top, ring collar **310**

L.26 Head D.8.5 Shank section D.2mm
RF 1821, Context 1450, Phase 6iii.

- 373 Incomplete, most of shank broken off, biconical head, rounded conical top, ring collar **310**

L.30 Head D.8 Shank section D.2mm
RF 11944, Unstratified.

- 374 Incomplete, most of shank broken off, biconical head, conical top, ring collar **310**

L.30 Head D.7.5 Shank section D.2mm
RF 13911, Unstratified.

TYPE 311 BICONICAL HEAD, CONICAL TOP, COLLAR, SHANK SECTION UNVARIED (Fig. 1.25)

- 375 Complete, biconical head, rounded conical top, ring collar, shank section unvaried **311**

L.51.5 Head D.4.5 Shank section D.1.5mm. (Fig. 1.25)
RF 5663, Context 5139, Phase 5a.

- 376 Complete, biconical head, conical top, ring collar, shank section unvaried with three incised grooves towards tip **311**

L.79.5 Head D.8.5 Shank section D.2mm
RF 3422, Context 3421, Phase 5b–6.

- 377 Complete, biconical head, conical top, ring collar, shank section unvaried **311**

L.61 Head D.6 Shank section D.2mm
RF 6775, Context 6300, Phase 6iii–7.

- 378 Complete, biconical head, conical top, ring collar, shank section unvaried **311**
L.49.5 Head D.4.5 Shank section D.2mm
RF 1978, Unstratified.
- 379 Complete, biconical head, conical top, ring collar, shank section unvaried **311**
L.74.5 Head D.7.5 Shank section D.1.5mm
RF 7255, Unstratified.
- 380 Complete but in two fragments, biconical head, conical top, ring collar, shank section unvaried **311**
L.61.5 Head D.7 Shank section D.2mm
RF 12419, Unstratified.
- TYPE 312 BICONICAL HEAD, CONICAL TOP, COLLAR, SHANK SWOLLEN
- 381 Complete, biconical head, conical top, decorated on sides and top with stamped ring-and-dot, ring collar, shank slightly swollen towards tip **312**
L.62 Head D.6 Shank section D.2mm
RF 2266, Context 4, Phase 0.
- 382 Complete, biconical head, conical top, ring collar, shank swollen towards tip **312**
L.43 Head D.5 Shank section D.2mm
RF 6079, Context 6036, Phase 5b.
- 383 Complete, irregular biconical head, conical top, ring collar, shank swollen **312**
L.54 Head D.5 Shank section D.2mm
RF 5251, Context 4195, Phase 5b–6i.
- 384 Complete, biconical head, conical top, ring collar, shank swollen towards tip **312**
L.44 Head D.4 Shank section D.2mm
RF 6862, Context 6798, Phase 6i.
- 385 Complete, biconical head, conical top, ring collar, shank swollen towards tip **312**
L.48 Head D.4 Shank section D.2mm
RF 7642, Context 5871, Phase 6i.
- 386 Complete, biconical head, conical top, ring collar, shank swollen towards tip **312**
L.73 Head D.7.5 Shank section D.2mm
RF 6587, Context 6489, Phase 6ii–6iii.
- 387 Complete, biconical head, conical top, collar, shank swollen towards tip **312**
L.48 Head D.4.5 Shank section D.2mm
RF 7797, Context 7123, Phase 6iii.
- 388 Complete apart from extreme tip, biconical head, ring collar, swollen shank towards tip **312**
L.43 Head D.4 Shank section D.2mm
RF 553, Unstratified.
- TYPE 313 BICONICAL HEAD, CONICAL TOP, COLLAR, SHANK HIPPED/
SQUARE AT TIP (FIG. 1.25)
- 389 Complete, biconical head, conical top, ring collar, hipped shank **313**
L.53 Head D.5 Shank section D.2mm
RF 464, Context 463, Phase 2–3bv.
- 390 Complete, biconical head, top rounded, double ring collar, three grooves on shank at point where section changes to square **313**
L.62 Head D.6 Shank section D.2mm. (FIG. 1.25)
RF 3847, Context 3989, Phase 6iii.
- TYPE 320 BICONICAL HEAD, CONICAL TOP, MEDIAL BAND, SHANK
FORM UNKNOWN
- 391 Incomplete, most of shank broken away, biconical head, conical top, medial band **320**
L.23.5 Head D.7.5 Shank section D.1.5mm
RF 7259, Unstratified.
- 392 Incomplete, most of shank broken off, biconical head, conical top, medial band **320**
L.19.5 Head D.7 Shank section D.2mm
RF 12337, Unstratified.
- 393 Incomplete, most of shank broken off, biconical head, conical top, medial band **320**
L.22 Head D.8.5 Shank section D.2.5mm
RF 12761, Unstratified.
- TYPE 330 BICONICAL HEAD, CONICAL TOP, MEDIAL BAND, COLLAR,
SHANK FORM UNKNOWN
- 394 Incomplete, lower part of shank broken off, biconical head, conical top, medial band, ring collar **330**
L.26.5 Head D.7 Shank section D.2mm
RF 6481, Context 6471, Phase 6ii.
- 395 Incomplete, lower part of shank broken away, biconical head, conical top, medial band, ring collar **330**
L.40.5 Head D.9.5 Shank section D.2.5
RF 6609, Context 6499, Phase 6ii–6iii.
- 396 Incomplete, most of shank broken away, irregular biconical head, conical top, medial band, triple ring collar **330**
L.19.5 Head D.6.5 Shank section D.2mm
RF 2624, Context 2024, Phase 6iii.
- 397 Incomplete, lower part of shank broken away, biconical head, conical top, medial band, ring collar **330**
L.49.5 Head D.8.5 Shank section D.2mm
RF 6713, Context 6300, Phase 6iii–7.
- 398 Incomplete shank, large biconical head, conical top decorated with ring-and-dot in three triangular fields defined by pairs of incised lines, similar decoration on underside, three concentric incised grooves around medial band, ring collar **330**
L.41 Head D.10 Shank section D.3mm
RF 462, Context 463, Phase 2–3bv.
- 399 Incomplete, end of shank broken away, biconical head, conical top, irregular medial band, ring collar **330**
L.40.5 Head D.8.5 Shank section D.1.5mm
RF 963, Unstratified.
- 400 Incomplete, lower part of shank broken off, biconical head, conical top, medial band, ring collar **330**
L.34.5 Head D.8.5 Shank section D.2mm
RF 7953, Unstratified.
- 401 Incomplete, lower part of shank broken off, biconical head, rounded conical top, medial band, ring collar **330**
L.43 Head D.11 Shank section D.2.5mm
RF 11971, Unstratified.
- 402 Incomplete, most of shank broken off, biconical head, conical top, medial band, large ring collar **330**
L.27 Head D.11 Shank section D.2.5mm
RF 12457, Unstratified.
- 403 Incomplete, shank completely broken away, biconical head, conical top, medial band, ring collar **330**
Head D.11.5mm
RF 12916, Unstratified.

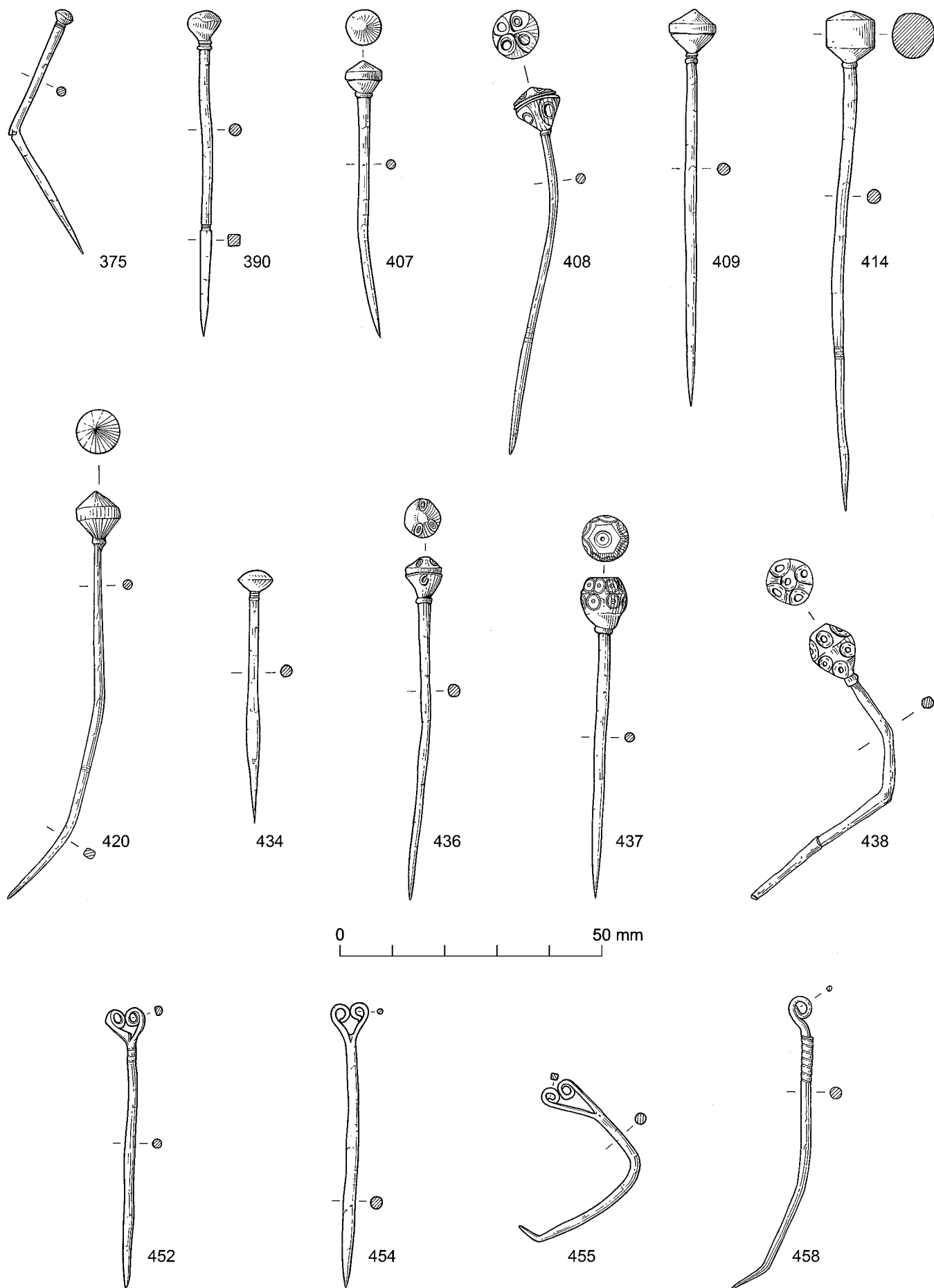


FIG. 1.25. Copper alloy pins of Types 3 and 4. Scale 1:1.

- 404 Incomplete, most of shank broken away, biconical head, conical top, medial band, ring collar **330**
L.12 Head D.7.5 Shank section D.2mm
RF 13773, Unstratified.
- 405 Incomplete, most of shank broken away, biconical head, conical top, medial band, irregular collar **330**
L.14 Head D.8 Shank section D.1.5mm
RF 13888, Unstratified.
- TYPE 331 BICONICAL HEAD, CONICAL TOP, MEDIAL BAND, COLLAR, SHANK SECTION UNVARIED (FIG. 1.25)
- 406 Complete, biconical head, conical top, narrow medial band, ring collar, five incised grooves on shank towards tip, shank section unvaried **331**
L.65 Head D.7 Shank section D.2mm
RF 4106, Context 3107, Phase 4ii.
- 407 Complete, biconical head, conical top, medial band, ring collar, shank section unvaried **331**
L.53.5 Head D.6.5 Shank section D.2mm. (FIG. 1.25)
RF 3445, Context 3107, Phase 4ii.
- 408 Complete, biconical head, conical top, double groove around medial band, ring-and-dot above and below band, ring collar, four incised lines around shank towards tip, shank section unvaried **331**
L.70.5 Head D.8.5 Shank section D.2mm. (FIG. 1.25)
RF 1858, Context 1831, Phase 6ii–6iii.
- 409 Complete, biconical head, conical top, medial band, double ring collar, shank section unvaried **331**
L.76 Head D.8.5 Shank section D.2mm. (FIG. 1.25)
RF 330, Context 1, Topsoil.
- 410 Complete, biconical head, conical top, medial band, ring collar, shank section unvaried, rounded tip **331**
L.46 Head D.7 Shank section D.1.5mm
RF 680, Context 458, Topsoil.
- 411 Complete, biconical head, conical top, medial band, ring collar, shank section unvaried **331**
L.55 Head D.7 Shank section D.2mm
RF 12361, Unstratified.
- 412 Complete, biconical head, conical top, medial band, ring collar, shank section unvaried, four incised grooves towards tip **331**
L.65.5 Head D.6 Shank section D.2mm
RF 12458, Unstratified.
- 413 Complete, biconical head, conical top, medial band, ring collar, shank section unvaried **331**
L.48 Head D.9.5 Shank section D.2mm
RF 12757, Unstratified.
- TYPE 332 BICONICAL HEAD, CONICAL TOP, MEDIAL BAND, COLLAR, SHANK SWOLLEN (FIG. 1.25)
- 414 Complete, biconical head, conical top, broad medial band, ring collar, shank swelling slightly towards tip, incised grooves at point of swelling **332**
L.95 Head D.9.5 Shank section D.2mm. (FIG. 1.25)
RF 8525, Context 8149, Phase 6ii.
- 415 Complete apart from extreme tip, biconical head, conical top, medial band, ring collar, shank swollen towards tip **332**
L.56.5 Head D.7.5 Shank section D.2mm
RF 7296, Context 6498, Phase 6ii–6iii.
- TYPE 333 BICONICAL HEAD, CONICAL TOP, MEDIAL BAND, COLLAR, SHANK HIPPED/SQUARE AT TIP (FIG. 1.25)
- 416 Complete apart from shank tip, biconical head, conical top, medial band, ring collar, shank of square section at break **333**
L.49 Head D.7.5 Shank section D.2mm
RF 3404, Context 3107, Phase 4ii.
- 417 Complete, biconical head, conical top, medial band, ring collar, three incised lines around shank towards tip where shank section changes to square **333**
L.58.5 Head D.7 Shank section D.1.5mm
RF 2643, Context 2184, Phase 6iii.
- 418 Complete, biconical head, conical top, medial band, ring collar, four incised grooves on shank at point where section changes to square **333**
L.89 Head D.8 Shank section D.2mm
RF 3846, Context 3989, Phase 6iii.
- 419 Complete, biconical head, conical top, medial band, ring collar, shank square in section towards tip **333**
L.85 Head D.8 Shank section D.2mm
RF 345, Unstratified.
- 420 Complete, biconical head, conical top, medial band, ring collar, four incised grooves around shank at point where shank section changes to square **333**
L.79.5 Head D.9 Shank section D.2mm. (FIG. 1.25)
RF 4261, Unstratified.
- 421 Complete but in two fragments, biconical head, conical top, medial band, ring collar, shank section changes to square towards tip **333**
L.77.5 Head D.9 Shank section D.2mm
RF 7363, Unstratified.
- 422 Complete apart from extreme tip, biconical head, conical top, medial band, ring collar, lower part of shank of square section **333**
L.57 Head D.8 Shank section D.2mm
RF 11930, Unstratified.
- 423 Complete, biconical head, conical top, medial band, ring collar, shank changes to square section towards tip just below three incised grooves **333**
L.67 Head D.8.5 Shank section D.2mm
RF 11991, Unstratified.
- 424 Complete apart from tip of shank, biconical head, conical top, medial band, ring collar, shank changes to square section towards end just below three incised grooves **333**
L.50 Head D.8 Shank section D.2mm
RF 11993, Unstratified.
- TYPE 341 BICONICAL HEAD, FLAT OR ROUNDED TOP, SHANK SECTION UNVARIED
- 425 Complete, biconical head, flat top, shank section unvaried **341**
L.61 Head D.9 Shank section D.2.5mm
RF 11972, Unstratified.
- TYPE 342 BICONICAL HEAD, FLAT OR ROUNDED TOP, SHANK SWOLLEN
- 426 Complete, biconical head, flat top, shank swollen towards tip **342**
L.60 Head D.6.5 Shank section D.2.5mm
RF 2685, Context 2184, Phase 6iii.

TYPE 351 BICONICAL HEAD, FLAT OR ROUNDED TOP, COLLAR, SHANK SECTION UNVARIED

- 427 Complete apart from extreme tip of shank, sub-biconical head, top flattish, ring collar, shank section unvaried **351**
L.44 Head D.5 Shank section D.2mm
RF 3542, Context 2742, Phase 4ii–5a.
- 428 Complete apart from extreme tip, biconical head, flat top, sides decorated with stamped ring-and-dot, ring collar, shank section unvaried **351**
L.71 Head D.10 Shank section D.2mm
RF 4142, Context 4044, Phase 6ii.
- 429 Complete, biconical head, flat top, ring collar, shank section unvaried **351**
L.56 Head D.5 Shank section D.2mm
RF 8467, Context 8461, Phase 6ii.

TYPE 352 BICONICAL HEAD, FLAT OR ROUNDED TOP, COLLAR, SHANK SWOLLEN (FIG. 1.25)

- 430 Complete, biconical head, flat top, collar, shank swollen towards tip **352**
L.48 Head D.4 Shank section D.2mm
RF 3918, Context 3896, Period 2.
- 431 Complete, biconical head, flat top, ring collar, shank swollen towards tip **352**
L.52 Head D.4.5 Shank section D.2mm
RF 3928, Context 2784, Phase 3a.
- 432 Complete apart from extreme tip of shank which has broken off, biconical head, flat top, irregular ring collar, swollen shank **352**
L.47.5 Head D.4.5 Shank section D.2mm
RF 679, Context 669, Phase 5a–5b.
- 433 Complete apart from extreme tip, biconical head, top rounded, crude collar, shank swollen towards tip **352**
L.39 Head D.4 Shank section D.2mm
RF 4226, Context 3891, Phase 6ii.
- 434 Complete, biconical head, top rounded, double ring collar, shank swollen towards tip **352**
L.48 Head D.5 Shank section D.2.5mm. (FIG. 1.25)
RF 3818, Context 3989, Phase 6iii.
- 435 Complete apart from tip, biconical head, flat top, trapezoidal facets, decorated with ring-and-dot, ring collar, shank swelling towards tip **352**
L.54 Head L.5.5 W.3.5 Shank section D.2.5mm
RF 6976, Context 5988, Phase 6i.

TYPE 371 BICONICAL HEAD, FLAT OR ROUNDED TOP, MEDIAL BAND, COLLAR, SHANK SECTION UNVARIED (FIG. 1.25)

- 436 Complete, biconical head with flat top, broad groove around medial band, decorated above and below with ring-and-dot, ring collar, shank section unvaried **371**
L.65.5 Head D.7 Shank section D.2mm. (FIG. 1.25)
RF 790, Context 636, Phase 6iii.
- 437 *(described from illustration only)* Complete, biconical head, flat top, medial band, decorated on all faces and top with ring-and-dot, ring collar, shank section unvaried **371**
L.61 Head D.8.5 Shank section D.2mm. (FIG. 1.25)
RF 14041, Unstratified.
- 438 *(described from illustration only)* Complete apart from shank tip, biconical head, flat top, medial band, decorated on all faces and top with ring-and-dot, ring collar, shank section unvaried **371**

L.66.5 Head D.6 Shank section D.2.5mm. (FIG. 1.25)
RF 14045, Unstratified.

TYPE 372 BICONICAL HEAD, FLAT OR ROUNDED TOP, MEDIAL BAND, COLLAR, SHANK SWOLLEN

- 439 Complete, biconical head, flat top, narrow medial band, ring collar, shank slightly swollen towards tip **372**
L.71 Head D.8.5 Shank section D.2mm
RF 4102, Context 3107, Phase 4ii.
- 440 Complete but in two fragments, irregular biconical head, flat top, medial band, ring collar, shank swollen towards tip **372**
L.52.5 Head D.5.5 Shank section D.2mm
RF 2641, Context 2184, Phase 6iii.
- 441 Complete, biconical head, flat top, medial band, ring collar, shank swollen towards tip **372**
L.67 Head D.7 Shank section D.2.5mm
RF 3819, Context 3989, Phase 6iii.
- 442 Complete, biconical head, flat top, medial band, ring collar, shank swollen towards tip, two deeply incised lines around swelling **372**
L.65.5 Head D.7 Shank section D.2mm
RF 50008, Unstratified.
- 443 Complete, biconical head, flat top, medial band, ring collar, shank swollen towards tip, incised line around swelling **372**
L.68.5 Head D.6.5 Shank section D.2mm
RF 13103, Unstratified.

TYPE 373 BICONICAL HEAD, FLAT OR ROUNDED TOP, MEDIAL BAND, COLLAR, SHANK HIPPED/SQUARE AT TIP

- 444 Complete, biconical head with flat top, broad medial band, ring collar, square-sectioned shank towards tip **373**
L.83 Head D.9 Shank section D.2mm
RF 317, Context 322, Phase 2i–4ii.

Type 4 pins – Spiral heads (Fig. 1.25)

TYPE 400 SPIRAL-HEADED, SHANK FORM UNKNOWN

- 445 Incomplete, lower end of shank broken away, well made spiral head **400**
L.24 Head W.9.5 Shank section D.2mm
RF 3475, Context 86, Period 7.

TYPE 401 SPIRAL-HEADED, SHANK SECTION UNVARIED (FIG. 1.25)

- 446 Complete, well made spiral head, shank section unvaried **401**
L.53 Head W.5 Shank section D.1.5mm
RF 3732, Context 3734, Phase 1b.
- 447 Complete, well made spiral head, shank section unvaried **401**
L.57 Head W.8 Shank section D.1.5mm
RF 4729, Context 3334, Phase 4i–4ii.
- 448 Incomplete, spiral-headed, part of one spiral broken away, shank section unvaried **401**
L.55.5 Head W.9 Shank section D.2mm
RF 5692, Context 3758, Phase 4ii.
- 449 Complete, well made spiral head, shank section unvaried, long narrow tip **401**
L.51.5 Head W.7.5 Shank section D.2mm
RF 5465, Context 5373, Phase 5a–5b.

- 450 Complete, spiral head, shank section unvaried **401**
L.54.5 Head W.7.5 Shank section D.2mm
RF 4510, Context 2719, Phase 5a–6ii.
- 451 Incomplete spiral-headed, one spiral and tip of shank broken off, shank section unvaried **401**
L.49 Shank section D.2mm
RF 1242, Context 1182, Phase 6iii.
- 452 Complete, slightly bent over spiral head, three incised grooves below head, shank section unvaried **401**
L.53.5 Head W.7 Shank section D.1.5mm. (FIG. 1.25)
RF 3691, Context 3451, Phase 6iii.
- 453 Complete, well made spiral head, shank section unvaried **401**
L.55.5 Head W.7 Shank section D.2mm
RF 3211, Unstratified.
- 454 Complete, well made spiral head, shank section unvaried **401**
L.54.5 Head W.7 Shank section D.2.5mm. (FIG. 1.25)
RF 50019, Unstratified.
- TYPE 402 SPIRAL-HEADED, SHANK SWOLLEN (FIG. 1.25)
- 455 Complete, spiral-headed, irregularly shaped, shank bent up, slightly swollen **402**
L.52 Head W.7.5 Shank section D.2mm. (FIG. 1.25)
RF 255, Context 221, Phase 2i–4ii.
- 456 Complete apart from tip of shank which has broken away, spiral head, one spiral incompletely joined to side, shank swollen towards tip **402**
L.41.5 Head W.9 Shank section D.2mm
RF 2000, Context 2004, Phase 5a.
- 457 Incomplete, spiral-headed, one spiral broken off, shank swollen **402**
L.64 Head W.4.5 Shank section D.2mm
RF 5261, Context 4195, Phase 5b–6i.
- TYPE 411 SPIRAL-HEADED, SHANK SECTION UNVARIED, DECORATION (FIG. 1.25)
- 458 Incomplete, spiral-headed, one spiral broken off, decorative grooves on shank just below base of spiral head, shank section unvaried **411**
L.67.5 Head W.4 Shank section D.1.5mm. (FIG. 1.25)
RF 5218, Context 5193, Phase 4ii–5a.
- Type 5 pins – headless (FIG. 1.26)*
- TYPE 501 HEADLESS, SHANK SECTION UNVARIED (FIG. 1.26)
- 459 Complete, headless, shank section unvaried **(501)**
L.55 Shank section D.2mm
RF 6403, Context 4807, Phase 1a.
- 460 Complete, headless, shank section unvaried. Analysis: grey deposit around upper end of shank – XRF indicated solder or preferential corrosion **(501)**
L.61 Shank section D.2mm
RF 1401, Context 448, Phase 2i–4ii.
- 461 Complete, headless, shank section unvaried. Analysis: greyish deposits around upper end – XRF indicated possible preferential corrosion or solder **(501)**
L.55 Shank section D.2mm
RF 6074, Context 6028, Phase 3bii–3bv.
- 462 Complete but in two fragments, top appears headless though corrosion makes top unclear, shank section unvaried **(501)**
L.58 Shank section D.1.5mm
RF 5244, Context 5227, Phase 3bv.
- 463 Complete, headless, shank section unvaried **(501)**
L.54 Shank section D.2mm
RF 10131, Context 6235, Phase 3bv.
- 464 Complete but in two fragments, headless, shank section unvaried **(501)**
L.48 Shank section D.2mm
RF 6078, Context 6080, Phase 3bv–4ii.
- 465 Complete, headless, shank section unvaried **(501)**
L.57.5 Shank section D.2mm
RF 11459, Context 3758, Phase 4ii.
- 466 Complete, headless, shank section unvaried **(501)**
L.45 Shank section D.1.5mm
RF 5816, Context 5139, Phase 5a.
- 467 Complete, headless, shank section unvaried **(501)**
L.55.5 Shank section D.2mm
RF 3277, Context 3275, Phase 5a–6i.
- 468 Complete, headless, shank section unvaried. Analysis: greyish deposits around upper end – XRF indicated possible preferential corrosion or solder **(501)**
L.54 Shank section D.2mm
RF 5628, Context 5553, Phase 5b.
- 469 Complete, headless, shank section unvaried **(501)**
L.46 Shank section D.2mm. (FIG. 1.26)
RF 3460, Context 3417, Phase 5b–6i.
- 470 Complete, headless, shank section unvaried **(501)**
L.58.5 Shank section D.2mm
RF 6830, Context 6798, Phase 6i.
- 471 Complete, headless, shank section unvaried **(501)**
L.48 Shank section D.1.5mm
RF 4183, Context 3891, Phase 6ii.
- 472 Complete, headless, shank section unvaried. Analysis: greyish deposits around upper end – XRF indicated possible preferential corrosion or solder **(501)**
L.59.5 Shank section D.2mm
RF 2264, Context 1835, Phase 6ii–6iii.
- 473 Complete, headless, shank narrowing slightly at top. Analysis: grey deposits around upper end – XRF did not confirm solder **(501)**
L.45 Section D.1.5mm
RF 2293, Context 1892, Phase 6ii–6iii.
- 474 Complete, headless, shank section unvaried. Analysis: deposits around upper end, XRF did not confirm solder **(501)**
L.57 Shank section D.2mm
RF 2045, Context 2018, Phase 6iii.
- 475 Complete, headless, top pointed, shank section unvaried. Analysis: white-metal patches at upper end – XRF did not indicate solder or plating **(501)**
L.52.5 Shank section D.2mm
RF 5961, Context 5885, Phase 5a.
- 476 Headless, upper end slightly pointed, shank tip faceted and slightly narrowed. Analysis: white metal around upper end – XRF indicated possible preferential corrosion or solder **(501)**
L.58 Shank section D.2mm
RF 11063, Context 6490, Phase 5b–6i.
- TYPE 502 HEADLESS, SHANK SWOLLEN
- 477 Complete, headless, shank swollen towards tip **(502)**

- L.53.5 Shank section D.2mm
RF 5609, Context 3758, Phase 4ii.
- 478 Complete, headless, shank slightly swollen towards tip (**502**)
L.59 Shank section D.2mm
RF 6286, Context 3758, Phase 4ii.
- 479 Incomplete, headless, shank appears swollen towards tip.
Analysis: white-metal patches at upper end – XRF did not indicate solder or plating (**502**)
L.48 Shank section D.2.5mm
RF 5168, Context 3730, Phase 6ii.
- 480 Complete, headless, with triangular notch cut into side of shank just below head, swollen shank. Analysis: white metal around upper end, XRF did not confirm solder (**502**)
L.53 Shank section D.2.5mm
RF 599, Context 555, Phase 6ii–6iii.
- 481 Complete, headless, possible traces of solder around top, shank swollen towards tip. Analysis: white metal around upper end – XRF indicated possible preferential corrosion or solder (**502**)
L.52 Shank section D.2mm
RF 10923, Unstratified.
- TYPE 503 HEADLESS, SHANK HIPPED/SQUARE AT TIP
- 482 Complete, headless, shank hipped towards tip. Analysis: white metal around upper end – XRF indicated possible preferential corrosion or solder (**503**)
L.55 Shank section D.2mm
RF 981, Context 458, Topsoil.
- TYPE 510 HEADLESS, SHANK FORM UNKNOWN, GROOVES
- 483 Incomplete, lower end of shank broken away, headless, groove just below top (**510**)
L.32 Shank section D.2mm
RF 6233, Context 5503, Phase 4ii.
- 484 Incomplete, lower part of shank broken off, headless, faint traces of grooves just below top (**510**)
L.39 Shank section D.2mm
RF 6875, Context 6798, Phase 6i.
- TYPE 511 HEADLESS, SHANK SECTION UNVARIED, GROOVES (FIG. 1.26)
- 485 Complete, headless, three grooves just below top, shank section unvaried. Analysis: white metal around upper end – XRF unable to identify solder or plating (**511**)
L.53.5 Shank section D.2mm
RF 3729, Context 3343, Phase 1b–3a.
- 486 Complete, headless, top corroded but traces of groove just below top, shank section unvaried (**511**)
L.54 Shank section D.2mm
RF 6243, Context 6028, Phase 3bii–3bv.
- 487 Complete, headless, two deep grooves, shank section unvaried (**511**)
L.50.5 Shank section D.1.5mm
RF 5656, Context 5653, Phase 3biv.
- 488 Headless, four grooves just below top, shank section unvaried. Analysis: white metal around upper end – XRF indicated possible preferential corrosion or solder (**511**)
L.48.5 Shank section D.1.5mm
RF 5703, Context 5653, Phase 3biv.
- 489 Complete, headless, eight grooves just below top, shank section unvaried (**511**)
- L.50.5 Shank section D.1.5mm
RF 6459, Context 5617, Phase 3bv.
- 490 Incomplete, part of separate (?) lead alloy head (not analysed) and headless shank with three grooves just below top, shank section unvaried (**511a**)
L.53.5 Shank section 2mm
RF 3293, Context 2508, Phase 3bv–4i.
- 491 Complete, headless, two grooves just below top, shank section unvaried (**511**)
L.43 Shank section D.1.5mm
RF 5657, Context 5624, Phase 4i–4ii.
- 492 Complete, headless, two grooves just below top, shank section unvaried (**511**)
L.49 Shank section D.2mm
RF 10087, Context 10082, Phase 4i–4ii.
- 493 Complete, three grooves around shank just below top, shank section unvaried. Analysis: white metal around upper end – XRF indicated possible preferential corrosion or solder (**511**)
L.53 Shank section D.2mm. (FIG. 1.26)
RF 4250, Context 3107, Phase 4ii.
- 494 Complete, headless, two grooves below top, shank section unvaried (**511**)
L.52 Shank section D.1.5mm
RF 5352, Context 3758, Phase 4ii.
- 495 Complete, tall narrow conical head, top appears flat but attached bone fragment obscures, two grooves well spaced, shank section unvaried (**511**)
L.55.5 Shank section D.2mm
RF 5493, Context 3758, Phase 4ii.
- 496 Complete, tall narrow conical head, top flat, two grooves, shank section unvaried. Analysis: grey deposits around upper end – XRF indicated possible preferential corrosion or solder (**511**)
L.55.5 Shank section D.2mm. (FIG. 1.26)
RF 5502, Context 5503, Phase 4ii.
- 497 Complete, headless, three deep grooves just below top, shank section unvaried. Analysis: at upper end: XRF indicated possible preferential corrosion or solder (**511**)
L.51.5 Shank section D.2mm
RF 5888, Context 3758, Phase 4ii.
- 498 Complete, headless, pointed top, groove just below top, shank section unvaried (**511**)
L.51 Shank section D.2mm
RF 6098, Context 3758, Phase 4ii.
- 499 Complete, headless, two grooves below top, shank section unvaried (**511**)
L.50 Shank section D.2mm
RF 6116, Context 5503, Phase 4ii.
- 500 Complete, headless, three grooves just below top, shank section unvaried (**511**)
L.52 Shank section D.2mm
RF 6301, Context 3758, Phase 4ii.
- 501 Headless but top incomplete, two grooves just below top, shank section unvaried (**511**)
L.49.5 Shank section D.2mm
RF 6005, Context 5885, Phase 5a.
- 502 Complete, headless, three grooves just below top, shank section unvaried (**511**)

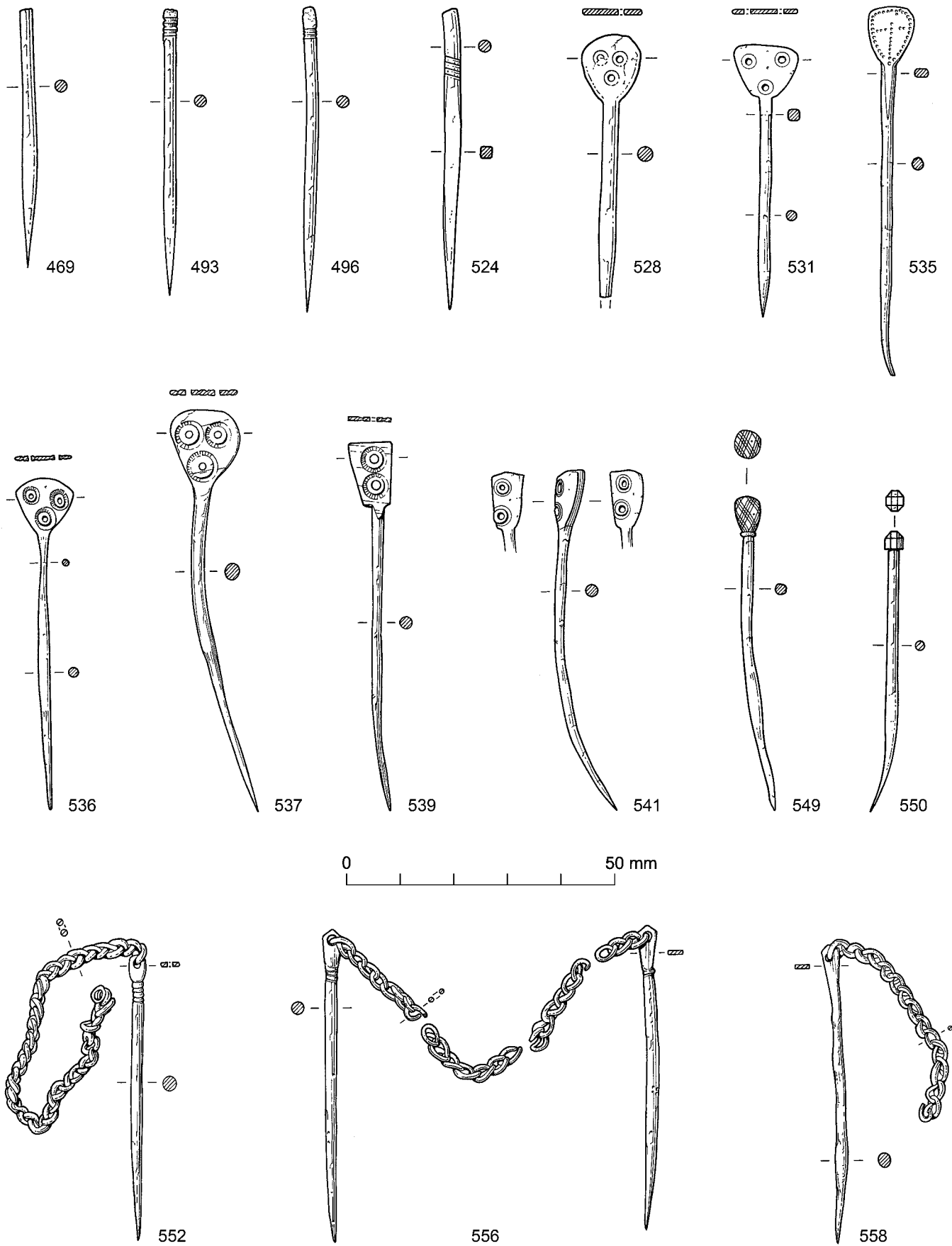


Fig. 1.26. Copper alloy pins of Types 5, 6, 7, 8, 9 and LIN1. Scale 1:1.

- L.43 Shank section D.2mm
RF 8221, Context 8108, Phase 5a.
- 503 Complete, headless, two incised grooves just below top, shank section unvaried. Analysis: metal around upper end – XRF indicated possible preferential corrosion or solder (**511**)
L.43 Shank section D.1.5mm
RF 8228, Context 8108, Phase 5a.
- 504 Complete, headless, traces of material at top, two grooves just below top, shank section unvaried. Analysis: metal around upper end – XRF indicated possible preferential corrosion or solder (**511**)
L.46 Shank section D.2mm
RF 13408, Context 11039, Phase 5a.
- 505 Complete, headless, two grooves just below top, shank straight. Analysis – XRF indicated no solder or gilding (**511**)
L.53.5 Shank section D.2mm
RF 2260, Context 3214, Phase 5a–5b.
- 506 Headless, two grooves, shank section unvaried (**511**)
L.47 Shank section D.1.5mm
RF 5474, Context 5373, Phase 5a–5b.
- 507 Complete, headless, six lightly incised grooves just below top, shank section unvaried. Analysis: white metal around upper end – XRF indicated possible preferential corrosion or solder (**511**)
L.43.5 Shank section D.1.5mm
RF 6035, Context 6036, Phase 5b.
- 508 Complete, headless, groove just below top, shank section unvaried (**511**)
L.47.5 Shank section D.2mm
RF 5855, Context 4195, Phase 5b–6i.
- 509 Complete apart from extreme tip, headless, two deep grooves on shank just below top, shank section unvaried. Analysis: white metal around upper end – XRF indicated possible preferential corrosion or solder (**511**)
L.40.5 Shank section D.1.5mm
RF 5387, Context 1680, Phase 5b–6ii.
- 510 Complete apart from extreme tip, headless, three grooves just below top, shank section unvaried. Analysis: grey deposits and white metal around upper end – XRF indicated possible preferential corrosion or solder (**511**)
L.39 Shank section D.1.5mm
RF 6341, Context 5930, Phase 6i.
- 511 Complete, headless, two deep grooves just below top, shank section unvaried (**511**)
L.46 Shank section D.2mm
RF 6873, Context 6798, Phase 6i.
- 512 Incomplete, top broken off, two grooves just below indicate originally headless, shank section unvaried (**511**)
L.45.5 shank section D.2mm
RF 6876, Context 6798, Phase 6i.
- 513 Complete, headless, with two grooves just below top, shank section unvaried (**511**)
L.48 Shank section D.1.5mm
RF 3458, Context 3255, Phase 6ii.
- 514 Complete, headless, two grooves below top, shank section unvaried. Analysis: white metal around upper end – XRF indicated pin made of high tin alloy (**511**)
L.48 Shank section D.1.5mm
RF 3551, Context 1705, Phase 6ii.
- 515 Complete, headless, three grooves below top, shank section unvaried (**511**)
L.49 Shank section D.1.5mm
RF 3808, Context 3730, Phase 6ii.
- 516 Complete, headless with three grooves just below top, shank straight (**511**)
L.49.5 Shank section D.2mm
RF 2311, Context 10393, Phase 6ii–6iii.
- 517 Complete, headless, shank section unvaried, three grooves just below squared upper end (**511**)
L.41 Shank section 1.5mm
RF 349, Unstratified.
- 518 Complete, headless, three grooves below top, shank section unvaried (**511**)
L.43 Shank section D.2mm
RF 3750, Unstratified.
- 519 Complete apart from extreme tip which has broken off, headless, three grooves below top, shank section unvaried (**511**)
L.46.5 Shank section D.1.5mm
RF 3795, Unstratified.
- 520 Complete, headless, six lightly incised grooves just below top, shank straight. Analysis: white metal around upper end, XRF did not confirm solder (**511**)
L.56 Shank section D.2mm
RF 11943, Unstratified.
- 521 Complete, headless, three grooves just below top, shank section unvaried (**511**)
L.51 Shank section D.1.5mm
RF 12463, Unstratified.
- TYPE 512 HEADLESS, SHANK SWOLLEN, GROOVES
- 522 Complete, headless, decorated with three grooves just below top, very slightly swollen shank (**512**)
L.50 Shank section D.1.5mm
RF 632, Context 461, Phase 5a–5b.
- 523 Complete, headless, three grooves just below top, shank slightly swollen (**512**)
L.52 Shank section D.1.5mm
RF 607, Context 535, Phase 6iii.
- TYPE 513 HEADLESS, SHANK HIPPED/SQUARE AT TIP, GROOVES (FIG. 1.26)
- 524 Complete, headless, four grooves on shank just below top, below grooves shank changes to square section (**513**)
L.56 Shank section D.2mm. (FIG. 1.26)
RF 6841, Context 6300, Phase 6iii–7.
- 525 Incomplete, headless, upper end squared off, lower end of shank of square section and broken away, with four incised grooves where shank changes section (**513**)
L.33 Shank section D.2.5mm
RF 331, Context 1, Topsoil.
- Type 6 pins – disc-headed (FIG. 1.34)*
- TYPE 600 DISC-HEADED, SHANK FORM UNKNOWN
- 526 Incomplete disc-headed, with stamped ring-and-dot decoration, dots perforate head, upper end of head broken across perforation, shank incomplete (**600**)
L.35.5 Head D.10 Thickness 0.5 Shank section D.2mm
RF 417, Context 400, Phase 2i–4ii.

- 527 Incomplete, part of sub-discoidal head only, decorated with perforating ring-and-dot motifs, one face with three ring-and-dot, the other with two, the third perforation undecorated **(600)**
L.11 W.12 Th.1mm
RF 2838, Context 51, Phase 4ii.

TYPE 602 DISC-HEADED, SHANK SWOLLEN (FIG. 1.28)

- 528 Incomplete, part of shank broken off, sub-discoidal head, three ring-and-dot motifs, two perforated, third possibly perforated originally, slight swelling on shank towards break **(602)**
L.48 Head D.10.5 Th.1 Shank section D.2mm. (FIG. 1.28)
RF 13908, Unstratified.

Type 7 pins – Flat triangular/trapezoidal head
(FIG. 1.26)

TYPE 700 FLAT TRIANGULAR/TRAPEZOIDAL HEAD, SHANK FORM
UNKNOWN

- 529 Incomplete, part of head only, flat trapezoidal, with perforated ring-and-dot decoration **(700)**
L.10, W.7 Th.0.5mm
RF 10629, Context 3421, Phase 5b–6.
- 530 Incomplete, most of shank broken off, flat sub-trapezoidal head, upper edge with triangular cut-outs, three ring-and-dot motifs, two of which are perforating **(700)**
L.29 Head L.12 W.11 Th.0.5 Shank section D.2mm
RF 11979, Unstratified.

TYPE 701 FLAT, TRIANGULAR/TRAPEZOIDAL HEAD, SHANK SECTION
UNVARIED (FIG. 1.26)

- 531 Complete, flat rounded triangular head with three perforating ring-and-dot motifs, shank of squarish section just below head, remainder of circular section and unvaried **(701)**
L.51 Head L.9.5 W.12 Th.1 Shank section D.2mm. (FIG. 1.26)
RF 2890, Context 2860, Phase 2i–4ii.
- 532 Incomplete, most of head and tip of shank broken away, but head flat, incised grooves on shank just below head, shank section unvaried **(701)**
L.52 Shank section D.2mm
RF 11619, Context 6235, Phase 3bv.
- 533 Incomplete flat head with angular sides but original shape uncertain, decorated with perforating ring-and-dot, shank of squarish section **(701)**
L.49 Head L.4 W.6 Th.1 Shank section W.2mm
RF 3137, Context 3107, Phase 4ii.
- 534 Complete, flat trapezoidal head, decorated with stamped dots on both faces, shank section unvaried **(701)**
L.57 Head L.9 W.4 Shank section D.1.5mm
RF 7016, Context 5988, Phase 6i.
- 535 Complete, flat rounded triangular head, decorated on one face only with stamped dots around edge and in cross-shape inside this decorative edging, shank slightly flattened below head, remainder of circular section and unvaried **(701)**
L.69 Head L.10.5 W.8.5 Shank section D.2mm. (FIG. 1.26)
RF 7106, Context 6485, Phase 6ii–6iii.

TYPE 702 FLAT TRIANGULAR/TRAPEZOIDAL HEAD, SHANK SWOLLEN
(FIG. 1.26)

- 536 Complete, flat rounded triangular head, decorated with three

perforating ring-and-dot motifs, shank swollen towards tip **(702)**
L.60 Head L.9 W.10.5 Th.1 Shank section D.2mm. (FIG. 1.26)
RF 11931, Context 10772, Phase 2–4ii.

- 537 Complete, flat sub-triangular head with rounded corners, decorated with three perforating ring-and-dot, shank centrally swollen before tapering markedly to tip **(702)**
L.76 Head L.14 W.13 Th.1.5 Shank section D.3mm. (FIG. 1.26)
RF 4168, Context 3107, Phase 4ii.
- 538 Complete apart from extreme tip, flat trapezoidal head decorated on both faces with two stamped ring-and-dot, shank swollen towards tip **(702)**
L.54 Head L.10 W.5.5 Th.1mm Shank section D.2.5mm
RF 7894, Context 5871, Phase 6i.
- 539 Complete, flat trapezoidal head, decorated with two perforating ring-and-dot motifs, shank swollen towards tip **(702)**
L.69 Head L.12.5 W.8 Th.1 Shank section D.2mm. (FIG. 1.26)
RF 1645, Context 1440, Phase 6iii.
- 540 Complete, flat trapezoidal head, with two perforating ring-and-dot motifs, shank swollen towards tip **(702)**
L.56 Head L.9 W.5 Th.0.5 Shank section D.2mm
RF 2094, Context 2097, Phase 6iii.
- 541 Complete apart from one corner of sub-triangular head which has broken off, swollen shank, head decorated on both faces with stamped ring-and-dot close to one edge **(702)**
L.64 Head L.11 W.6 Th.1 Shank section D.2mm. (FIG. 1.26)
RF 546, Context 535, Phase 6iii.

TYPE 703 FLAT, TRIANGULAR/TRAPEZOIDAL HEAD, SHANK HIPPED/
SQUARE AT TIP

- 542 Complete, flat trapezoidal head, with two stamped ring-and-dot on each face, shank hipped towards tip **(703)**
L.65 Head L.7 W.4.5 Shank section D.2.5mm
RF 7257, Context 3758, Phase 4ii.

TYPE 713 FLAT, TRIANGULAR/TRAPEZOIDAL HEAD, COLLAR, SHANK
HIPPED/SQUARE AT TIP

- 543 Complete, flattened sub-triangular head, sides convex, ring collar, shank swollen towards tip **(713)**
L.67 Head L.13.5 W.7.5 Th.1 Shank section D.2.5mm
RF 7256, Context 6300, Phase 6iii–7.

Type 8 pins – inverted conical heads (FIG. 1.34)

TYPE 803 INVERTED CONICAL HEAD, SHANK HIPPED/SQUARE AT TIP

- 544 Complete, inverted conical head, shank section changes to square towards tip **(803)**
L.56 Head D.6 Shank section D.2mm
RF 13099, Unstratified.

TYPE 811 INVERTED CONICAL HEAD, COLLAR, SHANK SECTION
UNVARIED

- 545 Complete, inverted conical head, ring collar, shank section unvaried **(811)**
L.57.5 Head D.4.5 Shank section D.2mm
RF 5047, Context 3107, Phase 4ii.
- 546 Incomplete, lower end of shank broken off, inverted conical head, top rounded, double ring collar, shank section

- unvaried, whole gilded. Analysis: XRF – gilded pin, base metal alloy of silver/copper. **(811)**
L.40 Head L.4 D.3 Shank section D.2mm
RF 6270, Context 3758, Phase 4ii.
- 547 Complete apart from extreme tip which has broken off, inverted conical head, top rounded, ring collar, shank section unvaried with incised grooves just above break **(811a)**
L.56.5 Head D.6 Shank section D.2mm
RF 6861, Context 6798, Phase 6i.
- TYPE 832 INVERTED CONICAL HEAD, COLLAR, SHANK SWOLLEN, DECORATION ON HEAD (FIG. 1.26)
- 548 Complete, inverted conical head, top rounded, wrythen decoration, ring collar, shank swollen towards tip **(832)**
L.59 Head D.4 Shank section D.3mm
RF 2031, Context 2030, Phase 5a–5b.
- 549 Complete, inverted conical head, decorated with incised cross-hatching, ring collar, shank swollen towards tip **(832)**
L.58 Head D.5 Shank section D.2.5mm. (FIG. 1.26)
RF 12762, Unstratified.
- Type 9 Faceted dome-shaped head (FIG. 1.26)*
- TYPE 902 FACETED DOME-SHAPED HEAD, SHANK SWOLLEN TOWARDS TIP (FIG. 1.26)
- 550 Complete, dome-shaped head, top flattened, sides faceted, shank swollen before narrowing markedly to tip **(902)**
L.52.5 Head D.3 Shank section D.2.5mm. (FIG. 1.26)
RF 1639, Context 1269, Phase 6iii.
- 551 Complete, faceted dome-shaped head, slight swelling on shank towards tip **(902)**
L.55.5 Head D.4 Shank section D.2.5mm
RF 11996, Unstratified.
- Linked pins (FIG. 1.26–1.27; PL. 1.8)*
- TYPE LIN1 – SMALL FLAT TRAPEZOIDAL OR SUB-CIRCULAR HEADS (FIG. 1.26)
- 552 Complete pin, flattened sub-circular head, perforation containing length of chain, triple collar below, shank section unvaried **(LIN1)**
Pin L.53 Head D.3 Th.1 Shank section D.2. Chain L.82.5 Link section D.1mm. (FIG. 1.26)
RF 6076, Context 6080, Phase 3bv–4ii.
- 553 Pin complete apart from extreme tip, in two adjoining fragments, flattened sub-trapezoidal head, top edge rounded, perforation below containing fragment of chain link, shank section unvaried **(LIN1)**
L.49 Head W.4 Th.1 Shank section D.2.5mm
RF 9973, Context 6885, Phase 4ii.
- 554 Complete pin, flattened sub-circular head, perforation containing length of chain, triangular projections to each side of shank just below head, shank section unvaried **(LIN1)**
Pin L.56.5 Head D.4.5 Th.0.5. Chain L.96 Link section D.1mm
RF 5213, Context 5193, Phase 4ii–5a.
- 555 Complete pin, flattened sub-trapezoidal head, top edge rounded, perforated and containing chain link, shank section unvaried. Also separate length of chain **(LIN1)**
Pin L.62 Head W.3.5 Th.0.5 Shank section D.2mm. Chain L.79 Link section D.1.5mm
RF 5750, Context 5139, Phase 5a.
- 556 Pair of pins, identical in size, both with flattened trapezoidal heads, one with two grooves below head, other with three, both perforated and containing length of chain, shanks section unvaried. Also two separate lengths of chain and four separate chain links **(LIN1)**
Pin L.57 Head W.3.5 Th.1.5 Shank D.2. Chain (longest) L.22.5 Link section D.1mm. (FIG. 1.26)
RF 3454, Context 3417, Phase 5b–6i.
- 557 Complete, flattened sub-trapezoidal head, upper edge rounded, perforation below containing length of chain, shank section unvaried. Also separate length of chain **(LIN1)**
Pin L.50 Head W.4.5 Th.1mm. Chain (on head) L.26 Link section D.1mm. Sep. chain L.52.5mm
RF 3675, Context 3610, Phase 6ii.
- 558 Complete pin, flattened trapezoidal head, upper edge rounded, perforation below containing length of chain, shank of circular section, hipped towards tip **(LIN1)**
Pin L.56 Head W.3.5 Th.1 Shank section D.2. Chain L.36 Link section D.1mm. (FIG. 1.26)
RF 1815, Context 1450, Phase 6iii.
- TYPE LIN2 – LARGE DISCOIDAL HEADS (FIG. 1.27; PL. 1.8)
- 559 Complete, disc-headed decorated in the form of a cross with expanded terminals, defined by four leaf-shaped indentations, two partially perforated, and outlined with punched dots. There is a large perforation for the chain in the left arm of the cross, and two grooves at the top of the shank which has a swelling towards the tip. When found, the chain was attached but is now separate **(LIN2)**
Pin L.69 Head D.14 Th.1 Shank section D.2.5. Chain L.139 Link section D.1mm. (FIG. 1.27)
RF 4157, Context 3891, Phase 6ii.
- 560 Complete, discoidal head, decorated on one face only with central cross, and chip-carved interlace filling the quadrants between the arms. The cross and a band around the edge are decorated with small punched dots, and a perforation for a chain is right on the edge on the left arm of the cross. The interlace and dots are mercury-gilded. There is a small collar below the head and the shank has a long tapering tip. Analysis: XRF – alloy is bronze with some lead, head has been mercury-gilded. **(LIN2)**
L.94 Head D.28 Th.1 Shank section D.2mm. (FIG. 1.27; PL. 1.8)
RF 7835, Context 7817, Phase 6iii.
- 561 Discoidal head only, with narrow plain border, and plain central equal-armed cross, the quadrants between the arms filled with gilded (not analysed) chip-carved interlace. At the end of one arm of the cross there is a perforation for a chain, and close to this the edge of the disc has a series of V-shaped notches cut in, and in the same area part of one quadrant has been damaged. Two rivet-heads for attachment of the shank survive, one approximately in the centre of the cross, the second inside the interlace in one quadrant; the perforation for the chain would have had a north-west orientation to the shank **(LIN2)**
D.30 Th.2mm. (FIG. 1.27)
FX 88, R3, Context 1, Topsoil.
- 562 Discoidal head only, decorated with a cross motif with scrolled terminals, the whole gilded (not analysed). Two rivet-heads for attachment of the shank survive along one arm of the cross, and there is one perforation for a chain at

right angles to the position of the shank on one edge, the other edge appears torn across a second perforation (**LIN2**) D.37.5 Th.1mm. (FIG. 1.27)
RF 50006, Unstratified.

Miscellaneous pins (Fig. 1.27; PLS 1.6–1.7)

GLASS HEAD (FIG. 1.27)

- 563 Complete apart from part of globular glass head which has been broken away, glass decayed so original colour unknown, two grooves around shank below head, shank section unvaried with tool-marks. Analysis: glass head, tool-marks like “chatter marks” along shank. **000**
L.52 Head D.5.5 Shank section D.2mm. (FIG. 1.27)
RF 3481, Context 3479, Phase 3bi–3bv.

SEPARATELY MADE GLOBULAR HEAD, (?) OF GLASS

- 564 Incomplete, part of separately made globular head (material unidentified) still attached, shank incomplete **000**
L.22 Head D.5 Shank section D.1.5mm
RF 613, Context 466, Phase 4i–4ii.

ZOOMORPHIC HEADS (FIG. 1.27; PLS 1.6–1.7)

- 565 Complete, with a flat sub-triangular head with chip-carved decoration on the front face depicting a pair of addorsed beasts with long noses and necks, projecting ears and dangling entwined tongues. There is little room for the bodies which meet at the rumps and the legs are short. There is a collar below the head, and the shank swells towards the tip. The pin is made of copper alloy, the shank and back of the head have been silvered and the front of the head and collar are mercury-gilded. File marks are visible under the gilding on the head. Analysis: XRF – high copper/silver ratio on shank – silver-plated copper alloy pin, with mercury-gilded head. **000**
L.71 Head L.19 W.18 Th.1 Shank section D.2.5mm. (FIG. 1.27; PL. 1.6)
RF 4163, Context 3107, Phase 4ii.
- 566 Complete apart from the extreme tip of the shank, the terminal in the form of a dog’s head, with round nostrils, and circular eyes set with blue glass, one glass eye missing. A collar separates the head from the shank which has a swelling towards the tip. The whole is gilded. Analysis: mercury gilded pin, strong iron and copper peaks, therefore might be an iron pin or a copper alloy one, blue glass eyes **000**
L.45 Shank section D.2mm. (FIG. 1.27; PL. 1.7)
RF 822, Context 636, Phase 6iii.

Type 00 pins – head type unclear (Fig. 1.27)

- 567 Head type unclear, possibly unfinished or too damaged to identify, shank slightly swollen. Analysis: XRF indicated solder or preferential corrosion around head end of shank **00**
L.54 Shank section D.2mm
RF 334, Context 263, Phase 2i–4ii.
- 568 Head type unclear, shank swollen towards tip. Analysis: pin is made from a quaternary alloy – XRF indicated solder or preferential corrosion at head end of shank **00**
L.51 Shank section D.2mm
RF 420, Context 400, Phase 2i–4ii.
- 569 Complete apart from tip of shank but very corroded and form unidentifiable **00**

L.39 Head D.4 Shank section D.2.5mm
RF 2741, Context 2740, Phase 3a–3bi.

- 570 Complete, apparently globular head but corrosion obscures most of pin, shank section appears unvaried, whole pin gilded. Analysis: XRF – mercury-gilded copper **00**
L.49.5 Head D.4 Shank section D.2mm
RF 5695, Context 3758, Phase 4ii.
- 571 Fragmentary, both ends very corroded, one end possibly with attached separate head, shape uncertain, lower end of shank also broken **00**
L.28.5 Shank section D.1.5mm
RF 5895, Context 5553, Phase 5b.
- 572 Incomplete, head too corroded to identify, most of shank broken off **00**
L.22 Shank section D.2mm
RF 7934, Context 6888, Phase 5b–6i.
- 573 Complete but very corroded, head appears polyhedral but uncertain, shank section unvaried **00**
L.74 Head L.9.5 W.6 Shank section D.2mm
RF 6636, Context 6471, Phase 6ii.
- 574 Complete but too much concretion to identify fully. It may have a globular head and shank of section unvaried **00**
L.64 Head D.7.5 Shank section D.2mm
RF 8486, Context 8461, Phase 6ii.

Type 09 – pin shanks only (Fig. 1.27)

TYPE 090 – SHANK FORM UNKNOWN

- 575 Shank fragments (2), both broken at both ends (**090**)
Largest L.25 Shank section D.2mm
RF 10341, Context 6304, Phase 3bv.
- 576 Shank fragments (3) (**090**)
Largest L.18.5 Shank section D.1.5mm
RF 5551, Context 3758, Phase 4ii.
- 577 Shank fragment, both ends broken (**090**)
L.34.5 Shank section D.2mm
RF 6126, Context 3758, Phase 4ii.
- 578 Shank fragment, both ends broken (**090**)
L.30 Shank section D.2mm
RF 6269, Context 3758, Phase 4ii.
- 579 Shank fragment, both ends broken (**090**)
L.28 Shank section D.2mm
RF 9383, Context 3758, Phase 4ii.
- 580 Shank fragment, upper end broken off (**090**)
L.10.5 Shank section D.1mm
RF 10198, Context 51, Phase 4ii.
- 581 Shank fragment, both ends broken (**090**)
L.25 Shank section D.1.5mm
RF 13756, Context 6885, Phase 4ii.
- 582 Shank fragment, both ends broken (**090**)
L.24.5 Shank section D.2mm
RF 6001, Context 5860, Phase 5a.
- 583 Shank fragments (5), all very corroded (**090**)
Largest L.18 D.2mm
RF 5881, Context 5553, Phase 5b.
- 584 Shank fragment, both ends broken (**090**)
L.14.5 Shank section D.1mm
RF 7338, Context 6472, Phase 5b–6i.
- 585 Shank fragment (**090**)

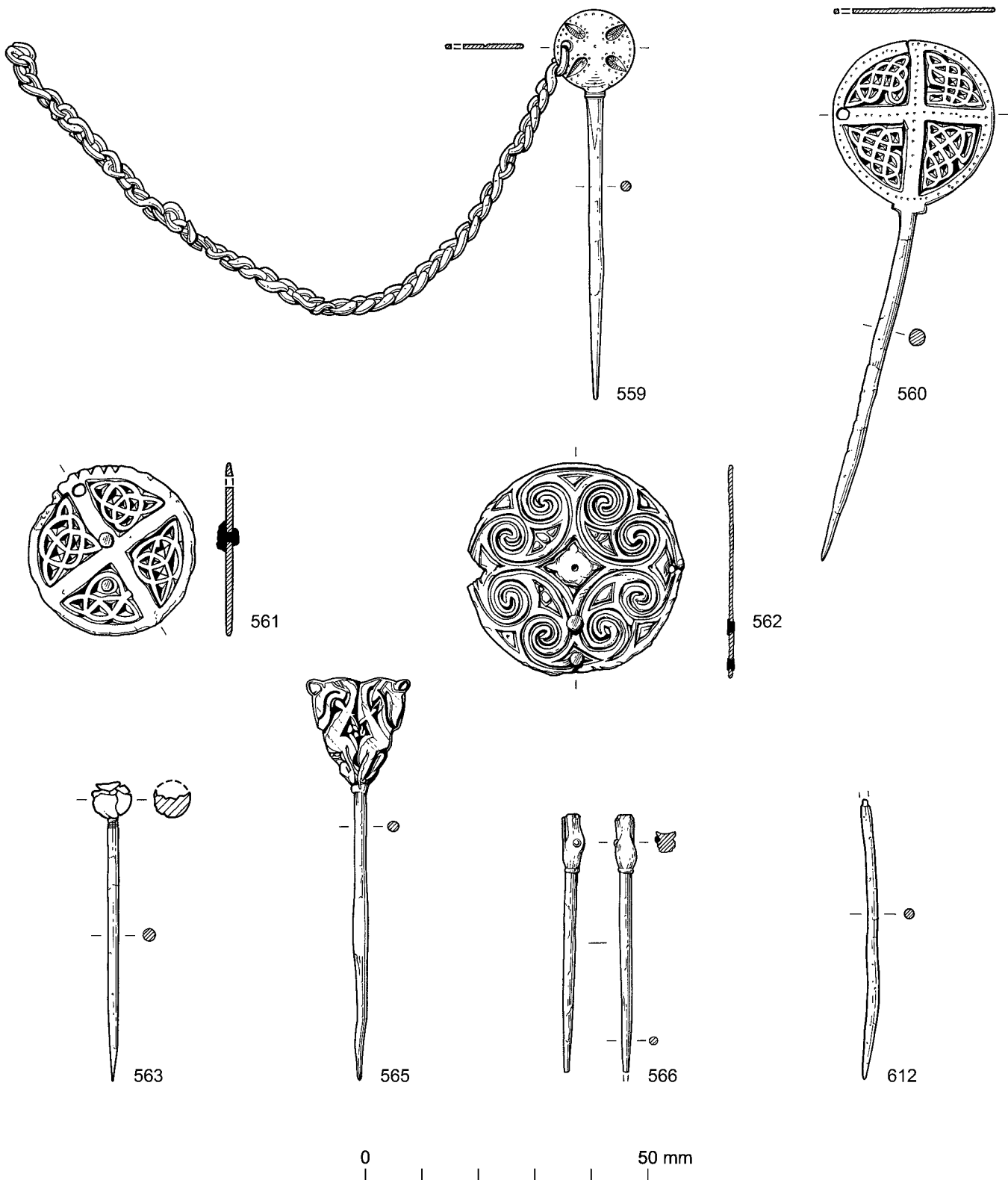


FIG. 1.27. Copper alloy pins of Types LIN2 and 000, and a Type 09 shank. Scale 1:1.

- L.48 Shank section D.2mm
RF 5960, Context 5930, Phase 6i.
- 586 Shank fragment, both ends broken **(090)**
L.18 Shank section D.1.5mm
RF 6342, Context 5930, Phase 6i.
- 587 Shank fragment **(090)**
L.24 Shank section D.1.5mm
RF 6872, Context 6798, Phase 6i.
- 588 Shank fragment, both ends broken **(090)**
L.21.5 Shank section D.2mm
RF 3872, Context 3730, Phase 6ii.
- 589 Shank fragment, tip and lower end only **(090)**
L.24 Section D.1.5mm
RF 1844, Context 1832, Phase 6ii–6iii.
- 590 Shank fragment, both ends broken **(090)**
L.25.5 Section D.1.5mm
RF 1169, Context 1154, Phase 6iii.
- 591 Shank tip fragment **(090)**
L.11.5 Section D.1.5mm
RF 2424, Context 2176, Phase 6iii.
- 592 Shank fragment, both ends broken **(090)**
L.34 Shank section D.2mm
RF 3827, Context 3989, Phase 6iii.
- 593 Shank fragment **(090)**
L.38 Shank section D.1.5mm
RF 7050, Context 6300, Phase 6iii–7.
- 594 Possible shank fragment both ends broken, identification uncertain **(090)**
L.44.5 Section D.2mm
RF 2578, Unstratified.
- 595 Shank fragment, both ends broken **(090)**
L.15.5 Section D.1.5mm
RF 2589, Unstratified.
- TYPE 091 – SHANK SECTION UNVARIED
- 596 Shank fragment, one end broken, other end probably broken but obscured **(091)**
L.48 Shank section D.2mm
RF 6402, Context 5653, Phase 3biv.
- 597 Shank fragment, tapering to tip **(091)**
L.33 Shank section D.2.5mm
RF 6208, Context 6136, Phase 3bv.
- 598 Shank fragment, both ends broken **(091)**
L.47 Shank section D.2.5mm
RF 3983, Context 3187, Phase 4i–5b.
- 599 Shank fragment, traces of ring collar just below break, shank section unvaried. Analysis: white-metal shank – XRF detected high tin level probably accounting for appearance. **(091)**
L.52 Shank section D.2mm
RF 5483, Context 3758, Phase 4ii.
- 600 Shank fragment, section unvaried **(091)**
L.29 Shank section D.1.5mm
RF 5557, Context 3758, Phase 4ii.
- 601 Shank fragment, upper end broken off, shank section unvaried **(091)**
L.37 Shank section D.1.5mm
RF 8235, Context 6886, Phase 5a.
- 602 Shank fragment, broken at upper end **(091)**
L.46.5 Shank section D.2mm
RF 8498, Context 8108, Phase 5a.
- 603 Shank fragment, broken at upper end **(091)**
L.43 Shank section D.2mm
RF 8766, Context 8764, Phase 5a.
- 604 Shank fragment, upper end broken off **(091)**
L.36 Section D.2mm
RF 1884, Context 1728, Phase 5b.
- 605 Shank fragment, section unvaried **(091)**
L.44 Shank section D.2mm
RF 5940, Context 5920, Phase 5b.
- 606 Shank fragment, upper end broken off, two decorative grooves run around shank **(091)**
L.38.5 Section D.2mm
RF 2292, Context 1891, Phase 6ii–6iii.
- 607 Shank fragment, broken at upper end **(091)**
L.33.5 Shank section D.2mm
RF 6711, Context 6499, Phase 6ii–6iii.
- 608 Shank fragment, upper end broken off, very solid **(091)**
L.77.5 Shank section D.3mm
RF 10499, Context 1831, Phase 6ii–6iii.
- 609 Shank fragment, both ends broken, section unvaried. Analysis: grey deposit around head end – XRF indicated solder or preferential corrosion. **(091)**
L.47 Section D.2mm
RF 2577, Unstratified.
- 610 Shank fragment, broken at upper end, incised grooves close to tip **(091)**
L.40 Shank section D.2mm
RF 9932, Unstratified.
- 611 Incomplete, head appears broken off, shank section unvaried. Analysis: white metal within corrosion around head end – XRF detected a much higher tin content in this region, but low lead level, possibly the result of preferential corrosion **(091)**
L.52 Shank section D.2mm
RF 12467, Unstratified.
- TYPE 092 – SHANK SWOLLEN (FIG. 1.27)
- 612 Incomplete, head broken off, shank slightly swollen towards tip **(092)**
L.49 Section D.2mm. (FIG. 1.27)
RF 198, Context 70, Phase 5a.
- 613 Incomplete, lower end of shank only, slightly swollen **(092)**
L.28 Section D.2mm
RF 222, Context 70, Phase 5a.
- 614 Shank fragment, broken at upper end, swelling towards tip **(092)**
L.35 Shank section D.2.5mm
RF 13882, Context 6886, Phase 5a.
- 615 Shank fragment, very slightly swollen towards tip. Analysis: powdery grey deposit around head end – XRF indicated may be solder or preferential corrosion, the alloy has a high tin content. **(092)**
L.51.5 Shank section D.2mm
RF 2605, Context 2492, Phase 5b.
- 616 Shank fragment, upper end broken off, shank swollen towards tip **(092)**

- L.32 Shank section D.2mm
RF 7046, Context 6472, Phase 5b–6i.
- 617 Shank fragment, broken at both ends, swelling towards one end (**092**)
L.43 Shank section D.1.5mm
RF 7146, Context 7054, Phase 6ii–6iii.
- 618 Shank fragment, broken at upper end, slight swelling close to tip where there are also two incised lines (**092**)
L.39.5 Shank section D.2mm
RF 7954, Context 6300, Phase 6iii–7.
- TYPE 093 – SHANK HIPPED/SQUARE AT TIP
- 619 Incomplete, shank only, of square section at tip (**093**)
L.46 Shank section D.1.5mm
RF 5201, Context 5193, Phase 4ii–5a.
- 620 Shank fragment, of squarish section, both ends broken (**093**)
L.22 Shank section W.2 Th. 2mm
RF 1801, Context 1728, Phase 5b.

Catalogue of the bone pins (Fig. 1.28)

Bone identifications by Sonia O'Connor

TYPE B1 – MADE FROM A STRIP OF LONG-BONE COMPACT TISSUE FROM A MEDIUM-SIZED ANIMAL (Fig. 1.28)

- 621 Complete, roughly shaped sub-circular head of sub-rectangular section, shank narrowing from centre to both ends, shank of circular section
L.54 Head D.3.5 Th.2.5 Shank section D.2mm
RF 1118, Context 767, Phase 1b–2.
- 622 Complete, sub-inverted conical head of irregular section, shank narrowing from centre to both ends, of circular section
L.53 Head L.3.5 W.5 Th.3.5 Shank section D.3mm
RF 11149, Context 10236, Period 2.
- 623 Complete, well made inverted conical head of sub-square section, shank tapering to tip, shank of circular section
L.50 Head L.4 W.4.5 Th.4 Shank section D.3mm
RF 4193, Context 3531, Phase 4i–4ii.
- 624 Complete, roughly shaped inverted conical head of rectangular section, shank narrowing from centre to both ends, shank of sub-circular section
L.53.5 Head L.4 W.5 Th.2 Shank section D.3mm
RF 3164, Context 3107, Phase 4ii.
- 625 Complete, well made globular head, shank tapering to tip, shank of circular section
L.50 Head D.3.5 shank section D.2.5mm
RF 6262, Context 5503, Phase 4ii.
- 626 Incomplete, lower part of shank broken off, sub-inverted conical head of irregular section, shank of sub-circular section
L.33 Head L.3.5 W.4 Th.3.5 Shank section D.3mm
RF 6495, Context 3711, Phase 5a.
- 627 Incomplete, tip of shank broken off, irregularly shaped head, shank of sub-circular section
L.33 Head W.5 Th.2 Shank section D.3mm
RF 12341, Context 11379, Phase 5a.
- 628 Complete, sub-globular head, shank tapering to tip, of circular section
- L.41 Head D.4 Shank section D.2.5mm
RF 13906, Context 11039, Phase 5a.
- 629 Complete apart from extreme tip, head of irregular shape and section, shank tapering from centre to both ends, shank of circular section
L.45 Head L.4.5 W.4.5 Th.4 Shank section D.3mm
RF 5453, Context 5373, Phase 5a–5b.
- 630 Complete apart from extreme tip, inverted conical head of sub-circular section, shank tapering to tip, shank of circular section
L.60 Head L.4 D.4 Shank section D.3mm
RF 8226, Context 8090, Phase 5a–5b.
- 631 Complete, sub-inverted conical head of sub-rectangular section, shank tapering to tip, of circular section
L.52 Head L.5.5 W.4.5 Th.3.5 shank section D.3mm
RF 11432, Context 2562, Phase 5b.
- 632 Complete, well made sub-globular head, slight swelling just below head, shank tapering to tip, shank of circular section
L.53 Head D.4.5 Shank section D.3mm
RF 3430, Context 3417, Phase 5b–6i.
- 633 Complete, well made sub-globular head, shank centrally swollen, shank of circular section
L.60 Head D.4.5 Shank section D.2mm. (Fig. 1.28)
RF 6360, Context 6490, Phase 5b–6i.
- 634 Complete, globular head, shank narrowing from centre to both ends, of circular section
L.52 Head D.4 Shank section D.3mm. (Fig. 1.28)
RF 12061, Context 1680, Phase 5b–6ii.
- 635 Complete, sub-inverted conical head of plano-convex section, shank narrowing from centre to both ends, shank of circular section
L.58 Head L.4.5 W.4 Th.3 Shank section D.3mm. (Fig. 1.28)
RF 7323, Context 5871, Phase 6i.
- 636 Complete, sub-inverted conical head of sub-rectangular section, shank narrowing from centre to both ends, shank of circular section
L.63.5 Head L.6.5 W.5.5 Th.3 Shank section D.3mm
RF 6834, Context 6798, Phase 6i.
- 637 Complete, spatulate head of rectangular section, collar beneath, shank of circular section tapering to tip
L.49 Head L.4.5 W.6 Th.2 Shank section D.2mm. (Fig. 1.28)
RF 10977, Context 10961, Phase 6i–6ii.
- 638 Complete, well made sub-globular head, shank tapering to tip, shank of circular section
L.54 Head D.4 Shank section D.2.5mm. (Fig. 1.28)
RF 3871, Context 3730, Phase 6ii.
- 639 Complete apart from extreme tip, roughly shaped sub-circular head of sub-rectangular section, shank narrowing from centre to both ends, shank of sub-circular section
L.52.5 Head D.5.5 Th.3 Shank section D.3.5mm
RF 2316, Context 1833, Phase 6ii–6iii.
- 640 Incomplete, lower part of shank broken off, head of irregular shape and section, shank of circular section
L.37 Head L.4.5 W.5 Th.4 Shank section D.3mm
RF 6656, Context 6499, Phase 6ii–6iii.

- 641 Incomplete, lower part of shank broken off, head of irregular shape and section, shank of circular section
L.26 Head L.4 W.4 Th.2.5 Shank section D.2.5mm
RF 10600, Context 1833, Phase 6ii–6iii.
- 642 Complete apart from extreme tip, roughly shaped inverted conical head of sub-rectangular section, shank narrowing slightly from centre to both ends, shank of sub-circular section
L.45 Head L.5 W.5 Th.3 Shank section D.3mm
RF 366, Context 535, Phase 6iii.
- 643 Complete apart from part of head broken off, roughly shaped inverted conical head of sub-rectangular section, shank narrowing from centre to both ends, shank of sub-circular section
L.89 Head L.6.5 W.7 Th.5 Shank section D.4.5mm. (Fig. 1.28)
RF 819, Context 636, Phase 6iii.
- 644 Complete apart from extreme tip, roughly shaped inverted conical head of sub-rectangular section, shank narrowing slightly from centre to both ends, shank of sub-circular section.
L.51 Head L.4 W.5 Th.3.5 Shank section D.3mm
RF 16, Context 1, Topsoil.
- 645 Complete, roughly shaped inverted conical head of sub-rectangular section, shank narrowing from centre to both ends, shank of sub-circular section
L.47 Head L.3 W.4.5 Th.3 Shank section D.3mm
RF 3038, Unstratified.
- 646 Complete, irregularly shaped head of irregular section, shank tapering slightly from centre to both ends, of sub-circular section
L.41 Head L.4.5 W.3 Th.3 Shank section D.2mm
RF 3760, Unstratified.
- 647 Complete, sub-globular head, shank tapering to both ends, of circular section
L.47 Head D.4 Shank section D.3mm
RF 12759, Unstratified.
- 648 Complete, head of irregular shape and section, shank tapering to both ends, of sub-circular section
L.57 Head L.4 W.4.5 Th.3 Shank section D.3mm
RF 14067, Unstratified.
- 649 Complete, sub-globular head, shank tapering to both ends, of sub-circular section
L.54 Head D.4.5 Shank section D.2.5mm
RF 50022, Unstratified.

TYPE B1 SHANKS

- 650 Shank fragment, broken at both ends, of circular section
L.30 Shank section D.3.5mm
RF 11231, Context 10772, Phase 2–4ii.
- 651 Shank fragment, broken at both ends, of circular section
L.37 Shank section D.3.5mm
RF 11036, Context 3107, Phase 4ii.
- 652 Incomplete, shank fragment, head and upper end broken off, shank of circular section
L.36.5 Shank section D.3mm
RF 6871, Context 6798, Phase 6i.
- 653 Incomplete, lower part of shank only, of sub-oval section
L.53 Shank section W.5 Th.3.5mm
RF 14068, Context 6300, Phase 6iii–7.

TYPE B2 – MADE FROM PIG FIBULAE (FIG. 1.28)

- 654 Complete, but in two fragments, expanded head, top edge rounded, perforation, shank of circular section
L.81 Head W.7.5 Th.2 Shank section D.3.5mm
RFs 901 & 7646, Context 463, Phase 2–3bv.
- 655 Incomplete, lower part of shank broken off, slightly modified expanded head, perforated, shank of sub-oval section
L.45 Head W.10.5 Th.3 Shank W.5 Th.3.5mm
RF 3821, Context 3605, Phase 3a.
- 656 Complete, expanded head, one corner trimmed, perforated, shank of sub-oval section
L.110.5 Head W.12 Th.5 Shank section W.7 Th.3.5mm. (Fig. 1.28)
RF 5511, Context 3758, Phase 4ii.
- 657 Complete, expanded head unmodified apart from perforation, shank of sub-plano-convex section
L.99 Head W.12 Th.4 Shank section W.5 Th.4mm. (Fig. 1.28)
RF 7433, Context 6803, Phase 5b–6i.
- 658 Complete apart from shank tip, expanded head unmodified apart from a perforation, shank of sub-oval section
L.85.5 Head W.14 Th.5.5 Shank section W.6 Th.4mm
RF 13271, Context 6300, Phase 6iii–7.
- 659 Complete, expanded head, unmodified apart from perforation, shank of sub-oval section
L.104 Head W.13 Th.5 Shank section W.8 Th.4mm
RF 12552, Unstratified.
- 66 Complete, well made sub-discoidal expanded head, perforated, shank of oval section, tapering to tip
L.88 Head D.10 Th.3.5 Shank section W.4 Th.3mm
RF 11797, Unstratified.

TYPE B2 SHANK

- 661 Shank fragments (2), adjoining, head end broken off, shank of circular section
L. (together) 51 Shank section D.4mm
RF 10175, Context 6805, Phase 6i–6ii.

Catalogue of the silver pins (FIG. 1.29)

NB All shanks are of circular section unless otherwise stated

Type 1 – Globular head (Fig. 1.29)

- TYPE 101 GLOBULAR HEAD, NO COLLAR, SHANK SECTION UNVARIED
- 662 Complete, small, globular head, shank waisted just below head, below this shank section unvaried (**101**)
L.24 Head D.1.5 Shank section D.1mm
RF 2761, Context 51, Phase 4ii.

TYPE 102 GLOBULAR HEAD, NO COLLAR, SHANK SWOLLEN

- 663 Complete, sub-globular head, shank swollen towards tip (**102**)
L.48 Head D.3 Shank section D.2mm
RF 12194, Context 12076, Phase 5b.

TYPE 111 GLOBULAR HEAD, COLLAR, SHANK SECTION

UNVARIED

- 664 Complete, globular head, ring collar, shank section unvaried (**111**)
L.57 Head D.6 Shank section D.2mm
RF 4525, Context 2024, Phase 6iii.

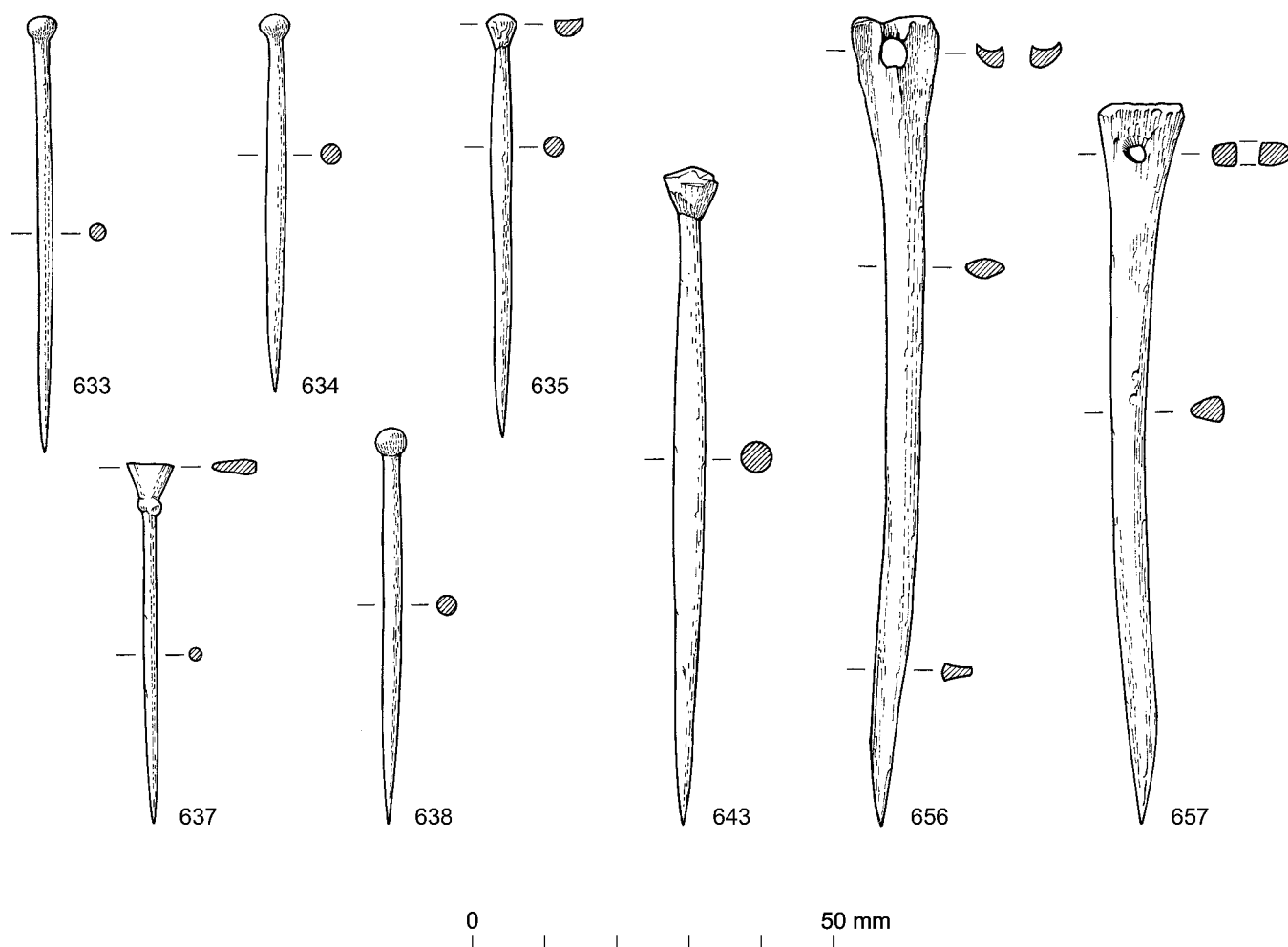


FIG. 1.28. Bone pins of Types B1 and B2. Scale 1:1.

TYPE 112 GLOBULAR HEAD, COLLAR, SHANK SWOLLEN
(FIG. 1.29)

665 Complete, globular head, ring collar, shank swelling towards tip. Analysis: silver pin, mercury-gilded – slight trace of copper detected (**112**)

L.48.5 Head D.4 Shank section D.2mm. (FIG. 1.29)
RF 1127, Context 767, Phase 1b–2.

666 Complete, globular head, ring collar, shank swells towards tip (**112**)

L.57 Head D.4.5 Shank section D.2mm
RF 4725, Context 4716, Phase 5a–6ii.

667 Complete apart from extreme tip, globular head, ring collar, shank swells towards tip. Analysis: debased silver, mercury-gilded **112**

L.32.5 Head D.3.5 Shank section D.1.5mm. (FIG. 1.29)
RF 622, Context 533, Phase 6ii.

668 Complete apart from extreme tip, in two adjoining fragments, globular head, ring collar, shank swells towards broken end (**112**)

L. (together) 52.5 Head D.6 Shank section D.2mm
RF 2250, Context 2177, Phase 6iii.

669 Complete, sub-globular head, broad ring collar, shank swells towards tip (**112**)

L.65 Head D.6.5 Shank section D.2.5mm
RF 10849, Unstratified.

670 Complete, globular head, large ring collar, shank swells towards tip (**112**)

L.39 Head D.5 Shank section D.2mm
RF 50023, Unstratified.

TYPE 132 GLOBULAR HEAD, COLLAR, SHANK SWOLLEN,
DECORATION ON HEAD (FIG. 1.29)

671 Complete, globular head with wrythen decoration, collar, shank swells towards tip (**132**)

L.62 Head D.6 Shank section D.2mm. (FIG. 1.29)
RF 4148, Context 3891, Phase 6ii.

Type 2 – polyhedral head

TYPE 212 POLYHEDRAL HEAD, COLLAR, SHANK SWOLLEN

672 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, triangular corner facets, triple ring collar, shank swollen towards tip (**212**)

L.59 Head L.3.5 W.4 Shank section D.2mm
RF 5451, Context 3758, Phase 4ii.

Linked pin (Fig. 1.29)

TYPE LIN2 – LARGE DISCOIDAL HEAD

- 673 Large disc head only, originally attached to the shank via one central rivet and a second at the junction with the shank, the second still surviving. The chip-carved decoration depicts a central narrow-armed cross, with simple interlace in the fields between the arms. There is a narrow plain band between the decoration and the disc edge, with two perforations for chains at opposing sides.
D.42 Th.2mm. (Fig. 1.29)
RF 2068, Context 2016, Phase 6iii.

Other pins (Fig. 1.29; Pls 1.6 and 1.9)

DISCOIDAL HEAD

- 674 Complete apart from the extreme tip of the shank, discoidal head formed from integral disc with a decorated disc superimposed and attached by a silver rivet at the top of the shank and possible solder on the back of the disc. The decorated disc has chip-carved simple interlace which is gilded and has almost completely split away from its backing. The shank swells slightly towards the tip. Analysis: mainly silver, trace of copper, mercury-gilded. Sheet attached to pin head by silver rivet and possible solder **000**
L.48.5 Head D.11 Th.1.5 Shank section D.2mm. (Fig. 1.29)
RF 5334, Context 3891, Phase 6ii.

ZOOMORPHIC HEADS (Fig. 1.29; PL. 1.6)

- 675 Complete, with a small mercury-gilded terminal in the form of an animal head, of triangular section, thicker at the back of the head which has a deep notch between the ears, and thinning towards the gaping mouth and upturned snout. The small circular eyes are inset, and there is a collar below the head. The shank has a long tapering tip. Analysis: debased silver, mercury-gilded **000**
L.46 Head W.3.5 Th.1.5 Shank section D.1.5mm. (Fig. 1.29)
RF 2294, Context 1832, Phase 6ii–6iii.
- 676 Incomplete, part of head decorated on both sides with chip-carved beast, with small ear, round snout and circular eye. Part of an extended leg rests against the lower edge of the head. The upper part of both sides retains gilding which has worn off elsewhere. The head appears to have broken off at the junction with the shank. Analysis: alloy of silver and copper (silver content high), mercury-gilded **000**
L.16.5 W.8.5 Th.1mm. (Fig. 1.29)
RF 2631, Context 2184, Phase 6iii.
- 677 Complete apart from the extreme tip of the shank, with a head depicting a backward-looking beast on both faces. The beast has a long beak, upright ear, a collar, extended leg and a partially cross-hatched wing, the tip of which touches the beak. Gilding covers the head and the top of the shank. The shank swells towards the tip. Analysis: debased silver, mercury-gilded.
L.75 Head L.21 W.9 Th.2 Shank section D.2mm. (Fig. 1.29; PL. 1.6)
RF 324, Context 1, Topsoil.
- 678 Complete, with a flat head decorated on the front face with a pair of deeply carved confronted beasts. Each has a triangular ear, deeply punched circular eye, and wide gaping mouth which contains the tip of their companion's tail which winds around their neck. A curving and tapering wing on each side follows the lower edges of the pinhead, and the

legs of each with two long claws cross between the wings. Small triangular punched marks speckle the bodies. There is a collar below the head, and the shank swells towards the tip which is bent up. The front of the head and collar is gilded. Analysis: silver, slight trace of copper, mercury-gilded.

L.76.5 Head L.21 W.11.5 Th.1 Shank section D.3mm. (Fig. 1.29; PL. 1.6)

RF 7240, Unstratified.

SPHERICAL WITH GLASS SETTINGS (Fig. 1.29; PL. 1.9)

- 679 Head only, shank broken off, spherical with six cylindrical settings, five containing red glass, the sixth remains of the missing shank. All the settings have beaded collars around, two having a second plain collar, and that around the shank having a spirally twisted collar below the beaded collar. The head is gilded. Analysis: remains of shank debased silver, mercury-gilded head **000**
D.13.5 Setting D.3.5mm. (Fig. 1.29; PL. 1.9)
RF 1241, Context 1183, Phase 6iii.

Other (Fig. 1.29)

- 680 Incomplete, lower part of shank broken away, with sub-oval openwork terminal with chip-carved curvilinear tendrils, of sub-rectangular section, thinning out slightly to upper end, globular swelling below with ring collar, the whole is gilded. Analysis: debased silver, mercury-gilded **000**
L.32 Terminal: L.11.5 W.6.5 Th.1.5 Shank section d.2mm. (Fig. 1.29)
RF 1887, Context 1728, Phase 5b.

(?) Pin head (Fig. 1.29)

- 681 Semi-quadrant shaped, riveted at lower end with two copper alloy rivets to iron shank fragment of sub-rectangular section. The head is decorated with two fields divided axially by central band and defined at edges by narrow bands, both fields decorated with chip-carved interlace of asymmetrical patterns, punched dots along all bands. Analysis: front mercury-gilded, base metal is debased silver with copper alloy.
L.28.9, W.20.3, Th. 1 Shank W.4.1, Th.3.4. (Fig. 1.29)
RF 12755, Unstratified.

Catalogue of iron pins (Fig. 1.30)

NB All shanks are of circular section unless otherwise stated
NB non-pins = RFs 11790, 2593, 9835, 9688, 9444, 7916, 7117, 7118, 1956

Type FE01 – lead heads (Fig. 1.30)

TYPE FE011 – LEAD HEAD, SHANK SECTION UNVARIED (Fig. 1.30)

- 682 Incomplete, lower part of shank broken off, tin/lead alloy sub-globular head, shank of sub-circular section. Analysis: tin/lead alloy head (**FE011**)
L.39 Head D.7 Shank section D.2.5mm
RF 5505, Context 3758, Phase 4ii.
- 683 Complete, sub-globular lead/tin alloy head, shank of circular section with white-metal plating all over. Analysis: lead/tin alloy head, tin/lead plating (**FE011**)
L.50.5 Head D.6 Shank section D.2mm
RF 5765, Context 3107, Phase 4ii.
- 684 Complete, sub-globular lead/tin alloy head, shank of circular section. Analysis: lead/tin alloy head (**FE011**)
L.61.5 Head D.6 Shank section D.2mm. (Fig. 1.30)
RF 5192, Context 5193, Phase 4ii–5a.

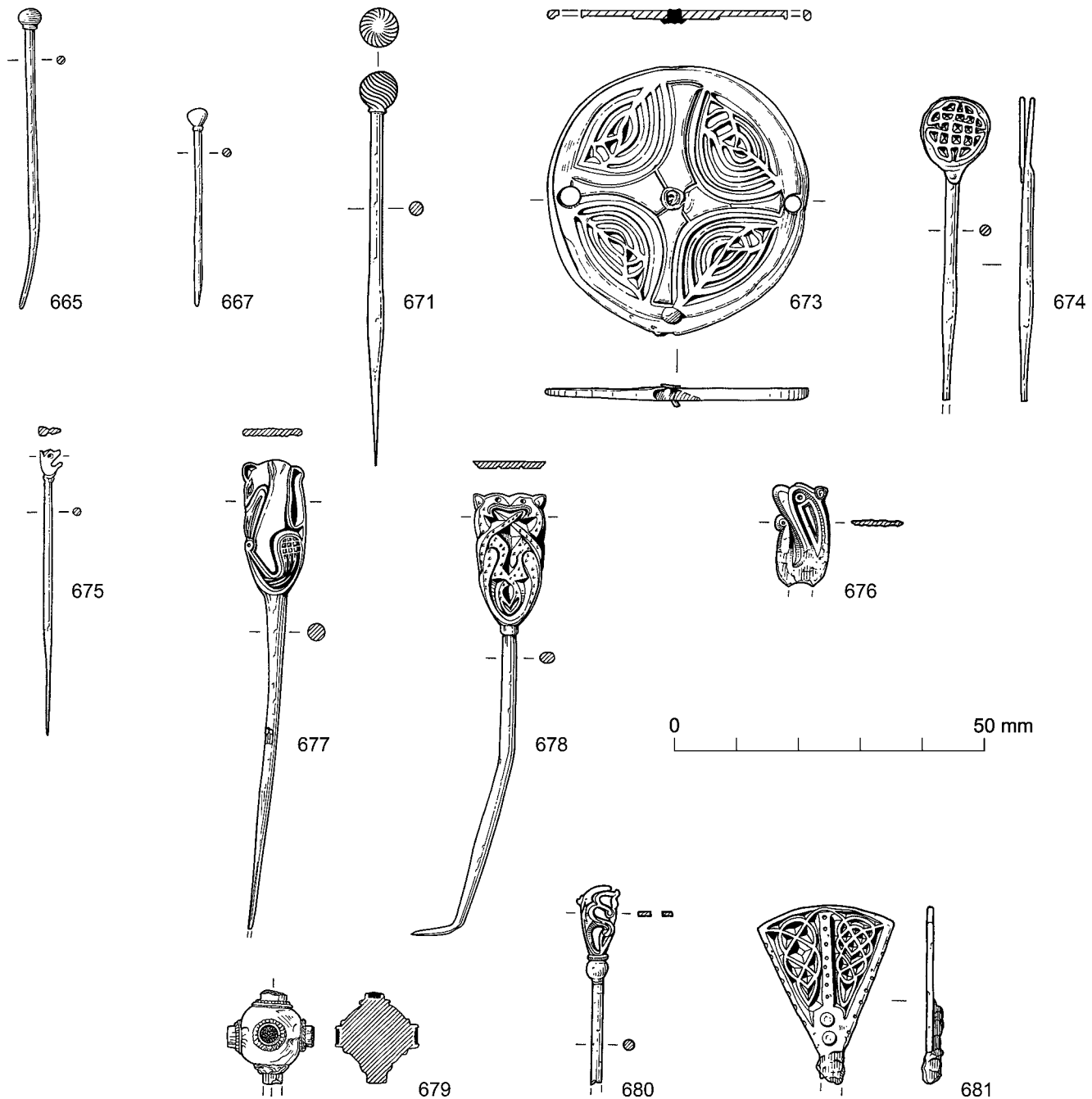


FIG. 1.29. Silver pins of Types 1, LIN2 and 000, and a possible pin head. Scale 1:1.

685 Complete, sub-globular lead head, shank of circular section with white-metal plating all over. Analysis: lead head, tin/lead plating (**FE011**)
L.59 Head D.5.5 Shank section D.2.5mm. (FIG. 1.30)
RF 4225, Context 3891, Phase 6ii.

686 Incomplete, lower part of shank broken off, globular lead head, shank of circular section (**FE011**)
L.23 Head D.5.5 Shank section D.2.5mm
RF 6820, Context 6797, Phase 6ii.

687 Incomplete, part of globular lead head broken off, short shank of sub-circular section. Analysis: lead head (**FE011**)
L.35 Head D.8 Shank section D.2.5mm
RF 1188, Context 1182, Phase 6iii.

688 Complete, sub-globular lead head, shank of circular section, white-metal plating all over. Analysis: lead head, tin/lead plating (**FE011**)
L.60.5 Head D.5 Shank section D.2mm
RF 3826, Context 3989, Phase 6iii.

- 689 Complete apart from extreme tip, globular tin/lead alloy head, shank of circular section, shank with white-metal plating. Analysis: tin/lead alloy head, tin plating on shank (**FE011**)
L.47.5 Head D.6 Shank section D.2mm
RF 3833, Context 3989, Phase 6iii.
- 690 Complete apart from extreme tip, sub-globular lead/tin alloy head, shank of circular section, white-metal plating on shank. Analysis: lead/tin alloy head, tin/lead plating (**FE011**)
L.46 Head D.4.5 Shank section D.2mm
RF 8241, Context 3989, Phase 6iii.
- 691 Incomplete, part of head and lower part of shank broken off, sub-globular lead alloy head, shank of sub-circular section.
Analysis: high proportion of tin was identified, and traces of lead. (**FE011**)
L.26 Head D.5 Shank section D.2mm
RF 9891, Unstratified.
- 692 Incomplete, lower end of shank broken off, lead alloy head wrapped around top of shank which is of sub-circular section.
Analysis: high proportion of lead and lower amounts of tin. (**FE011**)
L.44.5 Head D.6 Shank section D.3mm
RF 11308, Unstratified.
- 693 Incomplete, part of head and lower part of shank broken off, traces of lead head remain, shank of circular section. Analysis: lead head (**FE011**)
L.31 Shank section D.2mm
RF 13432, Unstratified.

Type FE1 – globular heads (Fig. 1.38)

TYPE FE100 GLOBULAR HEAD, NO COLLAR, SHANK FORM UNKNOWN

- 694 Sub-globular head fragment only (**FE100**)
D.6mm
RF 7830, Context 7817, Phase 6iii.

TYPE FE101 GLOBULAR HEAD, NO COLLAR, SHANK SECTION UNVARIED

- 695 Complete but in two adjoining fragments, sub-globular head, tapering shank of sub-circular section, white-metal plating all over. Analysis: tin/lead plating (**FE101**)
L. (together) 40 Head D.4 Shank section D.1.5mm
RF 514, Context 503, Phase 5a–5b.
- 696 Incomplete, lower part of shank broken away, sub-globular head, shank of circular section (**FE101**)
L.22 Head D.6 Shank section D.2.5mm
RF 3229, Context 3217, Phase 5b.
- 697 Incomplete, lower part of shank broken off, globular head, shank of circular section, white-metal plating all over. Analysis: tin/lead plating (**FE101**)
L.56 Head D.4.5 Shank section D.2mm
RF 3426, Context 3417, Phase 5b–6i.
- 698 Complete, globular head, short shank of circular section (**FE101**)
L.27 Head D.4 Shank section D.2mm
RF 1935, Context 1930, Phase 6iii.
- 699 Incomplete, part of head and lower end of shank broken off, head type unclear but possibly globular, shank of circular section (**FE101**)

L.30.5 Head W.4.5 Shank section D.3mm
RF 12044, Context 6469, Phase 6iii.

- 700 Incomplete, lower part of shank broken off, sub-globular head, shank of circular section (**FE101**)
L.33 Head D.6 Shank section D.2mm
RF 6890, Context 6300, Phase 6iii–7.
- 701 Complete, globular head, shank of circular section (**FE101**)
L.65.5 Head D.5 Shank section D.2.5mm
RF 839, Unstratified.
- 702 Complete, sub-globular head, groove just below head, shank of circular section (**FE101**)
L.62.5 Head D.4.5 Shank section D.3mm
RF 3781, Unstratified.
- 703 Complete apart from extreme tip, globular head, shank of sub-oval section (**FE101**)
L.65 Head D.4 Shank section W.3.5 Th.2.5mm
RF 9498, Unstratified.
- 704 Incomplete, lower end of shank broken off, sub-globular head, shank of circular section, white-metal plating all over. Analysis: tin/lead plating (**FE101**)
L.28 Head D.7 Shank section D.2mm
RF 11235, Unstratified.
- 705 Complete, head appears globular although obscured by corrosion, shank of circular section (**FE101**)
L.54 Head D.3 Shank section D.2mm
RF 12548, Unstratified.

TYPE FE103 GLOBULAR HEAD, NO COLLAR, SHANK OF SQUARE SECTION

- 706 Incomplete, lower part of shank broken away, globular head, shank of sub-square section (**FE103**)
L.30 Head D.7.5 Shank section W.2mm
RF 3771, Unstratified.

TYPE FE111 GLOBULAR HEAD, COLLAR, SHANK SECTION UNVARIED (Fig. 1.30)

- 707 Complete apart from shank tip, globular head, double-ring collar, shank of circular section, white-metal plating all over. Analysis: tin/lead plating (**FE111**)
L.45 Head D.6 Shank section D.2mm. (Fig. 1.30)
RF 2636, Context 2184, Phase 6iii.
- 708 Incomplete, lower part of shank broken off, globular head, collar, shank of sub-circular section (**FE111**)
L.22.5 Head D.3 Shank section D.2mm
RF 9687, Context 6300, Phase 6iii–7.
- 709 Incomplete, lower part of shank broken off, globular head, ring collar, shank of circular section (**FE111**)
L.24 Head D.4 Shank section D.2.5mm
RF 7861, Unstratified.

TYPE FE123 GLOBULAR HEAD, NO COLLAR, SHANK OF SQUARE SECTION, DECORATION ON HEAD (Fig. 1.30)

- 710 Incomplete, lower part of shank broken off, globular head, wrythen decoration, two grooves around shank below head, shank of sub-square section, white-metal plating all over. Analysis: tin/lead plating (**FE123**)
L.31 Head D.5 Shank section W.2mm
RF 3097, Context 2860, Phase 2i–4ii.
- 711 Complete apart from extreme tip of shank, globular head with wrythen decoration, three grooves around shank below head, shank of sub-square section, white-metal plating all

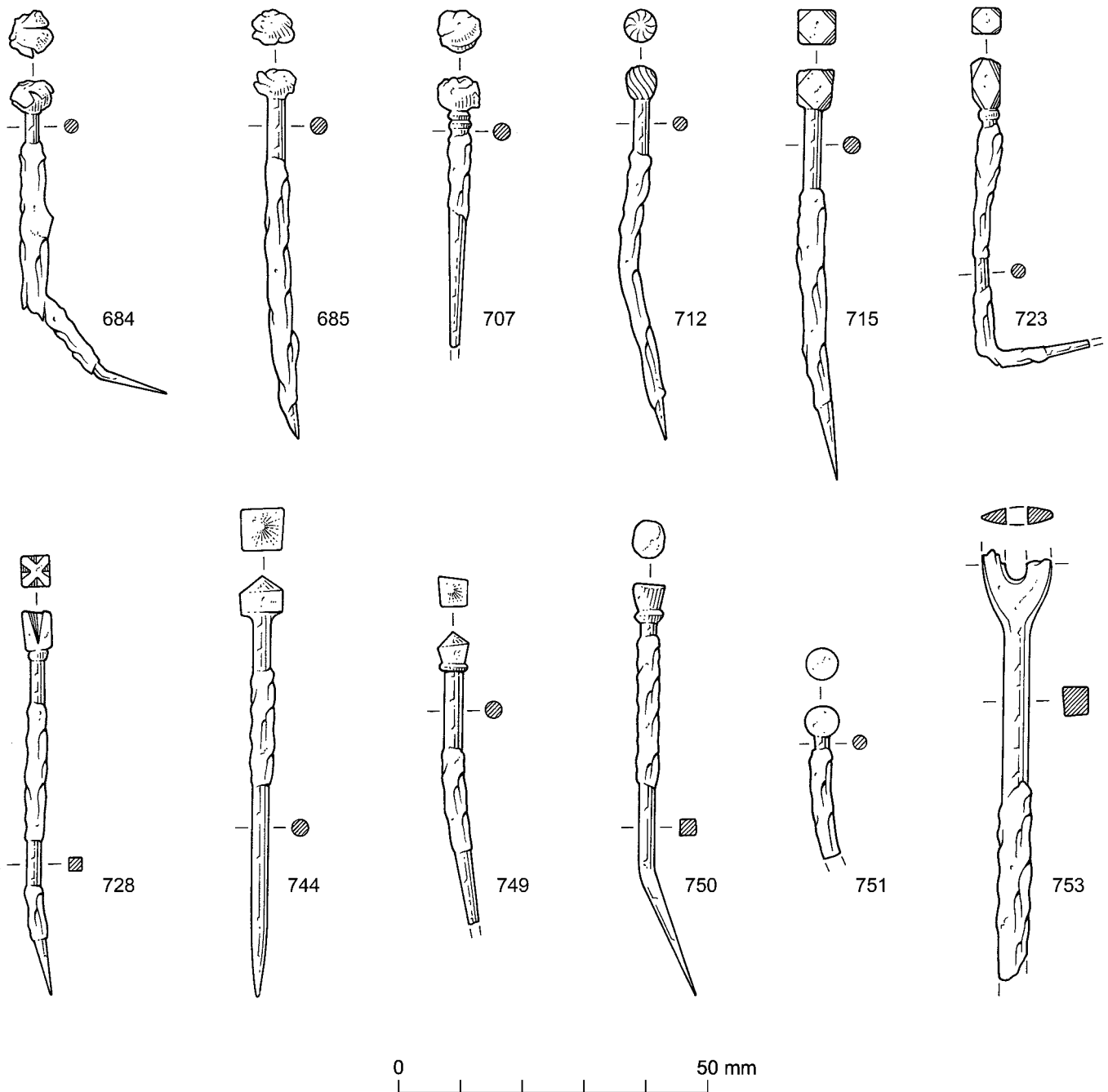


FIG. 1.30. Iron pins of Types FE01, FE1, FE2, FE3, FE8, and FE000. Scale 1:1.

over. Analysis: tin (trace of lead) plating (**FE123**)

L.52 Head D.5 Shank section W.2 Th.2mm

RF 3150, Context 3107, Phase 4ii.

- 712 Complete, globular head with wrythen decoration, shank of sub-square section, white-metal plating on head and top of shank. Analysis: tin/lead plating (**FE123**)
L.60 Head D.4.5 Shank section W..2 Th.2mm. (FIG. 1.30)
RF 1697, Context 1459, Phase 6iii.

Type FE2 – polyhedral heads (FIG. 1.30)

TYPE FE201 POLYHEDRAL HEAD, NO COLLAR, SHANK SECTION

UNVARIED

- 713 Complete but in two fragments, polyhedral head of square section, sides obscured by corrosion, shank of circular section (**FE201**)
L.(together)69.5 Head W.5.5 Shank section D.3mm
RF 3130, Context 3107, Phase 4ii.

- 714 Incomplete, lower part of shank broken away, head possibly

polyhedral but heavily obscured by corrosion, shank of circular section (**FE201**)

L.21 Head L.4.5 W.5 Shank section D.2mm

RF 7352, Context 3758, Phase 4ii.

- 715 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, triangular corner facets, shank of sub-circular section, white-metal plating all over. Analysis: tin/lead plating all over (**FE201**)
L.64.5 Head L.5.5 W.5 Shank section D.2.5mm. (Fig. 1.30)
RF 689, Context 669, Phase 5a–5b.

- 716 Complete, polyhedral head of square section, lozenge-shaped facets on top and sides, triangular corner facets, shank of sub-circular section (**FE201**)
L.64 Head L.5.5 W.6.5 Shank section D.2.5mm
RF 770, Context 636, Phase 6iii.

- 717 Complete apart from extreme tip, polyhedral head of square section, lozenge-shaped facets on sides and top, triangular corner facets, shank of circular section (**FE201**)
L.47 Head L.6.5 W.5.5 Shank section D.2.5mm
RF 9773, Context 6300, Phase 6iii–7.

- 718 Complete, head polyhedral of square section, details of top and sides obscured by corrosion, shank of sub-circular section (**FE201**)
L.52.5 Head L.6 W.3.5 Shank section D.2mm
RF 7488, Unstratified.

TYPE FE203 POLYHEDRAL HEAD, NO COLLAR, SHANK OF SQUARE SECTION

- 719 Complete apart from tip of shank, polyhedral head, details of sides and top obscured by corrosion, shank of square section, tin plating all over. Analysis: white-metal plating (**FE203**)
L.38 Head L.6.5 W.5. Shank section W.3mm
RF 7349, Context 3758, Phase 4ii.

TYPE FE210 POLYHEDRAL HEAD, COLLAR, SHANK FORM UNKNOWN

- 720 Incomplete, most of shank broken away, remaining shank split along one side, polyhedral head, lozenge-shaped facets on top and sides, triangular corner facets, collar, shank section unclear (**FE210**)
L.27 Head L.7 W.5 Shank section W.3mm
RF 12907, Unstratified.

TYPE FE211 POLYHEDRAL HEAD, COLLAR, SHANK SECTION UNVARIED (Fig. 1.30)

- 721 Complete apart from extreme tip, polyhedral head, detail of sides and top obscured by corrosion, collar, shank of sub-circular section, white-metal plating all over. Analysis: tin/lead plating (**FE211**)
L.55 Head L.4 W.4 Shank section D.2.5
RF 4610, Context 3107, Phase 4ii.

- 722 Complete, polyhedral head, of square section, lozenge-shaped facets on top and sides, triangular corner facets, collar integral with head, shank of circular section, white-metal plating all over. Analysis: tin/lead plating (**FE211**)
L.75.5 Head L.6 W.5 Shank section D.3mm
RF 11010, Context 6472, Phase 5b–6i.

- 723 Complete, polyhedral head of square section, sub-lozenge shaped facets on top and sides, triangular corner facets, ring collar, shank of sub-circular section, white-metal plating on head and grooves around collar. Analysis: tin/lead plating (**FE211**)

L.65 Head L.7.5 W.4 Shank section D.2mm. (Fig. 1.30)
RF 2511, Context 2181, Phase 6iii.

- 724 Incomplete, most of shank broken off, polyhedral head, obscured by corrosion, but appears to have lozenge-shaped facets, collar, shank of circular section (**FE211**)
L.17 Head L.5.5 W.4 Shank section D.2.5mm
RF 13306, Unstratified.

- 725 Complete apart from extreme tip of shank, polyhedral head of square section, lozenge-shaped facet on top, sub-triangular side facets, triangular corner facets, collar, shank of circular section, appears plated all over (but not analysed) (**FE211**)
L.47 Head L.5.5 W.4 Shank section D.2mm
RF 13850, Unstratified.

TYPE FE213 POLYHEDRAL HEAD, COLLAR, SHANK OF SQUARE SECTION

- 726 Incomplete, lower part of shank broken off, polyhedral head, of square section, lozenge-shaped facets on top and sides, triangular corner facets, collar integral with head, shank of square section, white-metal plating on shank. Analysis: lead/tin plating (**FE213**)
L.33 Head L.8 W.3.5 Shank section W.2.5mm
RF 7467, Context 6472, Phase 5b–6i.

- 727 Complete apart from extreme tip, polyhedral head, of square section, lozenge-shaped facets on top and sides, triangular corner facets, collar, shank of square section, white-metal plating all over. Analysis: tin with trace of lead plating (**FE213**)
L.59 Head L.4 W.4.5 Shank section W.3mm
RF 7066, Context 7055, Phase 6ii–6iii.

TYPE FE233 POLYHEDRAL HEAD, COLLAR, SHANK OF SQUARE SECTION, DECORATION ON HEAD (Fig. 1.30)

- 728 Complete, polyhedral head of square section, sides trapezoidal with deep V-section notches cut in from the top, irregular collar, shank of sub-square section, white-metal plating all over. Analysis: tin/lead plating (**FE233**)
L.60.5 Head L.7 W.4.5 Shank section W.2 Th.2mm. (Fig. 1.30)
RF 2526, Context 2501, Phase 0.

- 729 Complete apart from extreme tip, polyhedral head of square section, sides trapezoidal with deep V-section notches cut in from the top, two ring collars, shank of sub-square section (**FE233**)
L.56 Head L.3 W.4 Shank section W.2.5mm
RF 4254, Context 3107, Phase 4ii.

Type FE3 – Biconical heads (Fig. 1.30)

TYPE FE300 BICONICAL HEAD, CONICAL TOP, SHANK FORM UNKNOWN

- 730 Complete apart from shank tip, biconical head, conical top, possible decoration or band around medial edge, shank section unknown, pin identified from X-ray only (**FE300**)
L.32.5 Head D.8 Across shank W.3mm
RF 14083, Unstratified.

- 731 Complete apart from tip, biconical head, conical top, shank section unknown, pin identified from X-ray only (**FE300**)
L.33 Head D.8 Across shank W.2mm
RF 14246, Unstratified.

TYPE FE301 BICONICAL HEAD, CONICAL TOP, SHANK SECTION

UNVARIED (FIG. 1.30)

- 732 Complete, biconical head, conical top, shank of circular section, white-metal plating all over. Analysis: tin/lead alloy plating (**FE301**)

L.58.5 Head D.6 Shank section D.2.5mm

RF 5913, Context 4041, Phase 5a.

- 733 Incomplete, lower part of shank broken away, biconical head, conical top, shank of circular section (**FE301**)

L.15 Head D.8 Shank section D.2.5mm

RF 3305, Context 2718, Phase 5a–6ii.

- 734 Incomplete and in three fragments, lower part of shank broken off, biconical head, conical top, shank of sub-circular section, white-metal plating all over. Analysis: tin/lead plating (**FE301**)

L. (together) 40.5 Head D.7.5 Shank section D.3mm

RF 2785, Context 2562, Phase 5b.

- 735 Complete, biconical head, conical top, short shank of circular section, white-metal plating all over. Analysis: tin/lead plating (**FE301**)

L.33 Head D.8 Shank section D.2.5mm

RF 5763, Context 3989, Phase 6iii.

- 736 Incomplete, lower part of shank broken off, biconical head, conical top, shank of circular section (**FE301**)

L.34 Head D.5.5 Shank section D.2.5mm

RF 7155, Context 7123, Phase 6iii.

- 737 Incomplete, lower part of shank broken off, biconical head, conical top, shank of circular section (**FE301**)

L.24.5 Head D.8.5 Shank section D.2mm

RF 7048, Context 6300, Phase 6iii–7.

- 738 Incomplete, lower part of shank broken off, biconical head, conical top, shank of circular section, white-metal plating all over. Analysis: lead/tin plating (**FE301**)

L.26.5 Head D.7.5 Shank section D.2.5mm

RF 7870, Context 6300, Phase 6iii–7.

- 739 Incomplete, lower part of shank broken off, biconical head, conical top, shank of sub-circular section (**FE301**)

L.45 Head D.7.5 Shank section D.2.5mm

RF 3039, Unstratified.

- 740 Complete apart from extreme tip, biconical head, conical top, groove around shank just below head, shank of circular section (**FE301**)

L.45 Head D.10 Shank section D.2.5mm

RF 7862, Unstratified.

- 741 Complete apart from extreme tip, biconical head, conical top, shank of circular section (**FE301**)

L.52 Head D.8 Shank section D.2.5mm

RF 7871, Unstratified.

- 742 Incomplete, tip of shank broken off, biconical head, conical top, shank of circular section (**FE301**)

L.30.5 Head D.7.5 Shank section D.2mm

RF 11938, Unstratified.

- 743 Incomplete, lower part of shank broken off, biconical head, conical top, shank of sub-circular section (**FE301**)

L.29.5 Head D.6 Shank section D.2mm

RF 12308, Unstratified.

- 744 Complete, biconical head, conical top, shank of circular section (**FE301**)

L.64 Head D.7 Shank section D.2.5mm. (FIG. 1.30)

RF 12695, Unstratified.

- 745 Incomplete, most of shank broken off, biconical head, conical top, shank of sub-circular section (**FE301**)

L.17.5 Head D.7.5 Shank section D.2.5mm

RF 13454, Unstratified.

TYPE FE303 BICONICAL HEAD, CONICAL TOP, SHANK OF SQUARE SECTION

- 746 Incomplete, lower part of shank broken off, biconical head, conical top, shank of sub-square section (**FE303**)

L.38 Head D.8 Shank section W.2mm

RF 4251, Context 3107, Phase 4ii.

- 747 Incomplete, most of shank broken off, irregularly biconical head, shank of sub-square section, white-metal plating on head. Analysis: tin/lead plating (**FE303**)

L.18 Head D.8 Shank section W.2.5mm

RF 9250, Unstratified.

- 748 Complete, biconical head, conical top, shank of sub-square section (**FE303**)

L.33.5 Head D.7 Shank section W.2mm

RF 12557, Unstratified.

TYPE FE311 BICONICAL HEAD, CONICAL TOP, COLLAR, SHANK

SECTION UNVARIED (FIG. 1.30)

- 749 Complete apart from extreme tip, biconical head, conical top, collar, shank of circular section, white-metal plating on shank. Analysis: tin/lead plating (**FE311**)

L.46 Head D.5 Shank section D.3mm. (FIG. 1.30)

RF 10617, Context 3421, Phase 5b–6.

Type FE8 – Inverted conical head (Fig. 1.30)

TYPE FE813 INVERTED CONICAL HEAD, COLLAR, SHANK OF SQUARE SECTION

- 750 Complete, inverted conical head of oval section, ring collar, shank of sub-square section, white-metal plating all over. Analysis: tin (trace of lead) plating (**FE813**)

L.68 Head L.4.5 W.5 Th.4.5 Shank section W.2.5mm. (FIG. 1.30)

RF 2606, Context 2184, Phase 6iii.

Miscellaneous pins (Fig. 1.30)

GLASS HEADS

- 751 Incomplete, lower end of shank broken off, globular blue glass head, shank of sub-circular section (**FE000**)

L.25.5 Head D.5.5 Shank section D.2mm. (FIG. 1.30)

RF 12234, Context 10772, Phase 2–4ii.

- 752 Incomplete, much of shank broken off, globular pale blue-green glass head, shank of sub-square section (**FE000**)

L.22 Head D.5.5 Shank section W.3mm

RF 5123, Context 3758, Phase 4ii.

OTHERS (FIG. 1.30)

- 753 Incomplete, both ends broken, shank of square section, one end flattened and appears originally oval or sub-circular with perforation, broken across perforation, other end cracked and distorted (**FE000**)

L.68 Head W.10.5 Th. 2 Shank section W.4 Th.4.5mm. (FIG. 1.30)

RF 11241, Unstratified.

- 754 Complete apart from extreme tip, narrow conical head, broad groove either side of collar just below head, shank of circular section (**FE000**)

- L.60.5 Head L.5 W.3 Shank section D.2.5mm
RF 12581, Unstratified.
- 755 Incomplete, lower part of shank broken off, horizontal discoidal head with two collars beneath, shank of circular section, white-metal plating all over. Analysis: lead/tin plating (**FE000**)
L.37.5 Head D.3 Shank section D.2mm
RF 13430, Unstratified.
- 756 (?) Pin, complete with sub-discoidal head, tapering shank of circular section
L.55 Head D.6 Shank section D.2.5mm
RF 11790, Context 10399, Phase 3bii.
- 757 Pin with looped 'shepherd's crook' head. L.48mm
RF 1956, Context 1453, Period 6.
- Type FE09 – shanks*
TYPE FE090 – SHANK FORM UNKNOWN (SECTION DIMENSIONS UNMEASURABLE)
- 758 Shank fragment, both ends broken off, shank split along side and section unclear (**FE090**)
L.26.5
RF 13057, Context 10772, Phase 2–4ii.
- 759 Shank fragment, broken at both ends and along side of shank, section unclear (**FE090**)
L.24
RF 12743, Context 6710, Phase 3biv–3bv.
- 760 Shank fragment, upper end broken off, shank broken up and section unclear (**FE090**)
L.46
RF 13206, Unstratified.
761. Shank fragment, broken at both ends, shank section unclear (**FE090**)
L.14
RF 13601, Unstratified.
- TYPE FE091 – SHANK SECTION UNVARIED
- 762 Shank fragment, both ends broken off, shank of sub-circular section (**FE091**)
L.25 Shank section D.3mm
RF 13031, Context 10772, Phase 2–4ii.
- 763 Shank fragment, both ends broken off, shank of sub-circular section (**FE091**)
L.34 Shank section D.2mm
RF 13040, Context 10772, Phase 2–4ii.
- 764 Shank fragment, upper end broken off, of sub-circular section (**FE091**)
L.56 Shank section D.2.5mm
RF 10092, Context 6235, Phase 3bv.
- 765 Shank fragment, upper end broken away, of circular section (**FE091**)
L.37 Shank section D.2mm
RF 9422, Context 3107, Phase 4ii.
- 766 Shank fragment only, both ends broken, of circular section (**FE091**)
L.30 Shank section D.2mm
RF 6606, Context 6499, Phase 6ii–6iii.
- 767 Shank fragment, upper end broken off, of circular section (**FE091**)
L.47 Shank section D.2.5mm
RF 10411, Context 1841, Phase 6ii–6iii.
- 768 Shank fragment, broken at both ends, of circular section (**FE091**)
L.31 Shank section D.2mm
RF 12150, Context 6499, Phase 6ii–6iii.
- 769 Shank fragment, upper end broken off, of circular section, white-metal plated all over. Analysis: tin plating (**FE091**)
L.45 Shank section D.2.5mm
RF 10491, Context 1836, Phase 6ii–6iii.
- 770 Shank fragment, of circular section, possibly part of no. 736, RF 7155 (**FE091**)
L.18 Shank section D.2mm
RF 7156, Context 7123, Phase 6iii.
- 771 Shank fragment, upper end broken away, of circular section (**FE091**)
L.46 Shank section D.3mm
RF 8975, Context 3989, Phase 6iii.
- 772 Shank fragment, broken at upper end, of circular section (**FE091**)
L.21 Shank section D.2mm
RF 11065, Context 1167, Phase 6iii.
- 773 Shank fragment, broken at upper end, of circular section (**FE091**)
L.20 Shank section D.3mm
RF 11166, Context 6469, Phase 6iii.
- 774 Shank fragment, upper end broken away, shank of sub-circular section, white-metal plating all over. Analysis: tin/lead plating (**FE091**)
L.26.5 Shank section D.2mm
RF 9455, Unstratified.
- 775 Shank fragment, upper end broken away, of sub-circular section (**FE091**)
L.32 Shank section D.2mm
RF 9671, Unstratified.
- 776 Incomplete, end of shank broken off, head type unclear, obscured by corrosion and possibly incomplete, shank of circular section (**FE091**)
L.44 Shank section D.2.5mm
RF 9905, Unstratified.
- 777 Shank fragment, upper end broken off, of circular section (**FE091**)
L.43.5 Shank section D.3mm
RF 11275, Unstratified.
- 778 Incomplete, upper end of shank broken off, shank of sub-oval section, white-metal plating all over. Analysis: tin/lead plating (**FE091**)
L.48.5 Shank section W.2 Th.1mm
RF 12417, Unstratified.
- 779 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.66 Shank section D.2.5mm
RF 12602, Unstratified.
- 780 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.59.5 Shank section D.3mm
RF 12737, Unstratified.
- 781 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.21.5 Shank section D.2mm
RF 12747, Unstratified.

- 782 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.59.5 Shank section D.3.5mm
RF 12855, Unstratified.
- 783 Shank fragment, upper end broken off, shank of sub-oval section (**FE091**)
L.26 Shank section W.2.5 Th.2mm
RF 12982, Unstratified.
- 784 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.39 Shank section D.2mm
RF 13215, Unstratified.
- 785 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.23.5 Shank section D.2mm
RF 13218, Unstratified.
- 786 Shank fragment, both ends broken off, shank of sub-circular section (**FE091**)
L.26 Shank section D.2mm
RF 13291, Unstratified.
- 787 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.43 Shank section D.3mm
RF 13376, Unstratified.
- 788 Shank fragment, both ends broken off, shank of sub-circular section, white-metal plating all over. Analysis: tin/lead plating (**FE091**)
L.38 Shank section D.2.5mm
RF 13410, Unstratified.
- 789 Shank fragment, upper end and tip broken off, shank of sub-circular section, white-metal plating all over. Analysis: tin plating, trace of lead (**FE091**)
L.57 Shank section D.2.5mm
RF 13414, Unstratified.
- 790 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.35 Shank section D.2mm
RF 13461, Unstratified.
- 791 Shank tip fragment, upper end broken off, of sub-circular section (**FE091**)
L.12 Shank section D.2mm
RF 13474, Unstratified.
- 792 Shank fragment, broken at both ends, of circular section (**FE091**)
L.30.5 Shank section D.2.5mm
RF 13527, Unstratified.
- 793 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.37 Shank section D.2mm
RF 13547, Unstratified.
- 794 Shank fragment, upper end broken off, shank of sub-circular section (**FE091**)
L.57 Shank section D.2.5mm
RF 13575, Unstratified.
- 795 Shank fragment, broken at both ends, shank of circular section, white-metal plating all over. Analysis: tin/lead plating (**FE091**)
L.27 Shank section D.2mm
RF 13578, Unstratified.

TYPE FE093 – SHANK OF SQUARE SECTION

- 796 Shank fragment, upper end broken away, of sub-square section (**FE093**)
L.35 Shank section W.2mm
RF 8965, Context 3107, Phase 4ii.
- 797 Incomplete, upper end broken off, shank of square section, white-metal plating all over. Analysis: tin/lead plating (**FE093**)
L.57 Shank section W.2.5mm
RF 11011, Context 6472, Phase 5b–6i.

1.9 Tool-marks and finishing details on non-ferrous, surface-coated and inlaid objects, including dress items

by Ian Panter, with contributions by Glynis Edwards[†] and Jacqui Watson

Copper alloy

A total of 72 objects were analysed, including a sample of the metal-detected material, to investigate and identify the presence of surface coatings and inlays, as well as technological evidence such as solder and alloy composition, although not all of the copper alloy was submitted for EDXRF analysis. The results are summarised below, and exclude the results of the study of the pins which is discussed above in section 1.8, Appendix 3 (pp.46–7).

Traces of both zinc and lead were often detected within the bronze and brass categories, although in very small quantities, as was silver, although no trace of a surface coating could be observed either visually or by EDXRF. The presence of silver, in these cases, is likely to be a contaminant, and, coupled with the range of alloy compositions observed, probably reflects the re-use and re-working of metal objects.

Of the objects analysed, thirty-one were found to have an applied decoration, and these are listed below:

Occasionally, during the course of investigation, areas of white metal were exposed which may have appeared to be either tinning or silvering. Subsequent analysis showed that the white metal patches represented elevated tin or lead levels within the alloy. Whether this was done deliberately to create a whiter alloy, or whether it has occurred as a result of differential corrosion is open to debate. Clearly, the most common method of surface coating for copper alloy objects was gilding, and the presence of mercury in the analyses suggests that the mercury-gilding method was usually employed. Silver coatings/inlays are rare, although a number of artefacts have been decorated with applied silver sheets.

In particular, two styli (cat. nos 1011 and 1012: RFs 7518 and 11568) are of note, in that they both have silver repoussé-decorated sheets applied to the broad eraser ends, similar to the iron stylus (no. 1013: RF 12268). EDXRF analysis of the grey deposits observed on the back of the silver sheets, as well as on the front surface of the eraser, indicated a much higher tin content, although the lead

levels were low. Although both tin and lead were constituents of the copper alloy used to make the styli, it is likely that these deposits are solder.

Silver and gold objects

All the silver objects (excluding coins – see Ch. 13) were analysed, including some of the metal-detected finds, to ascertain the quality of the silver present, that is, whether the silver had been debased by the addition of copper/copper alloys. The results are summarised in the table below:

Alloy composition	Number of objects
Cu	2
Cu/Sn	14
Cu/Sn/Pb	34
Cu/Zn	10
Cu/Sn/Zn/Pb	9
Cu/Pb	1
mainly Pb	2

Of these, 21 objects had been gilded, usually by the mercury process. Furthermore, it was possible to re-classify a few objects as being predominantly silver, as opposed to their original classification as copper alloy objects. Also, one pin (no. 566; RF 822) – originally thought to be iron with a gilded dog head – had high levels of copper present, and it was not possible to ascertain whether the “base” metal was a copper alloy which had become encrusted with masses of iron corrosion.

Surface coating	Number of objects
Gilded/Foil	18
Silvered	1
Inlay: lead	2
Inlay: silver	3
Enamel	7

A ‘finger ingot’ (no. 3289; RF 12198, unstratified) of debased silver possibly represents metal-working material.

One medieval gold brooch (no. 3367; RF 12237) was analysed and found to be predominantly gold, but with traces of silver and copper present.

Other decorative features

Alternative methods employed to decorate objects include carving/engraving, stamping, and punching, which can be observed on the iron, copper and silver objects.

Linear designs incised into the surface and often associated with plating can be seen on many buckles, strap-ends, styli and other fittings, and probably represent the most common form of adornment. One interesting item

is a mount (no. 979; RF 14087) which has an incised zoomorphic design which was probably cut into the mould used to cast the object.

Stamped and punched designs are also in evidence: in particular, the styli with applied repoussé sheets which have already been discussed, and other examples can be seen in brooches, lace tags and pins.

Alloy composition	Number of objects
Mainly silver	13
Debased with Cu or CuA	25

One method which appears to be observed only on iron objects is the spiral or “barley twist”, whereby two rods of iron are twisted together. This feature was observed on six objects, although only one (no. 1741; RF 5732) was positively identified as a handle – the others remaining of unknown function.

Effects of fire

A small number of objects exhibited evidence for being burnt. For example, areas on a copper alloy brooch (no. 23; FX 88, R6) have a disrupted “bubbly” appearance, with loss in definition of the decorative detail.

The possible vessel fragments (RF 14014), were seriously distorted and covered in red and green “glassy” corrosion products and “slag-like” material.

Manufacturing technology

Evidence for the processes and tools used in the fabrication of objects survived in a number of cases, especially within the patinated surfaces of the copper alloys, and in particular on a great number of pins. These marks were usually exposed during the process of corrosion removal, but given the excellent state of preservation of much of the material, they were visible without the aid of any mechanical intervention. This is an important point, as the surviving tool-marks can be considered as just that, rather than something that may have occurred from the activities of mechanical intervention.

The most common tool-mark would appear to be that from a file, used either in the shaping of an object, or to roughen or key a surface ready for application of a surface coating. For example, a medieval iron belt hasp (no. 3390; RF 10990) exhibited keying marks beneath the plating, as does a looped strip of ironworking debris (no. 3002; RF 7010), whilst on a copper alloy buckle (no. 121; RF 12522), although possible keying marks were preserved on the plate, no plating could be detected either visually or by EDXRF analysis. This may be an example of an unfinished object, indicating that fabrication and plating were occurring at Flixborough. During the course of corrosion removal from the iron file (no. 3092; RF 4877), tiny flecks of copper were visible, and subsequently detected using EDXRF. Whether this file had been used during the

fabrication of a number of objects from the site is open to debate. Further evidence for metal-working comes from the presence of lead splashes on four iron objects: a shoe or belt buckle (no. 3387; RF 9010), a U-shaped staple (no. 1279; RF 11155), an awl (no. 2492; RF 9654) as well as a S-shaped hook (no. 1783; 4085), where dots of lead were observed and detected.

Investigation of an iron strip (RF 8115) revealed that one end was still divided and had traces of coppering within it – perhaps the object was unfinished?

Although the majority of tool-marks appear on the copper alloys, there are a few examples preserved on the iron. For example, a knife (no. 2110, RF 3851) had faint striations running across the blade, probably from a file, although it is feasible that the marks may have been produced during the use of the blade.

Manufacturing flaws are visible within several of the copper alloy objects. A tag (no. 98; RF 6439) had a crescentic split in the back, as well as an area of white metal, as if there were impurities in the alloy, or the sheet had not been rolled out correctly. A patch of lead concentration on the eraser end of a stylus (no. 1005; RF 4762) may be indicative of a similar mishap, or may be the remains of solder, suggesting that a decorative sheet had been applied as with styli RFs 7518, 11568 and 12268 (nos 1011–13, discussed above).

The most common methods for joining two metals would appear to be the use of rivets, of solder and or welding, and one example of a possible scarf joint is visible on an iron handle (no. 1745; RF 7855). In this case, this might reflect a repair, using scarf joints to insert a new section.

Evidence for welding tends to be reflected in differential corrosion. Examination of a knife (no. 2174; RF 12303) revealed the presence of a distinct groove marking the junction of the blade and back, probably caused by a welding fault giving rise to deep-seated corrosion. A similar situation is seen in another knife (no. 2050; RF 12255), where a long split has developed from the tip, and presumably following the junction of the blade edge and back. The X-radiographic images of a number of the axes and adzes from the tool hoard also illustrate forging details.

Evidence for soldering is often notoriously difficult to confirm using techniques such as EDXRF, especially on copper alloys, as the solder constituents (tin and lead) are often components of the base metal alloy. In these instances, identification is very much dependent upon the character and position of the deposits as well as their relationship with the object. Examples from Flixborough include a domed mount (no. 975; RF 12802) and a disc-shaped mount (no. 977; RF 12803), both unstratified. Both base metals were bronze and each had a white crystalline deposit which had a lead-tin composition. Given the location and form of the material, it is likely that the deposits were solder, rather than areas of excessive corrosion.

Investigation of the copper alloy pins, especially the ones where the head was missing, revealed patches of

either white metal or a dull grey/white crystalline deposit around where the head would have been. Unfortunately, because of the alloy composition, it was not possible to detect for certain the presence of a solder using EDXRF. In many cases, higher levels of both lead and tin were detected, but whether this was due to solder or simply the affects of differential corrosion, is difficult to determine. As lower levels of tin and lead were detected elsewhere on the shanks, then a plating could be ruled out. A similar situation exists with the styli described above, where crystalline deposits survived on the reverse side of the applied silver mounts and on corresponding areas of the erasers. Unfortunately, because the styli were leaded copper/tin alloys, it was impossible to differentiate between lead and tin from the solder and that from the alloy, although higher tin levels were detected in these particular zones.

Detection of solder on ironwork is less fraught, but, apart from the iron stylus (described above), only one other example was recorded.

A barrel padlock bolt (no. 1818; RF 11419) had traces of a grey/silvery deposit sandwiched between two iron “plates”.

The use of rivets, both iron and copper alloy were recorded, and examples include a bell (no. 1020; RF 138), a fitting (no. 1516; RF 181), a disc-headed pin (no. 673; RF 2068) with both iron and copper rivets, and a possible copper alloy hinge (no. 1974; RF 2597) with remains of a thin iron sheet attached using iron rivets.

Objects such as strap-ends and buckle plates that had rivets were investigated to ascertain whether organic remains such as leather and textile had been preserved by mineralisation. Glynis Edwards and Jacqui Watson comment that six buckles have traces of leather from belts, and that no. 172 (RF 9284) had clear remains of the belt loops on both sides at the back. There is not enough evidence to determine whether the buckles were lost or discarded with the complete belts, or whether parts of the belts were cut off for other use.

Appendix 4. EXDRF analysis of selected gilded copper alloy and silver objects

by Jennifer Jones

A total of forty-one copper alloy and silver objects were found to have traces of gilding. These were surface analysed using EDXRF. Twenty-five are pins (13 copper alloy and 12 silver), and 16 are non-pins (seven copper alloy and nine silver).

By the early centuries AD, the most commonly-used method of gilding was the gold amalgam method, now usually referred to as fire gilding. An amalgam of gold and mercury was formed by dropping gold leaf or fragments of gold into hot mercury, and when this mixture cooled it was spread with a brush onto the carefully cleaned object. Heating the object to a dull red heat drove off the mercury and left the gold firmly attached to the underlying alloy. The object was then ready for burnishing (Untracht 1975). This method of gilding can be applied to both silver and copper

alloys, as long as the latter do not contain too much lead, and also to pure copper or silver artefacts. It can be used over the whole object surface, or just in selected areas.

EDXRF analysis of gilded objects should be able to reveal the use of fire gilding, by detecting mercury not completely driven off in the manufacturing process. Of the 41 gilded objects, mercury was detected by surface EDXRF analysis in 32 cases. It was not detected in five copper/copper alloys (three pins and two non-pins), or in four silver/silver alloys (two pins and two non-pins). The reason for this could be that where the gold layer is very thin or discontinuous, as is often the case, mercury was not detected at the exact site of analysis, or it could indicate the use of a different gilding method.

Leaf gilding and diffusion gilding techniques were also known at this time. Leaf gilding involves the attachment of gold leaf, too thin to be handled, to the object's surface by means of an adhesive. In diffusion gilding, the gold leaf was bonded to the underlying surface (usually silver or copper) by gentle heating (Oddy 1993). Both these methods may have been less commonly used than fire gilding by this period, but where mercury has not been detected, the use of diffusion or leaf gilding should not be discounted.

The results of the EDXRF analysis of the great square-headed brooch (no. 23; FX 88 R6) have already been discussed (see section 1.1, p.4).

1.10 Combs

by Martin Foreman, with identifications of osseous materials by Sonia O'Connor and T. P. O'Connor

Introduction

This report considers c.80 fragments derived from approximately 70 composite combs, recovered from contexts dated to between the late 7th and mid-10th centuries. They include double-sided, single-sided and handled forms. The combs are described according to terminology set out by MacGregor (1985, 75), with tooth-spacing or value (TV) calculated following Riddler (1994). The osseous materials were identified by Sonia O'Connor, and occasionally by Terry O'Connor. Comparative study with other sites was based primarily on published material; Bob Carr, Arthur MacGregor and Ian Riddler kindly provided information about many unpublished combs to broaden the scope of review.

Double-sided combs are represented by seven disassembled fragments of limited diagnostic value; 22 similar fragments which are more informative as to the size, form or decoration of the combs; and 13 assembled comb fragments. Symmetrical single-sided combs provide nine detached comb elements; five assembled fragments, and a complete comb. Handled combs and fragments possibly derived from handled combs include five disassembled elements; three assembled fragments; and a substantially

complete comb broken only at the time of its discovery. Other fragments, from either symmetrical or handled types, include seven end-plate, tooth-plate or side-plate fragments; and one small assembled fragment. Two flat mounts may be from the side-plates of composite combs of horn and bone. Another six items derive from combs of uncertain form; they include detached teeth and other small fragments.

The combs from Flixborough have previously been considered alongside those from the Anglian cemetery at Castledyke South, Barton-upon-Humber, North Lincolnshire (Foreman 1998; Foreman in prep.). The Roman affinity of Early Anglo-Saxon double-sided combs was suggested, differing from narrower and more elongated combs of later date. This development was perhaps conveyed through the introduction of single-sided forms. A regional tendency towards 'edge-pinning' of end-plates was identified, in contrast to common practice elsewhere (MacGregor 1985, 75). At Castledyke, double-sided combs outnumbered single-sided forms by about 3 to 1. At Flixborough, double-sided combs outnumbered single-sided forms by less than 2 to 1. Overall, this ratio resembles that reported from Middle Saxon *Hamwic*, Southampton. It contrasts with Middle Saxon Fishergate, York, where there were 3 single-sided combs for every 1 double-sided comb (Rogers 1993a), and more markedly still with Brandon, Suffolk (R. Carr, pers. comm.), and Thwing, East Riding of Yorkshire (T. Manby, pers. comm.): at Brandon there is only one double-sided comb, and at Thwing none. The Brandon assemblage comes as a re-deposited collection from 'dark earths'. Combs from Thwing are considered as Middle Saxon in date, though they are comparable to material from 10th- and 11th-century contexts at Coppergate, York, where single-sided combs predominate (A. MacGregor, pers. comm.; MacGregor *et al.* 1999).

The absence of comb-making debris may suggest that, in so far as its excavated areas are concerned, Flixborough functioned as a centre of consumption: these combs were manufactured elsewhere. The majority of comb fragments (c.85% of which were stratified finds) come from deposits dated by pottery to between the 9th century and the mid-10th century. They accompany metalwork, the majority of which is datable to the 8th and 9th centuries on the basis of current chronologies (Webster and Backhouse 1991). It is uncertain whether the combs accompany the metalwork as part of a residual and reworked assemblage, or whether they demonstrate shifts in rubbish disposal strategies and artefact deposition. A later emphasis on organic, and – in the case of antler – specifically woodland, resources may also be detectable. Antler combs, therefore, complement the studies of the consumption of timber and other faunal resources at Flixborough, which became more conspicuous during the later occupation of the site (Loveluck 2001; Dobney Volume 4, Ch. 5; Loveluck Volume 4, Chs 3, 4 and 9). These points enhance the importance of the combs from Flixborough, to the understanding of the site and its context, as well as to the study of the artefacts themselves.

Typological grouping of combs

Phasing information and context interpretations were added to catalogue entries for combs. The screening out of contexts interpreted as 'dumps' or 'dark soils' left only c.25 objects to provide a starting-point for a typological review, though two more from dump contexts were so near-complete as to suggest that their deposit may have been primary. This exercise showed similar material scattered between the earliest and latest phases represented. The next stage of review, therefore, drew all stratified material from all contexts together, tracing the currency of forms, material and tooth-value. This confirmed the mixing of artefacts, with scant discernible development in construction, fineness of tooth-spacing *etc.* Joins between fragments were usually within the same contexts. The presence of bone comb components in earlier and later phases, and the predominance of antler in the mid-to-late-9th-century Phases 4ii–5b, may hint at the more homogeneous nature of material in 9th-century contexts, and marked residuality in 10th-century deposits.

The typological ordering of the combs was attempted with reference to stratigraphic phasing, and to phase-dates supplied by pottery. Given significant residuality, in dumps in particular, 'spot-dates' offered by coins were also considered, as suggesting a feasible *terminus post quem* for residual elements incorporated in such contexts.

Wider double-sided combs

The double-sided combs appear at first sight to form an assemblage of consistent character. They have squared end-plates, some with slightly rounded corners, others more angular, and all with generous uncut and undecorated fields. These features suggest a date-range in the Middle Saxon period (Riddler 1994, 111). The teeth on end-plates are usually graduated in length, and similarly spaced on both sides of most combs. Side-plate terminals are straight-ended. Decoration is modest, and the avoidance of ring-and-dot for all except a distinct sub-group of single-sided combs is a particular feature of the assemblage from Flixborough. The execution of linear schemes is typically fine.

The earliest double-sided combs appear to have been the widest (c.36–49mm), and their side-plates were correspondingly broader as well. Tooth-plates were usually 9–13mm long (along the comb), shorter than those used for most other combs. The width and length of some detached end-plates and tooth-plates from double-sided combs has prompted their speculative assignment to this group. Tooth-spacing is between 5 and 7 per cm, with tooth values of 6/6 the most common. The preferred material was antler. Decoration usually comprises vertical lines, sometimes dividing blank fields, and is typically sparse. The sparse decoration of double-sided combs towards their ends is a feature of 7th-to-8th-century Frankish material; other examples are completely undecorated (Koch 1982, Taf. 15, gr. 36; Taf. 30, gr. 25; Taf. 39, gr. 76; Taf. 40, gr. 87; Taf.

43, gr. 97). Modest linear decoration, or none at all, is a widespread characteristic of Middle Saxon combs, as from Walton, Aylesbury, Buckinghamshire (Farley 1976, figs 20, 25 and 26); from *Hamwic* – Cook Street – Southampton (Riddler 1992, 8); Shakenoak, Oxfordshire (Brodrigg *et al.* 1972, figs 56–8); Sutton Courtenay, Berkshire (Leeds 1923, pls 28–9) and elsewhere.

Perhaps the (stratigraphically) earliest comb, no. 798 (RF 763, Fig. 1.31) is also among the plainest from the site. It is scantily decorated by two surviving pairs of finely incised vertical lines, set towards the end of the comb. It is possible that an attempt was made to restrict tooth-cutting scars to one side of the comb. Tooth-spacing was slightly differentiated on the two sides of the comb: six per cm on one side, seven on the other. The end-plate was apparently rounded at the corners, and apparently pinned close to its inner edge – though recorded on-site, these features did not survive the excavation of the object. It came from post-hole fill 463, ascribed to between Phases 2 and 5a – late-7th- to mid- to late-9th-century, but with residual material present. Its extremely simple decoration is similar to that of single-sided comb nos 842–3 (RF 5546/6015), from Phase 4ii dump 5503, dated to the mid 9th century. Plain combs figure among 7th-century finds from Castledyke (Foreman 1998, 287–8). Limited bands of decoration occur on a side-plate from Brandon, SF 2040 (R. Carr, pers. comm.), and are also an occasional feature of abraded comb fragments from *Hamwic*, with sets of four finely inscribed lines, SOU 1.7; and from Buttermarket, Ipswich, with sets of three lines (Ian Riddler, pers. comm.; Riddler *et al.* forthcoming).

Side-plate fragments nos 799–800 (RFs 10575/10590 and 180) are completely plain pieces, bearing the same tooth-spacing on both sides. Both are residual, deriving from a Phase 6ii–6iii dark soil and from topsoil. Unstratified no. 801 (FX 88, R103), from a fairly wide comb, retains traces of vertical linear decoration at one end of the side-plate. Fragment no. 802 (RF 7909) is from a detached and unstratified side-plate, and bears scars suggesting six teeth per cm on one side of the comb, and seven on the other.

Of the detached fragments grouped speculatively with these combs on account of their width, two end-plates are of some interest. They come from Phase 4ii dump 3758, dated to the mid 9th century but with a residual presence including a sceat of c.730–40. Both pieces have angular corners. One, no. 803 (RF 5705), bears an exceptionally generous blank field, and was apparently edge-pinned. Tooth-plates no. 804 (RF 6293), from the same context; and no. 805 (RF 11393) from Phase 5a dump 11039, could both derive from the same comb as no. 803. End-plate no. 806 (RF 3777, Fig. 1.31) has a rivet more centrally placed, and the surface shows that it was formerly held between flat-ended side-plates which narrowed towards the end of the comb. This implies cigar-shaped terminals, again a common feature of Middle Saxon combs, as from Maidenhead, SFs 1290 and 1321; Barton Court Farm,

Oxfordshire; *Hamwic* (Ian Riddler, pers. comm.) and elsewhere. A further end-plate with rounded corners but without graduation in tooth-length, no. 807 (RF 10157), bears a rivet-hole close to its inner edge. It comes from Phase 5a dump 6491, dated to the mid-to-late 9th century. Tooth-plate no. 809 (RF 6874) was unusually (50mm) wide, which tends to relate it to Early Anglo-Saxon combs rather than others from Flixborough (cf. Foreman 1998, and in prep.). Most other tooth-plates from wider combs occur in dumps from Phase 5a, but not later.

The dating available for these comb fragments at Flixborough is loose. The earliest possible date would be late 7th-century, for comb no. 798 (RF 763), and its similarity to Early Anglo-Saxon material from Castledyke could support an early date. These double-sided combs resemble others from sealed Middle Saxon contexts elsewhere. The condition of other fragments could allow all to be residual; the earliest context they occurred in was of early-to-mid-8th-century date.

Narrower double-sided combs

A larger number of double-sided combs appear more delicate and elongated than those considered above. These often bear decoration on only one side of the comb. This decoration remains modest in its form and extent, frequently comprising no more than deep tooth-cutting scars. For more ornate pieces, diagonal hatched or paired-line motifs were favoured, often appearing so regular as to suggest the use of a double-bladed saw. Tooth-spacing was fine, usually between six and seven teeth per cm, and usually the same on both sides of the comb. Tooth-plates were usually 14–17mm long – in this aspect of construction, resembling some of the symmetrical single-sided combs from Flixborough. Longer and narrower double-sided combs were less damaged than others, suggesting the soils in which they lay had been subjected to less disturbance after their deposition.

Though found in Phase 6i trench fill 5930, near-complete comb nos 811–12 (RF 5939/5938; FIG. 1.31) may derive from underlying dumps of mid-9th-century Phase 4ii; both the trench fills and underlying dumps produced comb fragments of closely comparable size. If this origin for the comb is accepted, nos 811–12 (RF 5939/5938) could have been the (stratigraphically) earliest of the assembled narrow double-sided combs. It comprises twelve tooth-plates and an end-plate, the tooth-plates being narrower towards the ends of the comb and wider in its central part. The side-plates are between 8 and 12mm in width. Though not central, the pinning of the end-plate has begun to drift away from its edge. Tooth-cutting scars appear on both sides. Comb no. 813 (RF 7925) appears very similar, and features tooth-plates arranged in a similar fashion to those of comb nos 811–12. It came from Phase 5b–6i dump 6888, dated to the late 9th to early/mid 10th century. The surviving end-plate appeared to have been pinned close to its edge. Prominent tooth-cutting scars were carefully restricted to one side of otherwise undecorated side-plates.

The elongated form recurs amongst combs from Middle Saxon *Hamwic*, though the Flixborough combs may feature more tooth-plates than are usual among these (Ian Riddler, pers. comm.). Narrow double-sided combs are thought to date to the Middle Saxon or the Mid-to-Late Saxon period at Buttermarket, Ipswich (Riddler *et al.* forthcoming).

Fragment no. 814 (RF 6982; FIG. 1.31) has atypically thick tooth-plates (5mm). The comb again features short tooth-plates towards the ends, flanking longer central tooth-plates. The end-plate is pinned fairly centrally. Tooth-cutting scars are restricted to one side-plate, but vertical lines appear at the terminals of both the narrow side-plates, combining with diagonal lines on the plainer side to produce a very restricted hatched zone. It is in fairly good condition, coming from Phase 6iii dark soil 6300, together with both residual and contemporary material. The limited decoration of the terminals recalls some of the combs, and their Middle Saxon parallels, cited above. Rogers (1993a, 1398) ascribes the restriction of tooth-cutting scars to one side of a double-sided comb from Fishergate to its repair (*ibid.*, fig. 683 no. 5739); it is there dated to the later 8th century (*ibid.*, table 76). The restriction of decoration to a single display face was a fashion of the 8th and 9th centuries (Riddler *et al.* forthcoming). It has been linked with Frisian craftsmanship or trade by MacGregor (1985, 91) and Tempel (1972, 57). This issue deserves to be more fully explored (MacGregor *et al.* 1999, 1938); the trait is clearly related to the material culture of the North Sea littoral, though its association with named groups identified from documentary sources is warmly contested (Lebecq 1990; Riddler 1990).

Bone comb fragment no. 815 (RF 11792) comes from ditch-fill 10772, a context only broadly dated to Phase 4ii. Tooth-spacing – six per cm – was equal on both sides. Its squared end-plates are lightly rounded at their corners. Decoration is a more prominent feature of this comb than of those considered above, and comprises closely-spaced vertical lines along a surviving length of 39mm – it is uncertain how far along the comb this extended. Though its width alone might prompt its inclusion among earlier material, it shares the more graceful form of later combs from Flixborough. The curved end-plate and dense decoration recur on a comb from Christ Church College, Canterbury, SF 22 (Ian Riddler, pers. comm.), while the decoration is also common on single-sided comb fragments from Ipswich Buttermarket (Riddler *et al.* forthcoming).

Fragment no. 816 (RF 5808; FIG. 1.31) comes from a Phase 5b dump, 5553, dated to between the late 9th and early 10th centuries, although residual finds are also present, including 7th-century hanging bowl escutcheon no. 980 (RF 5717; Youngs, Ch. 2.3 this volume). The end-plate is edge-pinned, and the terminals of the side-plates are decorated with restricted zones of vertical lines. Double-sided combs from York include examples of this decoration (e.g. Waterman 1959, 88, pl. 18 no. 11). At Coppergate, similar decoration of side-plate terminals appears on single-sided comb fragments from contexts

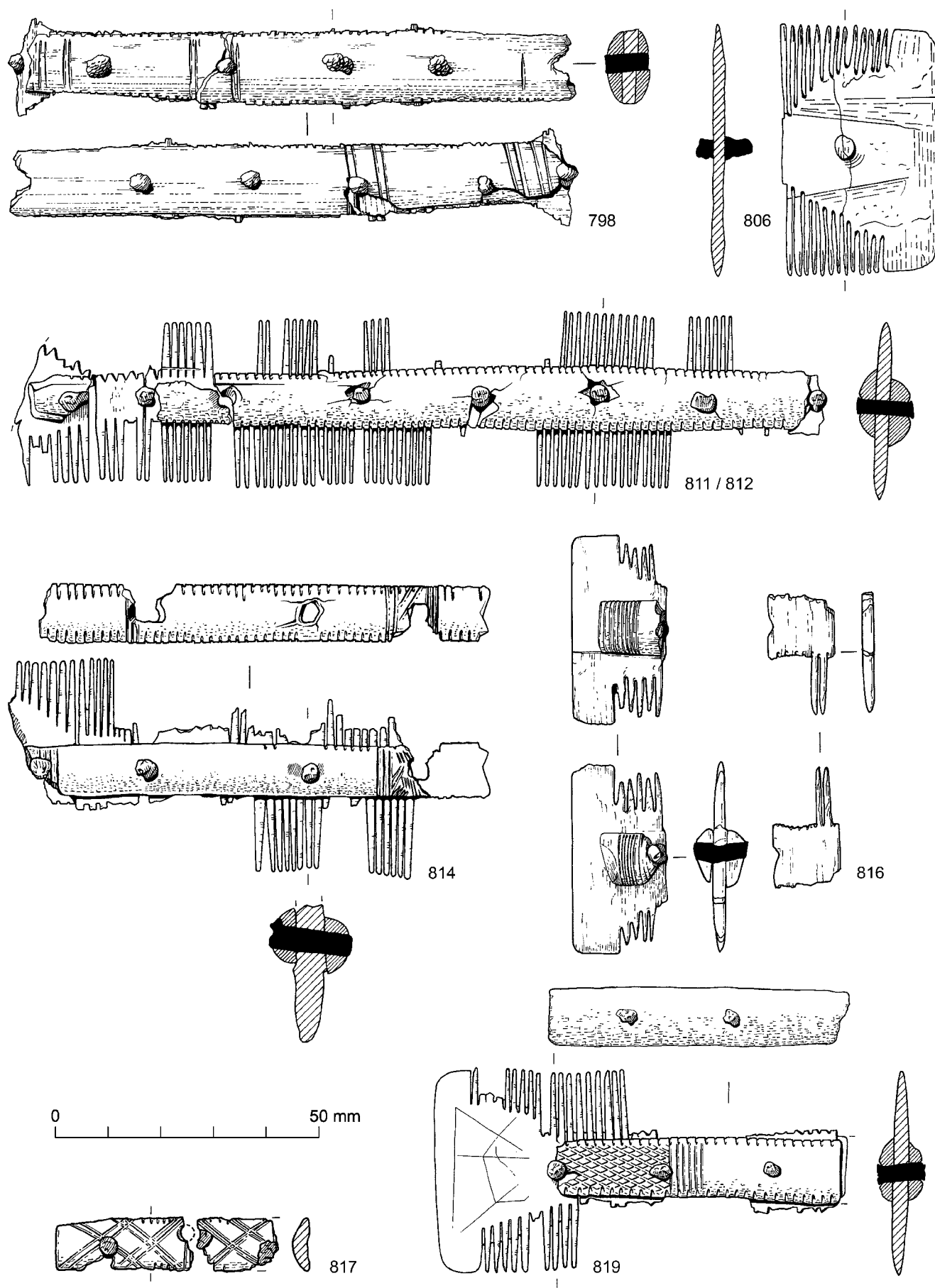


FIG. 1.31. Bone and antler combs. Scale 1:1.

dated from c.975 onwards, most of which may there be residual (MacGregor *et al.* 1999, fig. 885 no. 7563, fig. 887 no. 7591, fig. 892 nos 7654 and 7666). Similar decoration is more narrowly restricted to the side-plate terminals of Middle Saxon double-sided combs from Dorney, Maidenhead, SFs 2623, 1290, 2216 and 2244; from Christ Church College, Canterbury, SF 22; and from *Hamwic*, on both double-sided and single-sided combs, as with SOU 24.891 and SOU 8.74 (Riddler 2002; Ian Riddler, pers. comm.). It recurs on single-sided and handled combs from Ipswich for which 8th- or 9th-century dates are suggested, and it is thought to have been widely used in the 7th and 8th centuries, and perhaps later (Riddler *et al.* forthcoming).

Narrow side-plate fragment no. 817 (RF 8053; FIG. 1.31) bears cross-hatched paired-line decoration, and is from a dark soil, mid-late 10th-century-context 1833, from Phase 6iii. Fragment no. 818 (RF 7260) is similar, with diagonal paired-line decoration rather than cross-hatch on one side-plate. Examples of this simple decoration from *Hamwic* have been cited above. It recurs as zoned decoration on a minority of the single-sided combs from Ipswich (Riddler *et al.* forthcoming); and more frequently among single-sided combs from 10th-century contexts at Coppergate, York, where it is often placed centrally on side-plates (MacGregor *et al.* 1999, fig. 884, nos. 7535, 7543, 7547, 7551).

Fragment no. 819 (RF 6864; FIG. 1.31) is one end of a double-sided comb (cf. Rogers 1993a, no. 5569). It comes from Phase 6ii dump 6797, dated to the mid 10th century. The comb bears a zone of fine, hatched decoration at the surviving end, limited by a band of incised vertical lines. These, and tooth-cutting scars, occur on only one side of the comb. The decorative scheme recurs on a double-sided comb from Exeter Street, London, while its density is a characteristic of some single-sided Middle Saxon combs from Ipswich and Brandon (Riddler *et al.* forthcoming; Brandon SFs 2038 and 3827, R. Carr, pers. comm.). Like no. 819 (RF 6864), the latter bears decoration on only one side-plate. The dense cross-hatch recurs on several combs from Coppergate, York, derived from contexts dated from the mid 9th to the later 10th centuries (MacGregor *et al.* 1999, fig. 883 no. 7532; fig. 889, no. 7614; fig. 890, no. 6781). Irregular scratches on one side of no. 819's end-plate are described by the conservator as 'graffiti'. Their position, radiating from where side-plate lapped the end-plate, might associate them with mending. Though lightly cut, they disfigure an otherwise finely-worked comb. The pinning of the end-plate is well clear of its edge, distinguishing this comb from some other double-sided combs from Flixborough.

Of disassembled fragments from narrower combs, the (stratigraphically) earliest are tooth-plates, nos 820 (RF 3806) from mid 9th-century Phase 4ii, and 821 (RF 5220), from a dump of Phase 4ii–5a, of the mid to late 9th century. Side-plate fragment no. 822 (RF 5814) was undecorated save for tooth-cutting scars, and came from Phase 5b dump 5553, dated to between the late 9th and early 10th centuries.

Tooth-plate no. 823 (RF 5359) comes from Phase 6ii dump context 3891, of the mid 10th century. Squared end-plate no. 830 (RF 6910), with teeth evenly graduated in length as is typical of most Middle Saxon double-sided combs, comes from late dark soil 6300, along with tooth-plate no. 824 (RF 7059). Tooth-plate no. 825 (RF 10562), comes from a Phase 6ii–6iii dark soil of the mid 10th century or later, 7055. The provenance of detached elements from narrow double-sided combs is therefore similar to that of the assembled fragments.

Narrower double-sided combs with thin side-plates

For double-sided combs, the development towards narrower forms appears to have culminated with a group which were furnished with exceptionally narrow (less than 10mm wide) straight side-plates. Comb fragment no. 826 (RF 5124; FIG. 1.32) showed the edge-pinning of its surviving end-plate. Tooth-cutting scars were restricted to one narrow straight-ended side-plate, which bore somewhat haphazard diagonal and vertical decoration resembling that of no. 814 (RF 6982) at its end, and a blank central field. Crucially for an assembled piece, it came from a late-9th-to-mid-10th-century occupation deposit of Phase 5b–6i, 4195. The restriction of decoration to one side might place the comb in the company of 8th- and 9th-century material, as considered above. The cross-hatching of diagonal and vertical lines was avoided. The decorative motif finds parallels in the zoned diagonal decoration on Middle Saxon combs from Dorney, Maidenhead, SFs 2043 and 2769 (Riddler 2002, 39–41 and 47); in some abraded fragments from *Hamwic*, such as SFs SOU 15.65–66, SOU 15.46 and SOU 23.152 (Ian Riddler, pers. comm.); and on a minority of single-sided combs from Ipswich (Riddler *et al.* forthcoming). Combs from Ipswich display the alternation of diagonal and vertical decoration, and of decorated and blank zones, on a range of material dated to between the 7th and 9th centuries.

Undecorated fragment no. 827 (RF 1852), from a narrow comb (c.31mm), includes a single, thin side-plate with tooth-cutting scars. An accompanying tooth-plate bears more extensive tooth-cutting scars on one side, which may suggest that final finishing was executed from only one side of the assembled comb. This may point to it having been a further comb with decorative cut-marks on one side only. It came from a dark soil, 1832, of Phase 6ii–6iii. Fragment no. 828 (RF 7015), from a Phase 6iii–7 dump, bears prominent tooth-cutting scars on its narrow side-plates. Comb fragment no. 829 (RF 7042; FIG. 1.32) came from mid-to-late-10th-century dark soil 6300, accompanying both residual 9th-century and later material. The small size of both comb fragments suggests that they, too, may be residual. No. 829 bears cross-hatched diagonal line decoration on one side-plate, and teeth uniformly spaced at six teeth per cm. The width of the comb, tooth-spacing and hatched decoration resemble that of combs from Dorney, Maidenhead (Riddler 2002, 39–41); and from Sandtun, near West Hythe in Kent

(Riddler 2001, 229–231). Of the detached tooth-plates, no. 831 (RF 12157), which is 36mm wide, comes from the fill of a foundation trench of building 9, from Phase 3biv–v, dating from the later 8th or early 9th century.

Isolated fragments from narrow double-sided combs first appeared in contexts dating from the 8th century at Flixborough. Assembled combs first appeared as re-deposited finds from dumps dated to the mid 9th century. One occurred in an occupation deposit, and others in dumps, of the late 9th to mid 10th century; the rest were presumably residual finds in later dark soils. From wide-ranging study, Ian Riddler has suggested that narrower double-sided combs were favoured from c.750 onwards. At Flixborough, the narrower double-sided combs respect decorative conventions common to Middle Saxon types. However, many of these simple motifs are similarly recorded from contexts of later date. Even if allowance is made both for a lifetime's careful use of such combs before their disposal, and for heavy residuality, from the contexts of their final deposition at Flixborough it would still be difficult to propose their arrival much before the beginning of the 9th century.

Double-sided combs – other disassembled fragments

End-plate no. 832 (RF 3469) come from Phase 3a, of the early-to-mid 8th century. It lacks graduated teeth and has markedly curved 'corners', distinguishing it from other Flixborough end-plates. Burnt tooth-plates nos 833–4 (RFs 11512 and 11527) and abraded tooth-plate fragment no. 835 (RF 13272) come from Phase 4ii dump 3758, of the mid-9th century. Abraded tooth-plate no. 836 (RF 5669), from near the end of a comb with teeth of graduated length, came from the Phase 5a dump 5139.

Further fragments from dumps or dark soils of Phases 6i, 6ii and 6iii–7 may all be residual to judge from their abraded condition. Phase 6ii dump context 3891 produced heavily abraded fragments nos 837–8 and 810 (RFs 4708, 5364 and 5900). Of these, nos 837–8 were fairly narrow, a feature tending to associate these with the later double-sided combs from Flixborough. They share this characteristic with no. 824 (RF 7059), from a Phase 6iii dark earth.

Symmetrical single-sided combs

Two types of single-sided combs were recognised: symmetrical Middle Saxon forms, and handled combs which may span the Middle Saxon and Anglo-Scandinavian periods. Some smaller fragments might be ascribed to either type.

The symmetrical single-sided combs had tooth-plates or end-plates protruding beyond the back of the comb, to varying degrees. At Flixborough, the teeth of such combs often occupy less than half the width of the tooth-plate or end-plate, with 5–7 teeth per cm. These characteristics are shared by related groups, dated to between the 7th and 9th centuries, known as 'crested' and 'winged' combs.

Further combs of this period are furnished with two pairs of side-plates; and tooth-plates and end-plates from such combs may similarly bear wide uncut zones (Riddler *et al.* forthcoming). The material used for such combs at Flixborough was always antler. Tooth-plates are most frequently 15–17mm long, but may be longer or shorter.

The pronounced protrusion of tooth-plates is a feature of crested combs from the Frisian terp mounds, dated to between the 7th and the 9th centuries (Roes 1963, 21–2, pl. 25). This is also a feature, along with projecting end-plates, of 'Viking' combs of the 8th and 9th centuries from north-eastern Germany and the Baltic littoral (Hermann 1982, 139–41). An English example comes from Middle Saxon Southampton (Hinton 1980, fig. 15, no. 1). In less exaggerated form, a crest also appears on a comb bearing a Christian Anglo-Saxon runic inscription from Whitby (White 1984, 38, fig. 2, no. 7), and on a comb from a 10th-century context at Flaxengate, Lincoln (Mann 1982, 4–5, fig. 3, no. 3). Protruding end-plates from Fishergate, York (Rogers 1993a, fig. 679, nos 5701–8) were current from the first half of the 8th century (*ibid.* no. 5710), with others dated to the first half of the 9th century (*ibid.*, nos 5701–2), or broadly to the 8th or 9th centuries (*ibid.*, no. 5703). At Ipswich, these traits occur in 9th-century or later contexts (Riddler *et al.* forthcoming). At Coppergate, a fragment from a 10th to 11th-century context is presumably residual (MacGregor *et al.* 1999, fig. 891, no. 7636).

End-plate no. 839 (RF 4759; Fig. 1.32) has a curved back. It comes from Phase 3b post-hole fill 4702, dated to between the mid 8th and early 9th centuries. The descending curvature of the back suggests this is a piece of a winged 'hog-backed' comb (MacGregor 1985, 87, fig. 49e). Fragmentary no. 840 (RF 14336) resembles it, and comes from a Phase 4ii dump. A Frisian affinity has been suggested for pieces of this form (MacGregor 1978, fig. 29 no. 5; Roes 1965, pls 28–9, nos 216–17). It is a feature of a single-sided comb from a mid-to-late 9th-to-early-10th-century context at Coppergate, York (MacGregor *et al.* 1999, fig. 833, no. 7527). Decorated fragments from a comb of uncertain form, no. 841 (RF 10171; Fig. 1.32), from the same context, also bear an interlocked triangular motif combined with vertical linear decoration. This occurs on winged combs in Frisia (cf. Roes 1963, 19–20, pl. 22, nos 1 and 5), and on a single-sided comb from Thetford whose end-plates are lost (Rogerson and Dallas 1984, 167, fig. 186, no. 5). The motif recurs too, however, in later contexts, at Coppergate, York (MacGregor *et al.* 1999, fig. 889 no. 7624) and Ipswich (Riddler *et al.* forthcoming).

Antler comb fragments nos 842–3 (RFs 5546/6015) come from the mid 9th-century, Phase 4ii dump 5503. Simple decoration comprises grouped vertical lines. The protuberance of tooth-plates from the back of the comb is only slight. Unstratified tooth-plate no. 844 (RF 12460), which is possibly of antler, has coarsely spaced teeth (approximately 4 per cm), a chamfered back, and teeth possibly graduated in length, and might be a further element of the same comb. The very limited decoration

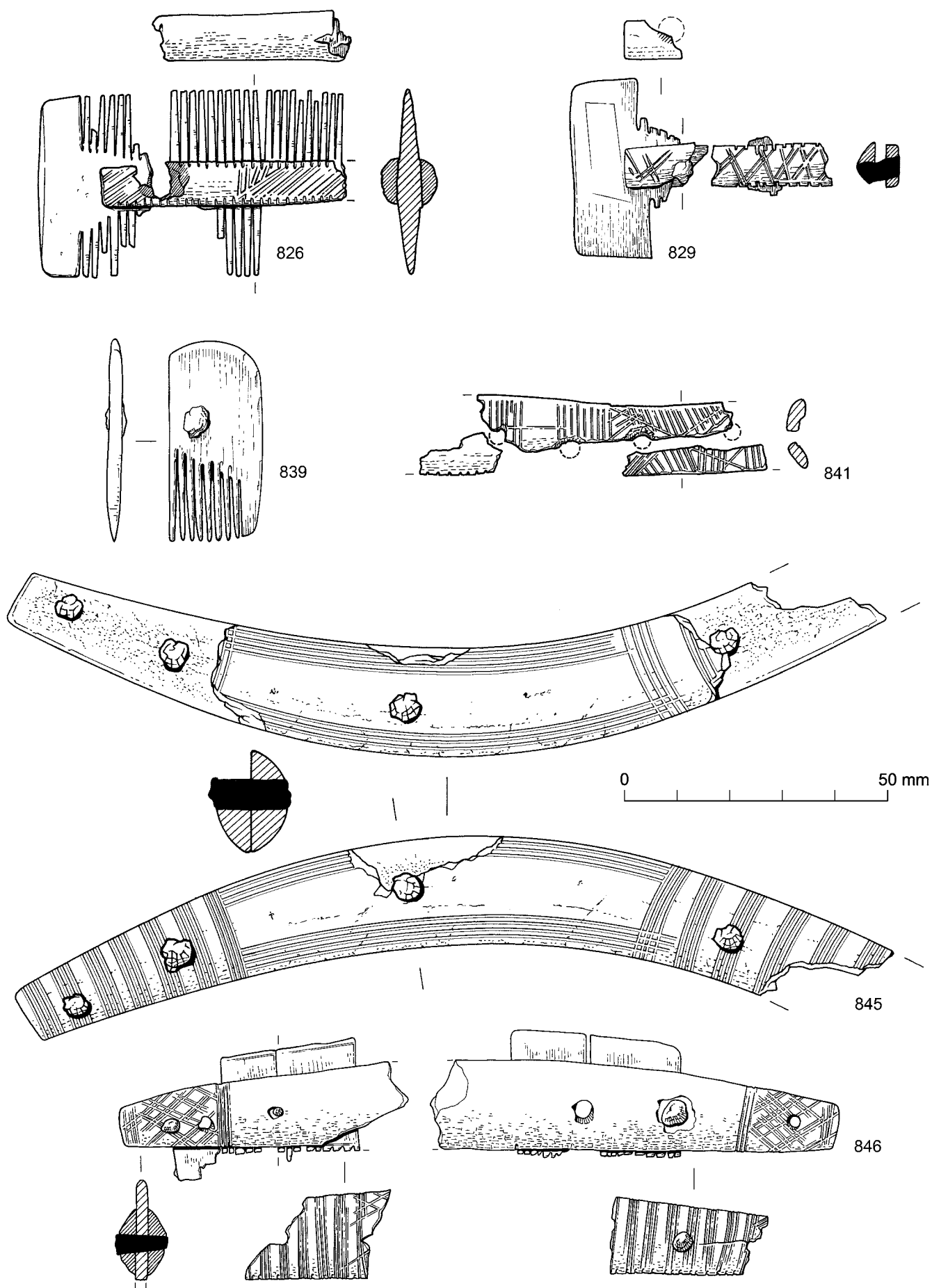


FIG. 1.32. Bone and antler combs. Scale 1:1.

is similar to that used for the wider, and probably earlier, double-sided combs from Flixborough. The bevelling of the back of the tooth-plates could suggest that they projected from the back of the comb, as a low crest. It may alternatively show provision for engagement with an upper set of side-plates. Upper side-plates from a comb of this style may be represented by no. 845 (RFs 8210/14340; FIG. 1.32), which comprises a pair of plano-convex antler plates pinned flush together at either end by a pair of iron rivets, and off-centre by a single rivet. One plate retains a flat-ended terminal. Finely incised horizontal and vertical lines define a blank central field. While following the conventions of composite comb construction, the side-plates lack both tooth-cutting scars and space for tooth-plates, features which prompt the identification offered here. The two components were recovered separately from the fill 5988 of a foundation trench of building 7, from Phase 6i. It is possible that they originated in underlying 9th-century dumps from Phases 4ii and 5a. At Brandon, Suffolk, comb plate SF 2040 bears a single off-centre rivet and closely parallels this form and decoration. Both Brandon (SF 3597 – R. Carr pers. comm.) and Ipswich (Riddler *et al.* forthcoming) provide examples of assembled combs with extra pairs of side-plates. The type is thought to be exclusively Early and Middle Saxon on those sites (*ibid.*).

Comb fragment no. 846 (RF 9571; FIG. 1.33) bears hatched decoration restricted to the terminals of one otherwise undecorated side-plate; vertical incised lines limit these, and occur on the central field of the other side-plate. Tooth-plates protrude from the back of the comb. It is from Phase 4ii dump 5503. Tooth-plate no. 847 (RF 11134), from the same context, could also derive from this comb, and again bears a chamfered back. Hatched decoration restricted to one side of single-sided combs was favoured at Brandon, Suffolk, as part of an assemblage including combs with extra side-plates (SFs 2038, 3724 and 3827; R. Carr, pers. comm.). The hatched decoration of terminals on the plainer side recalls that employed on a winged comb decorated on one side only, from Abbots Worthy, Hampshire, of the later 7th or 8th century (Riddler 1991, 46, fig. 36, no. 26). Hatched decoration combined with groups of vertical lines, as on one side of no. 846 (RF 9571), figures among early combs from Lund (Blomqvist 1942, 135, Bild 2–3), and as a widespread feature of Anglo-Scandinavian material. Its part-assembled survival could suggest initial discard sometime in the first half of the 9th century, prior to re-deposition during the middle decades of that century.

End-plate no. 848 (RF 4270; FIG. 1.33) was probably residual in Phase 6ii dump 3891. The top of the end-plate is slightly indented next to a circular perforation at the back of the end-plate, of 2.7mm diameter. The perforation could be for suspension, or its diameter might alternatively suggest it to be a rivet-hole where a second pair of side-plates was attached. At all events, this is another example of a plate whose blank field is more extensive than the teeth. The indentation at the back of the end-plate recurs

at Fishergate, York, from contexts of the early 8th and early 9th centuries (Rogers 1993a, nos 5701 and 5708). Unstratified fragments nos 849–50 (RFs 14131 – FIG. 1.33 – and 14224) are probably again from combs with, respectively, a pronounced crest with a serrated top edge, and extra side-plates. The serrated back of tooth-plates again occurs at Fishergate in a context of the early 8th century (*ibid.*, no. 5710).

A compass-drawn circle on no. 848 (RF 4270), and the serrated back of tooth-plate no. 849 (RF 14131; FIG. 1.33), are decorative features relating them to a final group of distinctive single-sided combs: complete comb no. 851 (RF 6139; FIG. 1.33; PL. 1.18), end-fragment no. 853 (RF 1646), and end-plate fragment no. 852 (RF 6289; FIG. 1.33). The projection of tooth-plates at the back of the comb is only slight, but markedly protruding end-plates remain a distinctive feature. These are of rounded form, a motif restated by circular projections rising from their backs. The end-plates are pinned close to their edges, a common feature of combs from North Lincolnshire (Foreman, in prep.). These combs bear compass-drawn decoration or perforation of the end-plates, ‘plaited’ or ‘cabled’ decoration, and serrated backs. The curvilinear form of the end-plates is reflected by a comb-end from Ipswich, Buttermarket, SF 3330; while a winged comb bearing a large double ring-and-dot on its end-plate, SF 5003, comes from the same site. A serrated back appears as a feature of a further winged comb from Buttermarket (Riddler *et al.* forthcoming). Comb no. 851 (RF 6139; FIG. 1.33; PL. 1.18) comes from the mid 9th-century Phase 4ii dump 5503, along with end-plate no. 852 (RF 6289), showing that at least two fine combs of this type are represented. Association with two sceats struck between AD 700 and 730 might place them as residual 8th-century finds, but no. 851 is in very good condition. Perforated fragment no. 853 (RF 1646) comes from a Phase 6iii dark soil, 1440, where it has a better chance of being residual.

The style may derive from a Merovingian model, or at any rate from continental contact, though a close individual parallel has not been identified (I. Ulbricht pers. comm.; cf. Foreman 1998; van Es 1978, fig. 2; Roes 1963 especially pl. 23, no. 2 and pl. 25 nos 1–3; Périn 1980, fig. 52 no. 8). The projection of plates from the back of combs occurs on a single-sided comb from a Frankish grave at Berghausen, Baden-Württemberg, Germany, in an assemblage otherwise dominated by double-sided forms (Koch 1982, Taf. 34, gr. 60). A 7th- to later 8th-century date has been suggested for the winged combs, to which the distinctive end-plates relate these pieces (Lethbridge 1931, 65, fig. 34; Riddler 1991, 46; MacGregor 1985, 87), while finds from Ipswich extend the currency of forms derived from the winged comb into the 9th century (Riddler *et al.* forthcoming).

Cabled decoration has been noted locally at Castledyke in 7th- and later 7th-century contexts (Foreman 1998, 287–8, grave 129, fig. 93). It appears at Wharram Percy’s South Manor, on the back of tooth-plates (MacGregor 2000, 148–9, no. 27). It recurs, on a single-sided comb

resembling that from Castledyke grave 129, in a mid to late 9th-century context at Coppergate, York (MacGregor *et al.* 1999, no. 7526). The motif also figures on an early casket mount from Coppergate, in a context of the later 9th century (*ibid.*, no. 7712). Castledyke also presents examples of compass-drawn decoration combined with cabled or serrated motifs (Foreman 1998, fig. 117, grave 206). A serrated comb back has practical advantages in improving grip. It occurs in late 7th-century Grave 83 at Burwell (Lethbridge 1931, *loc. cit.*), and on a 7th-century winged comb from Burial 12, Garton, *Green Lane Crossing* (J. R. Mortimer 1905, fig. 671; C. Loveluck, pers. comm.). This simple technique is also known on Viking-Age combs from Dublin (Class D – M. Dunlevy, pers. comm.); and on an example from Hedeby, where it adorns a comb so heavily glossed and smoothed by wear that its status as an antique or heirloom must be considered (I. Ulbricht pers. comm.). Vertical decoration of grouped lines also has a long currency (e.g. Lethbridge 1931, *loc. cit.*; Waterman 1959, pl. 18, no. 4, and fig. 16, no. 2; MacGregor *et al.* 1999, no. 7572).

The symmetrical single-sided combs from Flixborough display a broad affinity with East Anglian material of Middle Saxon date. The mangled state of most of the combs of originally crested, winged or double-side-plate forms leaves their precise types uncertain, and could argue that all originated in 8th-century contexts, and were residual in later deposits. The exception is perhaps no. 846 (RF 9571), whose decoration follows a display-side convention which appears at Flixborough only from the early-mid 9th century. The good state of comb no. 851 (RF 6139; Fig. 1.33; Pl. 1.18) in a dump dated to the mid 9th century could represent the discard of an outworn 8th-century item. However, the construction of the comb relates it to contemporary craft convention: the length of its tooth-plates resembles that of narrower double-sided combs from Flixborough, which are thought to date from the 9th century. The teeth on the single-sided combs are similarly finely spaced, at 6–7 teeth per cm.

Single-sided combs – handled forms

Nine handled combs were identified, together with other fragments perhaps to be associated with this form. They include detached handles. They feature the use of antler, sheep and larger mammal bones (the majority probably derived from cattle). The combs include examples of both ‘northern’ construction – with composite handles made by the rivetting of side-plates, with or without blank tooth-plates between them; and of ‘southern’ construction – with one-piece handles of bone or antler into which tooth-plates were slotted (M. L. Alexander 1987; Riddler 1990; 1998). Their decoration includes circumferential inscribed lines on handles, and vertical and diagonal lines, some cross-hatched. Most of the handled combs from Flixborough were unstratified finds; however, pottery and vertical stratigraphy provide *termini post quos* for the final deposition contexts of the remainder, to between the late

9th and mid 10th centuries. The primary deposition of handled combs at Fishergate is held to have been between the early 8th and early 9th centuries (Rogers 1993a, 1485, 1490). At Coppergate, they come from contexts dated to between the mid 9th and mid 11th centuries (MacGregor *et al.* 1999, 1934, fig. 895). At Thwing (East Yorkshire), they accompany Middle Saxon material dated by 8th- and 9th-century coins (Terry Manby, pers. comm.; Hull and East Riding Museum accession no. KINCM.2005.686). The use of bone for elements of five of the handled combs at Flixborough tends to place the group as a whole in an Anglo-Saxon tradition of comb-making (Riddler 1990).

Handled combs of ‘northern’ construction (Figs 1.33–1.34)

Handled antler comb no. 854 (RF 5418; Fig. 1.33) bears decoration on one side-plate only, figuring alternating vertical lines and saltires. The side-plates and a blank plate form the handle, making this a ‘northern’ handled comb. It is small for this class of comb, and its fine execution is shown both by its decoration and the tooth-spacing: 7 teeth per cm. It comes from Phase 5b–6i occupation deposit 4195, which is dated to between the late 9th and the early-to-mid 10th century. Its quality of finish, small size, narrow side-plates, and the restriction of paired-line decoration to one side-plate are all attributes shared with a number of double-sided combs from 9th-century and later contexts at Flixborough. The combination of small size with fine execution is similarly a feature of the sole example of a ‘northern’ handled comb from North Elmham, Norfolk, a site more frequently producing ‘southern’ types from later phases (Wade-Martins 1980, fig. 259, no. 5). The decorative scheme is similar to that of a single-sided comb from Thwing, where it is described as ‘a zone of incised saltire decoration cut with a double saw’, limited, as here, by a set of vertical lines (Arthur MacGregor, pers. comm.).

Antler fragment no. 855 (RF 7513) comes from a Phase 5b–6i dump, 6472. It figures decoration of grouped vertical lines, circumferential at its flat-ended butt. A rivet-hole and a thick plano-convex profile suggest this to be a fragment of another handled comb. The decorative scheme appears on a ‘northern’ handled comb fragment from York, though the end of the Flixborough handle is not so elaborate (Waterman 1959, 89–90, fig. 17 no. 2); and on handled combs of both ‘northern’ and ‘southern’ types from Coppergate, York (MacGregor *et al.* 1999, fig. 895 nos 7683–4, fig. 896 nos 6788–9). The simple groups of vertical lines also recur on a ‘northern’ handle from Thwing (*Thwing* RF 172).

Further ‘northern’ handled comb fragments share a less carefully executed level of decoration than appears on no. 854 (RF 5418), and indeed are more crudely decorated than most other combs from Flixborough. The less carefully finished combs cannot be proved to follow the display-side convention of restricted decoration, and may post-date it. The casual linear decoration is paralleled by that of ‘northern’ handled combs from Coppergate, York,

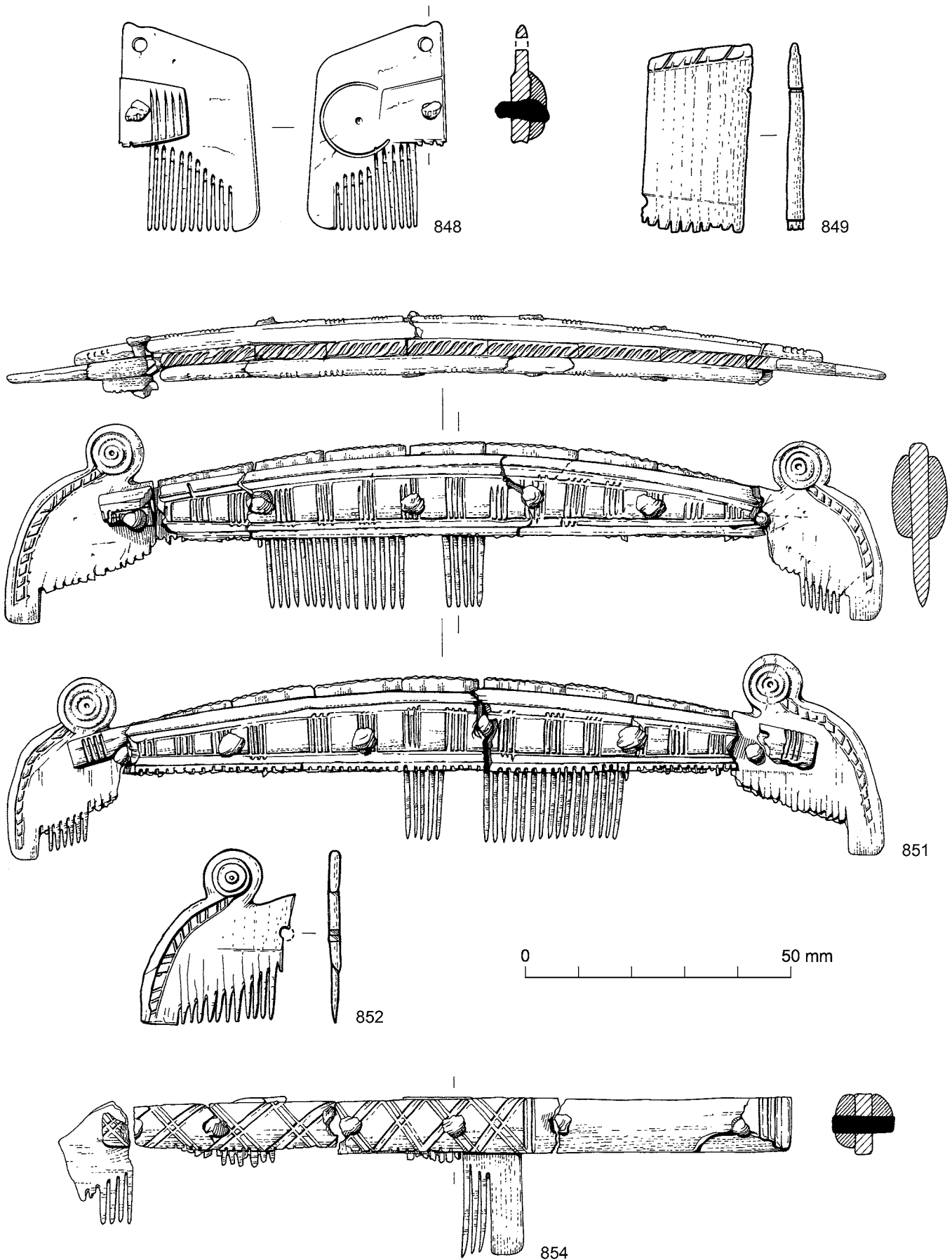


FIG. 1.33. Bone and antler combs. Scale 1:1.

from contexts dated to between the mid 9th and mid 11th centuries, probably from the early part of this date-range (MacGregor *et al.* 1999, 1934, fig. 895, nos 7683, 7684; fig. 896, nos 6788, 6789, 9790). Unstratified no. 856 (RF 14075; FIG. 1.34) has antler side-plates retaining (?cattle) bone tooth-plates. The haphazard scheme of alternating saltires and groups of vertical lines on one side also appears on a quasi-symmetrical comb from Antwerp (Stad Antwerpen Volkskundemuseum 1982–83, no. 520); on a handle of ‘northern’ construction from 11th–12th-century Fishergate, York (Rogers 1993a, no. 5570); and on a double-sided comb from *Hamwic*, Southampton (SF SOU24.891, Ian Riddler, pers. comm.). The crude chevron decoration of the other side appears from 10th-century and later contexts at Coppergate (MacGregor *et al.* 1999, table 169). Unstratified side-plate fragment no. 857 (RF 12445) bears groups of vertical lines. It would, if derived from a handled comb, necessarily be of ‘northern’-type construction as it is made from a rib, which could not furnish a solid handle. Countersunk rivet-holes, of unusually large diameter (4mm), are a distinctive feature of this piece. The large rivet-holes may associate it with detached tooth-plate fragment no. 858 (RF 10945) from Phase 6iii dump 1457, which has a 3.8mm diameter rivet-hole. The context is dated to the mid-to-late 10th or early 11th century.

Two further unstratified fragments are speculatively identified as from handled combs. Both are decorated on one side only. Antler comb fragment no. 859 (RF 14040; FIG. 1.34) bears cross-hatching at top and bottom of a side-plate, leaving a central field empty except for rivets. This decoration appears on combs found in the Frisian terps and at Dorestad (Roes 1963, pl. 21, no. 2; Roes 1965, pl. 28, no. 214, pl. 29 no. 218), on a double-sided comb from *Hamwic* (Ian Riddler, pers. comm.); and on a plaque of bone from Fishergate (Rogers 1993a, no. 5609). Dense and restricted hatching also occurs on a ‘northern’ handled comb from Thwing, though on both sides (*Thwing* RF 52); on the upper side-plates of another from Coppergate (MacGregor *et al.* 1999, fig. 896, no. 6789); and on several other single-sided combs from contexts at that site dated to the 9th and 10th centuries (*ibid.*, figs 883–4, 886). Antler comb fragment no. 860 (RF 14130) bears vertical incised lines as decoration on one side-plate, grouped in threes and distinctively finely executed.

At Thwing, East Riding of Yorkshire, three or four ‘northern’ handled combs come from 8th or 9th-century contexts (Manby 1984; Arthur MacGregor, pers. comm.). Another from Whitby comes from a collection of unhelpfully varied date (Peers and Radford 1943, 70–1, fig. 20, no. 1; cf. fig. 21). Comparable combs from Fishergate, York, come from 9th-century or later contexts (Rogers 1993a, nos 5569–70). The small, fine and near-complete ‘northern’ handled comb no. 854 (RF 5418; FIG. 1.33), from a Flixborough occupation deposit of the late 9th or early 10th century, provides the best available dating here. If its similarity to narrower forms of double-sided combs is accepted, this could support a 9th-century date. The cruder

finish of some other ‘northern’ combs suggests that these form a distinct group. Whether the latter are of Middle Saxon or Anglo-Scandinavian date remains uncertain. At Fishergate, these designs appear in 8th and 9th-century contexts (Rogers 1993a, figs 679–80), though in reviewing Coppergate material MacGregor (*et al.* 1999, table 169, 1938) saw the decorative repertoire of cross-hatched and saltire decoration as prevalent in later contexts – those dated to the late 10th century and beyond.

Handled combs of ‘southern’ construction (FIG. 1.34)

Two handle fragments from combs of ‘southern’ construction were found. This type of comb is typically of an 8th- or 9th-century date, and is held to have been a specifically Anglo-Saxon form, many being manufactured at *Hamwic* (Riddler 1990). In both cases, traces of a slot to accommodate tooth-plates permit the identification of these objects as comb-handles (cf. Trimpe Burger 1966, Afb. 6). Finely-finished sheep-bone handle no. 861 (RF 5326; FIG. 1.34) was unstratified. The handle must be from a small comb, comparable in size to no. 854 (RF 5418). The horizontal, billeted decoration between vertical bands provides extra texture. This zoned and varied decoration adorns pieces from Middle Saxon Ipswich, such as handle IAS 4001 0522, or double side-plate comb no. 1064 (Riddler *et al.* forthcoming). Bands of this horizontal decoration are rare, and associated with stylistically early combs at Coppergate (MacGregor *et al.* 1999, fig. 883 no. 7527, fig. 888 no. 7589); no other examples are known from Flixborough, so this comb may have been an import here. A further bone handle fragment, no. 862 (RF 2267), is also poorly provenanced, perhaps having subsided into the Phase 5a, mid-to-late-9th-century-occupation deposit 72. This is from a more casually decorated comb. A ‘southern’ handled comb from Ribby Crossroads, Lincolnshire, was stratified in a late element of a ditch complex where the pottery sequence dated the close of occupation to the mid 9th century (Foreman 1994, 273–6, fig. 21, no. 1). The Flixborough fragment bore similar casually executed decoration, likewise a feature of bone and antler handled combs of both ‘northern’ and ‘southern’ types from Coppergate, York (MacGregor *et al.* 1999, figs 895–6).

Other single-sided comb fragments (FIG. 1.34)

These could derive from either handled or symmetrical combs. They are too small to qualify as elements from the crested, winged or double side-plate types of comb considered above. If from symmetrical combs, these detached fragments could present the only evidence for the narrower forms of single-sided comb attributed to the Anglo-Scandinavian period. However, they include examples in both antler and bone – a mixture of materials which might suggest an earlier date.

Squared end-plates from single-sided combs were found only as detached pieces. Tooth spacing is fine: 6 or 7 teeth per cm. Bone end-plate no. 863 (RF 5916),

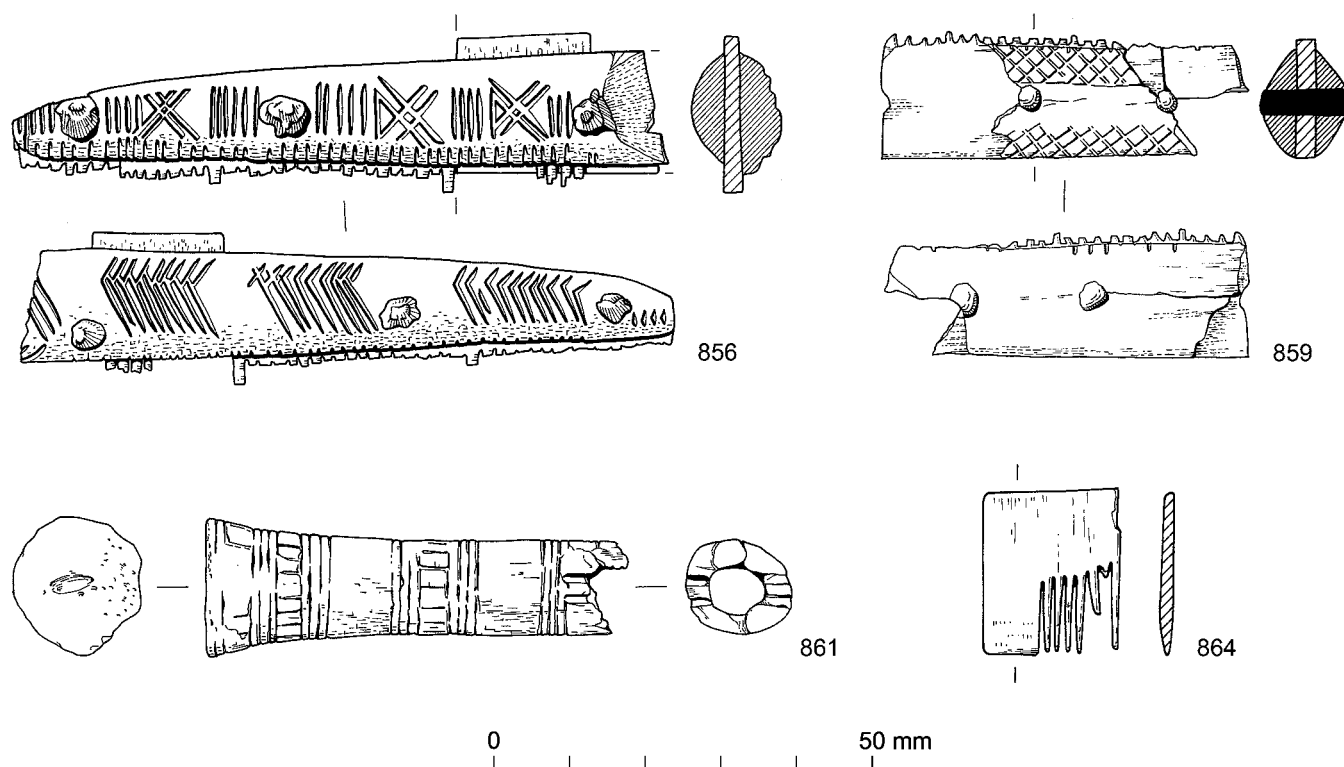


FIG. 1.34. Bone and antler combs. Scale 1:1.

unusually, has teeth of an even length. In this feature, it resembles the tooth-plate set nearest the handle end of comb no. 854 (RF 5418). It comes from the fill of the foundation trench – 5871 – of building 7, but could originate from mid to late 9th-century deposits of Phases 4ii and 5a. If so, this would make it the (stratigraphically) earliest of the group. A similar end-plate appears on an assembled single-sided comb from Ipswich (Riddler *et al.* forthcoming). Antler end-plate no. 864 (RF 5722; FIG. 1.34) has teeth graduated in length, and came from Phase 5b–6i pit-fill 5555, dated to between the late 9th and early-to-mid 10th centuries. Similar bone end-plate no. 865 (RF 7287) was incorporated in a contemporary dump, 6803. These, too, could come from either small handled combs, or symmetrical combs.

Comb terminal no. 866 (RF 14341) came from another trench-fill. Its material is yet to be identified, though the plano-convex side-plates would suggest these at least to be antler. An antler comb of ‘hog-backed’ form from Lurk Lane, Beverley, East Riding of Yorkshire, bears similar end-plates; it was dated to the mid 9th century by a styca hoard (Foreman 1991, fig. 128 no. 1115). Similar combs from Scandinavian and later Anglo-Scandinavian contexts tend to bear more markedly flared end-plates (Andersen *et al.* 1971, 147–8; Mann 1982, nos 1–3, 5; MacGregor *et al.* 1999, figs 883–92; Ayers and Murphy 1983, 20, fig. 19 no. 4). The marginal position of rivet-holes recalls the

locally-reported edge-pinning of end-plates (Foreman, in prep.). However, this also occurs among Wiberg’s Type E2 single-sided combs from Mindets tomt, Oslo, which included squared examples, both with and without teeth of graduated length, and dated from the 12th century or earlier (Wiberg 1977, 202–5, 253, figs 6–9).

Fragment no. 868 (RF 7774) is decorated with paired incised lines, cross-hatched. It comes from pit-fill 221, between Phases 2i and 4ii, a period which spans the late 7th to the mid 9th centuries. Paired-line ornament was a feature of combs at Flixborough for which a 9th-century date has been suggested above. The decoration spreads across the entire extent of the side-plates – in this, resembling some single-sided combs from Ipswich (see above; Riddler *et al.* forthcoming). It was subsequently favoured by Viking comb-makers at Hedeby (Ulbricht 1978, Taf. 29); it is also common among the Frisian terp finds (Roes 1963); and continues to figure on combs held to represent typical 10th- to 11th-century material from York (MacGregor 1995, fig. 160, no. 14.5). Side-plate fragment no. 869 (RF 11577) is decorated with a precisely executed dense cross-hatch of vertical and diagonal lines. It came from the mid-10th-century dump 3891 – among heavily fragmented redeposited material in the case of the combs. Again, the motif occurs at Ipswich (Riddler *et al.* forthcoming), Hedeby (Ulbricht 1978, Taf. 30, no. 3), and elsewhere.

Bone side-plates, possibly from composite horn and bone combs

Unstratified bone side-plate terminal fragment no. 872 (RF 50021), and perhaps side-plate fragment no. 875 (RF 12521), which bear tooth-cutting scars; and perforated strip or mount no. 871 (RF 341) may all be from composite combs of bone and horn (MacGregor 1985, 95–6). The type is common from Late Saxon or Anglo-Scandinavian urban contexts. Its rarity here is significant (Ian Riddler, pers. comm.), hinting at either an earlier date, or the disengagement of the Flixborough site from urban markets during its later history. Bone strips bearing a central rivet come from Thetford, together with Anglo-Scandinavian combs (Rogerson and Dallas 1984, 167, fig. 188); from 10th- and 11th-century contexts at Flaxengate, Lincoln (Mann 1982, 8); from Coppergate, where they became prominent in the 10th century (MacGregor *et al.* 1999, 1952–3, fig. 912, table 175); and from Winchester, where they appear in the 9th century, but became common in the 11th century (Biddle 1990, vol. 2, 678–90, table 82). These have been identified as side-plates from composite combs whose teeth were of horn.

Catalogue

Wider double-sided combs, and related pieces

- 798 Double-sided composite comb fragment (Fig. 1.31).
Material: Antler beam and tine.
Form: ?Six tooth-plates and one end-plate fragment held between side-plates of a flattened plano-convex profile by six iron rivets (one lost). A detached end-plate was recorded as square-ended with graduated teeth, only a fragment now survives. Seven teeth per cm on one side, and six per cm on the other. Abraded.
Assembly: Rivet spacing (from end-plate, centre to centre) 13.8mm, *c.* 23.0mm, 19.0mm, 19.0mm, 21.3mm, usually set at junction of tooth-plates. Side-plates notched with angled cuts from cutting of teeth after assembly, though more prominently on one side. Polished overall.
Decoration: Two pairs of vertical incised lines at end of that side-plate bearing more prominent tooth-cutting scars, and a further two pairs slightly more widely spaced. One of these lines is part-obliterated by rivet, and setting-out lines show equivocation over their placement. The other, plainer, side-plate bears paired double lines, apparently close to the ends of the comb.
Size: Overall *L.c.* 115.0mm (both ends lost), Max. *W.* 39.0mm, *Th.c.* 8.5mm. Side-plate *W.* 13.3mm. *L.* of end-plate *c.* 13.0mm. *L.* of tooth-plates: 8.7mm, 9.3mm, 13.3mm, 13.0mm, 9.0mm, 11.5mm.
RF 763, Context 463, Phase 2–3Bv. [Post-hole fill].
- 799 Double-sided composite comb, joining side-plate fragments.
Material: Antler tine.
Form: Straight, plano-convex profile. Angled cuts from cutting of teeth suggests *c.* seven teeth per cm on both sides.
Assembly: Rivet spacing (centre to centre) 24.5mm, *c.* 22.5mm.
Size: *L.* 49.2mm, Max. *W.* 16.4mm, Max. *Th.* 3.7mm.
RF 10575/10590, Context 1835, Phase 6ii–6iii [Dark soil.]
- 800 Double-sided composite comb, side-plate fragment.
Material: Antler tine.
Form: Plano-convex, two rivet-holes at ends, *D.* 3.5mm, tooth-cutting scars indicate *c.* six teeth per cm on both sides.
Assembly: Rivet holes 25.0mm apart.
Size: *L.* 27.8mm, Max. *W.* 13.6mm, Max. *Th.* 3.9mm.
RF 180, Context 189, Phase 7+ [Topsoil.]
- 801 Double-sided composite comb fragments.
Material: Antler beam and tine.
Form: Five tooth-plates and fragments, *c.* six teeth per cm on both sides. Four straight side-plate fragments of plano-convex profile. Polished overall.
Assembly: Side-plates broken at rivet positions (*D.c.* 3.3mm), rivet spacing on fragments *c.* 25.0mm, *c.* 26.0mm, *c.* 25.0mm, *c.* 25.0mm. Three tooth-plates bear rust spots at edges. Side-plates bear narrow angled cuts from cutting of teeth.
Decoration: Group of four finely incised lines close to terminal, cut by rivet-hole.
Size: Side-plate fragments (in two pairs): *L.c.* 58.0mm and *c.* 60.0mm, Max. *W.* 13.7mm. *L.* of tooth-plates 13.4mm, 12.6mm, 15.5mm, *c.* 13.0mm+, 9.6mm+, Max. *W.c.* 4.7mm, Max. *Th.* 2.9mm.
FX88 R103, Unstratified.
- 802 Double-sided composite comb, side-plate fragment.
Material: Antler ?beam.
Form: Flattened plano-convex profile. Two rivet positions (*D.* 2.5mm) indicate *c.* seven teeth per cm on one side and six on the other.
Assembly: Angled cuts from tooth-cutting, rivet spacing *c.* 18.5mm (centre to centre).
Size: *L.* 24.4mm, Max. *W.* 13.9mm, Max. *Th.* 3.1mm.
RF 7909, Unstratified.
- 803 Double-sided composite comb, end-plate fragment.
Material: Probably red deer antler beam.
Form: Squared end with fairly angular corners and teeth graduated in length, *c.* six teeth per cm on one side, ?coarser on the other – they start further in. Possibly from same comb as RFs 6293 and 11393 (nos 804–5).
Size: *L.* 29.0mm, Max. *W.* 40.8mm, *Th.* 2.7mm.
RF 5705, Context 3758, Phase 4ii. [Dump].
- 804 Double-sided composite comb, tooth-plate.
Material: (?) Antler beam?
Form: *c.* six teeth per cm on both sides. A rivet-hole (*D.* 2.7mm) on one edge.
Possibly from same comb as RFs 5705 and 11393 (nos 803 and 805).
Size: *L.* 13.4mm, *W.* 40.5mm, Max. *Th.* 2.3mm.
RF 6293, Context 3758, Phase 4ii. [Dump].
- 805 Double-sided composite comb, tooth-plate.
Material: Antler beam.
Form: Six teeth per cm on one side, *c.* 6.5 teeth per cm on the other. A rivet-hole (*D.* 2.8mm) at one edge. Possibly from same comb as RFs 5705 and 6293 (nos 803–4).
Size: *L.* 14.4mm, Max. *W.* 41.3mm, Max. *Th.* 2.9mm.
RF 11393, Context 11039, Phase 5A. [Dump].
- 806 Double-sided composite comb, end-plate (Fig. 1.31)
Material: Antler beam.
Form: Squared end-plate with angular corners and teeth graduated in length, *c.* six teeth per cm on one side and seven per cm on the other. An iron rivet runs through the

- end-plate, just off-centre.
Size: L.29.7mm, Max. W.42.3mm, Max. Th.2.1mm.
RF 3777, Context 3758, Phase 4ii. [Dump].
- 807 Double-sided composite comb, end-plate fragment.
Material: Antler beam.
Form: Rectangular, with rounded corners. Tooth spacing of *c.* five per cm on both sides; teeth graduated in length on one side, the equivalent part of the other side is lost due to breakage at a rivet-hole (D. 2.0mm) near one edge.
Size: L.19.9mm, Max. W.44.0mm, Max. Th.2.3mm.
RF 10157, Context 6491, Phase 5A. [Dump].
- 808 Double-sided composite comb, tooth-plate.
Material: Large mammal long-bone.
Form: Six teeth per cm on both sides. Rivet-hole (D.2.2mm) at one edge of plate.
Size: L.17.0mm, Max. W.45.4mm, Max. Th.2.5mm.
RF 3710, Context 3711, Phase 5A. [Dump – oven related]
- 809 Double-sided composite comb, tooth-plate.
Material: ?Antler beam?
Form: Five teeth per cm on both sides. Rivet position (D. 1.9mm) on one side. Beading from wear on one side of the teeth, on one side.
Assembly: Flattened area at centre may suggest rubbing down of teeth after assembly, and hints at side-plate W of *c.* 14.0mm.
Size: L.16.9mm, Max. W.49.7mm, Max. Th.3.2mm.
RF 6874, Context 6798, Phase 6i. [Dump]
- 810 Double-sided composite comb, tooth-plate fragment.
Material: Antler beam.
Form: Tooth-plate, scar from rivet at one edge (D.2.8mm).
c. Five teeth per cm on one side, *c.* six per cm on the other. Abraded, teeth lost.
Size: L.16.0mm, Max. W.20.6mm, Max. Th.3.0mm.
RF 5900, Context 3891, Phase 6ii. [Dump]
- Narrower double-sided combs, and related pieces*
- 811 Double-sided composite comb fragment (FIG. 1.31)
Material: Antler beam and tine.
Form: Eleven tooth-plates and one end-plate fragment held between straight side-plates of plano-convex profile by eight iron rivets. The side-plates are slightly bow-sided, widening by *c.* 2mm, at the mid-point of the comb. Seven teeth per cm on both sides. Teeth are graduated in length at end-plate. Joins to no. 812 (RF 5938).
Assembly: Rivet spacing (from end-plate, centre to centre): 13.0mm, 13.0mm, 20.0mm, 18.0mm, 20.0mm, 21.0mm, 22.0mm, usually set at junction of tooth-plates. Side-plates notched with angled cuts from cutting of teeth after assembly. Polished overall.
Size: Overall L.*c.* 155.0mm (one end lost), Max. W. 34.2mm, Max. Th.11.6mm. Side-plate Max. W.12.0mm. L. of end-plate: 14.0mm+. L. of tooth-plates 11.0mm, *c.* 12.0mm, 12.0mm, 14.5mm, 16.6mm, 12.0mm, 8.0mm+, 9.6mm, 13.0mm, 11.4mm, 12.5mm.
RF 5939, Context 5930, Phase 6i. [Trench fill]
- 812 Double-sided composite comb fragment (joins to no. 811, see FIG. 1.31)
Material: Antler beam and tine.
Form: One side-plate fragment of plano-convex profile and one tooth-plate, six teeth per cm on one side and seven on the other. Joins to no. 811 (RF 5939).
Assembly: Side-plate fragment bears two rivet-holes, spacing *c.* 12.0mm, and angled cuts from cutting of teeth after assembly.
Size: Side-plate fragment L.*c.* 15.0mm, Max. W.*c.* 8.0mm. Tooth-plate L.12.9mm, Max. W.30.6mm.
RF 5938, Context 5930, Phase 6i. [Trench fill]
- 813 Double-sided composite comb fragment.
Material: Antler beam and tine.
Form: One end-plate, with squared corners and teeth, slightly graduated in length, and seven tooth-plates held between straight side-plates of a slightly flattened plano-convex profile by six iron rivets (three lost). Light beading from wear on teeth on both sides. Six teeth per cm.
Assembly: Rivet spacing (?from end-plate, centre to centre) 18.6mm, 24.2mm, 36.1mm, 24.8mm, 17.6mm. Rivets pass through junction of tooth-plates in all cases except one, where it runs through centre of plate.
Size: Overall L.*c.* 142.0mm, Max. W.35.5mm, Th.*c.* 9.6mm. Side-plate W.*c.* 10.3mm. L. of end-plate: 14.6mm+; L. of tooth-plates 7.0mm+, 10.2mm, 13.7mm, 18.7mm, 19.2mm, 17.3mm, 16.0mm.
RF 7925, Context 6888, Phase 5B–6i. [Dump]
- 814 Double-sided composite comb fragments (FIG. 1.31)
Material: Antler beam and tine.
Form: One end-plate fragment with teeth of graduated length and four tooth-plates held between straight plano-convex side-plates by four iron rivets. Seven teeth per cm on both sides.
Assembly: Tooth-plates are abnormally thick; *c.* 4.8mm. Rivet spacing (from end-plate, centre to centre): *c.* 20.0mm, 27.8mm, 18.6mm, 11.5mm. Rivet passes through end-plate close to inner edge, others at junction of tooth-plates.
Decoration: Tooth-cutting scars on one side-plate. A terminal of side-plate (on plainer side of comb) bears a pair of vertically incised lines, limited by a zone of zigzag incised lines, cross-hatched only where direction of cut changes. A comparable motif, of three vertical incised lines, occurs at the other end of comb, though it is here uncertain whether this is at or close to the side-plate terminal. This decoration appears on both side-plates.
Size: Overall L.*c.* 84.0mm, Max. W.34.7mm, Max. Th.13.7mm. Side-plate W.10.0mm. L. of end-plate fragment: 13.0mm, L. of tooth-plates: 13.0mm, 15.2mm, 13.6mm, 18.8mm.
RF 6982, Context 6300, Phase 6iii–7. [Dark soil/ Occupation]
- 815 Double-sided composite comb fragment.
Material: (?) Cattle long-bone and rib.
Form: Square end-plate with rounded corners and teeth of graduated length held between slightly tapering side-plates of flattened plano-convex profile by two iron rivets (one lost). *c.* Six teeth per cm on both sides. Slight beading from wear on one side.
Assembly: Rivet-hole (D. 3.0mm) 1.5mm from inner edge of end-plate. Rivet spacing (centre to centre) 16.2mm. Angled cuts on side-plates from cutting of teeth after assembly.
Decoration: Vertically incised lines extend from flat-ended terminal along entire surviving length of side-plates.
Size: Overall L.38.7mm, Max. W.41.4mm. Side-plate Max. W.11.4mm. L. of end-plate: 22.4mm, Max. Th.2.5mm.
RF 11792, Context 10772, Phase 2–5A. [Ditch fill]

- 816 Double-sided composite comb fragment (Fig. 1.31)
 Material: Antler beam and tine.
 Form: Square end-plate held between two side-plate fragments (terminals only) by an iron rivet. Teeth graduated in length, *c.* six teeth per cm on one side and *c.* seven on the other. Also a detached and abraded tooth-plate, *c.* seven teeth per cm on both sides.
 Decoration: Nine finely incised vertical lines on terminals, beyond rivet.
 Size: Overall L.*c.*31.0mm, Max. Th.*c.*10.0mm. End-plate L.18.3mm, Max. W.35.7mm, Max. Th.2.7mm. Side-plate Max. W.10.0mm. L. of tooth-plate 12.3mm.
 RF 5808, Context 5553, Phase 5B. [Dump]
- 817 Double-sided composite comb, side-plate fragments (Fig. 1.31).
 Material: Antler tine.
 Form: Two joining fragments from the flat-ended terminal of a side-plate, with iron rivet between them, and another fragment apparently from the opposite side-plate. Tooth cutting scars suggest eight teeth per cm on one side, and *c.* six teeth per cm on the other.
 Assembly: Rivet spacing (centre to centre) 9.0mm.
 Decoration: A pair of vertical incised lines survives at the broken end of the terminal fragment. These limit a field of cross-hatched diagonally incised paired lines which extend as far as the flat end of the terminal.
 Size: L.*c.*26.0mm. Max. W.*c.*10.0mm, Max. Th. of side-plate 3.0mm.
 RF 8053, Context 1833, Phase 6iii. [Dark soil]
- 818 Double-sided composite comb fragment.
 Material: Antler beam and tine.
 Form: ?End-plate fragment with teeth of graduated length held between plano-convex side-plates by two iron rivets. Six teeth per cm on both sides. One side-plate bears a flat-cut terminal.
 Assembly: Rivet spacing (centre to centre) 12.4mm, with rivets set at junction of plates. Occasional cuts from tooth-cutting on one side-plate only, on the decorated side.
 Decoration: Diagonal paired incised lines on one side-plate.
 Size: Overall L.22.5mm, Max. W.28.2mm, Max. Th.9.2mm. Side-plate W.10.1mm. L. of ?end-plate fragment: 19.0mm, Max. Th.2.2mm.
 RF 7260, Context 6300, Phase 6iii–7. [Dark soil/ Occupation]
819. Double-sided composite comb fragment (Fig. 1.31).
 Material: Antler beam and tine.
 Form: Rectangular end-plate with rounded corners and three tooth-plates held between straight, slightly tapering plano-convex side-plates by three iron rivets. Side-plates widen by *c.*1.0mm as they extend away from end-plate. Teeth graduated in length at end-plate. Tooth spacing *c.* six per cm on both sides. Although the comb appears to be broken at the opposite end from the surviving end-plate, here what should be the outer edge of one “broken” side-plate appears polished or smoothed by wear.
 Assembly: Rivet spacing (from end-plate, centre to centre): 18.2mm, 20.8mm. Rivets pass through end-plate *c.*3.0mm from its inner edge and close to tooth-plate edges. Side-plate (on decorated side only) notched by angled cuts arising from cutting of teeth after assembly. Radiating scratches on one side of end-plate may have served to assist setting out for assembly, or may be casual graffiti.
 Decoration: Terminal of side-plate bears finely incised cross-hatch on one side only, limited by a group of six vertically incised lines. This decoration is apparently interrupted by tooth cutting scars.
 Use: Transverse wear has produced light beading of teeth on the decorated side, and on the other side of the end-plate.
 Size: Overall L.79.0mm, Max. W.39.0mm. Max. W. of side-plate *c.*12.0mm. L. of end-plate: 28.5mm, Max. Th.3.1mm. L. of tooth-plates: 14.0mm, 15.8mm, 16.5mm.
 RF 6864, Context 6797, Phase 6ii. [Dump]
- 820 Double-sided composite comb, tooth-plate fragment.
 Material: Antler beam.
 Form: Seven teeth per cm on one side and six on the other. Abraded.
 Size: L.21.2mm, Max. W.33.9mm, Max. Th.3.2mm.
 RF 3806, Context 3758, Phase 4ii. [Dump]
- 821 Double-sided composite comb, tooth-plate.
 Material: Antler beam.
 Form: *c.* Five teeth per cm on both sides. A rivet-hole (D.2.8mm) on one edge of the plate. Teeth on both sides beaded by wear.
 Size: L.11.7mm, Max. W.34.6mm, Max. Th.2.2mm.
 RF 5220, Context 5193, Phase 4ii–5A. [Dump]
822. Double-sided composite comb, side-plate fragment.
 Material: Antler tine.
 Form: Plano-convex profile, with a rivet scar at each end. Prominent scars from tooth-cutting indicate seven teeth per cm on both sides.
 Assembly: Rivet spacing *c.*24.0mm (centre to centre).
 Size: L.27.8mm, Max. W.11.3mm, Max. Th.3.2mm.
 RF 5814, Context 5553, Phase 5B. [Dump]
- 823 Double-sided composite comb, tooth-plate fragment.
 Material: (?) Antler beam?
 Form: Plate with six teeth per cm on both sides. Rivet-hole at one edge (D.*c.*3.0mm).
 Size: L.21.0mm, Max. W.33.9mm, Max. Th.3.2mm.
 RF 5359, Context 3891, Phase 6ii. [Dump]
- 824 Double-sided composite comb, tooth-plate fragment.
 Material: Antler beam.
 Form: *c.* five teeth per cm on both sides. Abraded.
 Size: L.21.8mm, Max. W.33.0mm, Max. Th.2.7mm.
 RF 7059, Context 6300, Phase 6iii–7. [Dark soil/ Occupation]
- 825 Double-sided composite comb, tooth-plate.
 Material: Antler.
 Form: Six teeth per cm on both sides. A rivet-hole (D.2.6mm) at one edge.
 Assembly: Uncut central zone appears *c.*1.5mm wider on one side, suggesting an attempt to restrict tooth-cutting scars to one side of the comb.
 Size: L.9.8mm, Max. W.37.2mm, Max. Th.2.3mm.
 RF 10562, Context 7055, Phase 6ii–6iii. [Dark soil]
- Narrower double-sided combs with thin side-plates*
- 826 Double-sided composite comb fragment (Fig. 1.32).
 Material: Antler beam and tine.
 Form: Squared end-plate and two tooth-plates held by two iron rivets (now lost) between side-plates of plano-convex

- profile. Teeth graduated in length in end-plate. Six teeth per cm on each side.
 Assembly: Rivet spacing c.33.0mm. Angled cuts from tooth cutting appear on one side-plate only.
 Decoration: One side only: Seventeen diagonal and five near-vertical lines inscribed on one side-plate, in an ?abortive attempt? at cross-hatched decoration. The diagonal scoring runs for c.31.0mm from the terminal, with near-vertical scoring intersecting at its limit.
 Size: Overall L.c.56.0mm, Max. W.37.7mm, Max. Th.c.11.0mm. Side-plate W.8.4mm. End-plate L.c.21.5mm, tooth-plates L. 5.5mm, c.15.8mm.
 RF 5124, Context 4195, Phase 5B–6i. [Occupation].
- 827 Double-sided composite comb fragments.
 Material: (?) Antler beam and tine?
 Form: Tooth-plate and side-plate fragment. c. Seven teeth per cm on both sides.
 Assembly: Rivet-hole, D. 2.6mm, on one edge of tooth-plate. Rivet spacing on side-plate 29.8mm (centre to centre). Angled cuts on side-plate from cutting of teeth after assembly. Uncut zone on tooth-plate is c.10.0mm wide on one side and 7.2mm wide on the other, ?suggesting tooth-cutting was finished from one side only.
 Size: Side-plate L.33.8mm, W.7.8mm. Tooth-plate L.13.2mm, Max. W.30.6mm, Max. Th.2.3mm.
 RF 1852, Context 1832, Phase: 6ii–6iii. [Dark soil]
- 828 Double-sided composite comb fragment.
 Material: Antler beam.
 Form: Three tooth-plates held between straight plano-convex side-plates by two (surviving) iron rivets. Six teeth per cm on both sides. Heavily abraded outer surfaces, and broken.
 Assembly: Prominent angled cuts from cutting of teeth on side-plates. Two tooth-plates bear rivet holes (D. 2.6mm) suggesting rivets were set at the junction of tooth-plates.
 Size: Overall L.c.49.0mm, Max. W.c.36.0mm. W. of side-plate 8.7mm. L. of tooth-plates: 10.7mm, 10.0mm, 12.2mm, Th.2.2mm.
 RF 7015, Context 6300, Phase 6iii–7. [Dark soil/Occupation]
- 829 Double-sided composite comb fragment (Fig. 1.32).
 Material: Antler beam and tine.
 Form: Squared end-plate held between straight side-plates of plano-convex profile by an iron rivet. Teeth graduated in length towards end of plate, c. six teeth per cm on both sides.
 Assembly: Rivet spacing c.20.0mm (centre to centre). Angled cuts from cutting of teeth after assembly, appearing on decorated side-plate (though equivalent element of opposed side-plate is lost).
 Decoration: Finely incised cross-hatch of single and paired lines runs along one side-plate only, possibly executed after assembly.
 Size: Overall L.42.4mm, Max. W.33.7mm, Max. Th.9.4mm. End-plate L.23.0mm, Max. Th.2.3mm. Side-plate W.8.1mm.
 RF 7042, Context 6300, Phase 6iii–7. [Dark soil/Occupation]
- 830 Double-sided composite comb, end-plate fragment.
 Material: Bone, (?) long-bone.
 Form: Square end-plate with angular corners, teeth graduated in length. Six teeth per cm on one side and five per cm on the other.
 Assembly: The central uncut zone is wider on one side than on the other, suggesting that the finishing of tooth-cutting may have been intended to leave scars on only one side of the comb.
 Size: L.27.0mm, Max. W.33.7mm, Max. Th.2.8mm.
 RF 6910, Context 6300, Phase 6iii–7. [Dark soil/Occupation]
- 831 Double-sided composite comb, tooth-plate fragment.
 Material: Antler beam.
 Form: c. Six teeth per cm on both sides. A rivet-hole (D. 2.0mm) at one edge.
 Assembly: Uncut zone appears wider by c. 1.0mm on one side, possibly from finishing of tooth-cutting from one side only.
 Size: L.7.3mm, Max. W.36.0mm, Max. Th.2.3mm.
 RF 12157, Context 10765, Phase 3a. [Trench fill].
- Double-sided combs – disassembled fragments of lesser diagnostic value*
- 832 Double-sided composite comb, end-plate fragment.
 Material: Large mammal, from near end of long-bone shaft.
 Form: Plate with curved corner and five teeth per cm on one side and c. six per cm on the other. Heavily abraded.
 Size: L.22.0mm+, Max. W.25.1mm, Max. Th.3.3mm.
 RF 3469, Context 2784, Phase 3a. [Occupation deposit]
- 833 Double-sided composite comb, tooth-plate.
 Material: Antler beam.
 Form: c. ten teeth per cm on one side and c. eight teeth per cm on the other, but burnt and twisted. Rivet-hole (D. 2.0mm) at one edge.
 Size: L.6.2mm, Max. W.32.3mm, Max. Th.2.4mm, but original dimensions have probably been altered by burning.
 RF 11512, Context 3758, Phase 4ii. [Dump]
- 834 Double-sided composite comb, tooth-plate fragment.
 Material: Antler beam.
 Form: c. Nine teeth per cm on one side and c. eight teeth per cm on the other, but burnt and twisted. Rivet-hole (D.1.8mm) at one edge.
 Size: L.5.6mm, Max. W.32.8mm, Max. Th.2.0mm, but original dimensions have probably been altered by burning.
 RF 11527, Context 3758, Phase 4ii. [Dump]
- 835 Double-sided composite comb, tooth-plate fragment.
 Material: Antler beam.
 Form: c. Eight teeth per cm on both sides, but burnt.
 Size: L.10.0mm, Max. W.16.0mm, Th.2.4mm, but original dimensions have probably been altered by burning.
 RF 13272, Context 3758, Phase 4ii. [Dump]
- 836 Double-sided composite comb, tooth-plate fragment.
 Material: (?) Antler beam?
 Form: Teeth slightly graduated in length. Six teeth per cm on both sides. Rivet-hole at one edge (D.c.2.0mm). Abraded.
 Size: L.12.0mm+, Max. W.30.0mm, Max. Th.2.5mm.
 RF 5669, Context 5139, Phase 5A. [Dump]
- 837 Double-sided composite comb, tooth-plate fragment.
 Material: (?) Bone, long-bone?
 Form: c. seven teeth per cm on both sides. Rivet-hole (D.2.4mm) at one edge. Abraded.
 Size: L.15.5mm, Max. W.25.7mm, Max. Th.2.3mm.
 RF 4708, Context 3891, Phase 6ii. [Dump]

- 838 Double-sided composite comb, tooth-plate fragment.
Material: Bone, long-bone.
Form: Plate with c. six teeth per cm on both sides, rivet-hole at one edge (D. 3.0mm). Abraded, most of teeth lost.
Size: L.15.2mm, Max. W.14.8mm, Th.3.5mm.
RF 5364, Context 3891, Phase 6ii. [Dump]
- Symmetrical single-sided combs*
- 839 Single-sided composite comb, end-plate (FIG. 1.32)
Material: Antler beam.
Form: End-plate curved at back, one rivet runs through plate 2.2mm from inner edge. Teeth graduated in length towards end of plate, six teeth per cm.
Size: L.18.0mm, Max. W.32.6mm, Max. Th.2.5mm.
RF 4759, Context 4702, Phase 3bi–3B. [Post-hole fill]
- 840 (?) Single-sided composite comb, end-plate fragment.
Material: Antler beam.
Form: Straight-ended plate curving at back, bearing teeth of graduated length, seven per cm. A rust spot on inner edge marks rivet position, where plate has broken.
Size: Max. L.17.8mm+, Max. W.c.41.0mm, Max. Th.2.1mm.
RF 14336, Context 5503, Phase: 4ii. [Dump]
- 841 Side-plate fragments from a composite comb (FIG. 1.32).
Material: Antler tine.
Form: Four side-plate fragments, one small and undecorated one bearing tooth-cutting scars indicating six teeth per cm. Abraded, broken, with white material in decorative cuts ?from the soil.
Assembly: Two or three possible rivet scars (one of D.2.3mm) on largest fragment, possibly spaced c.12.5mm, c.11.5mm (centre to centre).
Decoration: Largest fragment only is described: two zones of six and nine finely inscribed vertical lines are separated by a blank field. The latter group then gives way to diagonal lines, possibly arranged in juxtaposed triangular zones. The next largest fragment may feature a continuation of this motif.
Size: Fragments a–d. a: L.42.0mm, Max. W.10.4mm; b: L.26.4mm, Max. W.6.0mm; c: L.10.9mm, Max. W.8.2mm; d: L.6.4mm; Max. Th.(a) 3.7mm.
RF 10171, Context 4702, Phase 3bi–3B. [Post-hole fill]
- 842 Single-sided composite comb fragments.
Material: Antler beam and tine.
Form: Three tooth-plates and one tooth-plate fragment, held to a side-plate fragment by an iron rivet. Five teeth per cm. May be from the same comb as nos 843 (RF 6015) and 844 (RF 12460).
Assembly: Three tooth-plates bear notches from riveting, rivet spacing possibly c.37.0mm. Side-plate bears angled cuts from cutting of teeth after assembly.
Decoration: Each tooth-plate bears an angled back, subsequently smoothed, suggesting slight protrusion from the back of the comb. Three groups of three fine vertically incised lines occur towards one end of side-plate.
Size: Overall L.c.66.0mm, Max. W.32.8mm. Side-plate Max. W.17.3mm. Tooth-plates L: 9.4mm+, 11.9mm, 23.2mm, 17.3mm; Th.c.3.3mm.
RF 5546, Context 5503, Phase 4ii. [Dump]
- 843 Single-sided composite comb, side-plate fragment.
Material: Antler (?) beam.
Form: Plano-convex profile; angled cuts from cutting of teeth suggest c.5 teeth per cm. May be from the same comb as no. 842 (RF 5546). Rust spot at one end.
Decoration: Two groups of four vertically incised fine lines towards narrower end of fragment.
Size: L.32.6mm, Max. W.16.7mm, Max. Th.3.9mm
RF 6015, Context 5503, Phase 4ii. [Dump]
- 844 Single-sided composite comb, tooth-plate.
Material: (?) Antler (?) beam.
Form: Four teeth per cm, beaded by wear, and possibly slightly graduated in length. Trace of a rivet-hole (D.c.2.1mm) at one edge. Back of plate lightly chamfered/rounded. May be from same comb as no. 842 (RF 5546).
Size: L.8.8mm, Max. W.29.5mm, Max. Th.2.7mm.
RF 12460, Unstratified.
- 845 Composite antler object – ?upper side-plate (FIG. 1.32).
Material: Antler tine.
Form: Two curving plates of plano-convex profile joined flush to each other by two iron rivets at each end (one lost), and by an off-centre rivet. The object has a distinctive smoothly curved hog-backed form. Though it resembles a single-sided comb in its construction, the flush setting of side-plates leaves no room for intervening tooth-plates; nor do any tooth-cutting scars appear.
Assembly: Rivet-spacing (from more complete end, centre-to-centre): 21.0mm, 41.0mm, 65.0mm, 12.0mm.
Decoration: Plates bear fine triple longitudinally incised lines towards their upper and lower edges, limited towards terminal by six groups of four vertically incised lines, enclosing a blank central field. Polished overall. Broken at rivet positions – fresh breaks – into seven fragments.
Size: L.c.147.0mm (one terminal lost), Max W. of plates 19.6mm, Max. Th.c.10mm.
RF 8210/14340, Context 5988, Phase: 6i. [Trench fill]
- 846 Single-sided composite comb fragments (FIG. 1.32)
Material: Antler beam and tine.
Form: One end-plate fragment with teeth graduated in length and four tooth-plates with projecting backs held between bowed side-plates of flattened plano-convex profile (one broader than the other) by six iron rivets (and another lost or replaced in antiquity, leaving hole of D.2.3mm). Seven teeth per cm. Possibly included no. 847 (RF 11134).
Assembly: Rivet spacing (from end-plate, centre to centre): 5.0mm, 12.4mm, c.24.0mm, c.29.0mm, 16.6mm, 21.3mm (to empty hole – the side-plate fragment which was perhaps attached here suggest c.15.0mm, with empty hole beyond this). Rivets pass through junction of tooth-plates, but two pass through end-plate, one close to its edge. Re-assembly might also be suggested by the double pinning of end-plate, by the different decoration of side-plates, by lateral bowing of comb, and by the empty rivet-hole. Angled cuts from tooth cutting after assembly appear on one side-plate only – the more decorated one. The projecting backs of tooth-plates are smoothed down, also after assembly.
Decoration: Two distinct schemes appear, as follows: that side-plate without tooth cutting scars bears decoration only at its flat-ended terminals. Here, three or four incised vertical lines define a field occupied by paired diagonally incised cross-hatched lines. The central field is blank. The other, more fragmentary, side-plate bears vertically incised lines in groups of three, and occasionally four, closely spaced. Towards one terminal (lost) a diagonal cross-hatched motif

- begins. A similar interruption of the vertical decoration occurs on another fragment, on which it apparently represents cross-hatched decoration in a position which approaches the centre of the side-plate.
Size: Overall L.c.130.0mm, Max. W.24.0mm. Plainer side-plate Max. W.16.9mm, Th.4.3mm. More decorated (though less survives) side-plate Max. W.15.3mm, Th.3.2mm. L. of end-plate c.10.0mm+, L. of tooth-plates: 10.0mm, 14.6mm, (one or two missing), 13.5mm, 16.3mm.
RF 9571, Context 5503, Phase 4ii. [Dump]
- 847 Single-sided composite comb, tooth-plate fragment.
Material: Antler beam.
Form: c. Seven teeth per cm. Staining from iron rivet at one edge. Chamfered back may indicate projection of plate from back of comb by c.5.0mm, and uncut flattened zone suggests side-plate of W.c.17.0mm. Possibly part of no. 846 (RF 9571).
Size: L.16.3mm, Max. W.23.4mm, Max. Th.2.8mm.
RF 11134, Context 5503, Phase 4ii. [Dump]
- 848 Single-sided composite comb fragment (Fig. 1.33).
Material: Antler beam and tine.
Form: Angled end-plate with a slight indentation close to its back edge held to the terminal of a side-plate of plano-convex profile by an iron rivet. Teeth are graduated in length towards the end of the plate, seven teeth per cm. A circular perforation (D.2.7mm) runs through the back of the end-plate.
Assembly: Rivet passes through end-plate, positioned centrally, c.1.5mm from its inner edge. Raised zone on end-plate suggests finishing – ?rubbing down – of back of comb after assembly.
Decoration: End-plate bears a wide compass-drawn ring-and-dot (D.14.2mm) on one side, executed after assembly. Side-plate terminal bears group of five fine vertically incised lines beyond rivet, and two lines from a ?cross-hatched motif at rivet position.
Size: End-plate L.25.6mm, Max. W.39.4mm, Max. Th.3.2mm. Side-plate Max. W.c.11.5mm (from traces on end-plate).
RF 4270, Context 3891, Phase 6ii. [Dump]
- 849 Single-sided composite comb, tooth-plate fragment (Fig. 1.33)
Material: Antler beam.
Form: Tooth-plate with gently curved back, six teeth per cm. A rivet-hole (D.2.0mm) is set at one edge, just above the teeth (which are lost). Abraded.
Decoration: A zone is defined by a single longitudinally incised line close to the back edge of the plate, and is occupied by angled cuts forming a plaited motif along its back.
Size: L.19.0mm, Max. W.34.9mm.
RF 14131, Unstratified.
- 850 Single-sided composite comb fragment.
Material: Antler beam and tine.
Form: Tooth-plate with projecting angled back held to fragment of a plano-convex side-plate by one iron rivet. Six teeth per cm. Teeth lightly beaded by wear.
Assembly: Rivet positioned at edge of tooth-plate.
Decoration: Three longitudinal lines occur on side-plate, above rivet position.
Size: L.17.4mm, Max. W.40.0mm.
RF 14224, Unstratified.
- 851 Single-sided composite comb (Fig. 1.33; Pl. 1.18).
Material: Antler beam and tine.
Form: Seven tooth-plates and two end-plates with rounded projections at their backs, held between lightly bowed side-plates of plano-convex profile by six iron rivets. Seven teeth per cm. Teeth are graduated in length at the end-plates, which are of different sizes. Central teeth survive better than those towards the ends of the comb.
Assembly: Rivet spacing (centre to centre): 23.0mm, 28.0mm, 22.0mm, 22.0mm, 20.0mm; rivets pass through end-plates close to their inner edges, three out of the other four pass through tooth-plates at their junction. Side-plates notched by cutting of teeth after assembly; this appearing mainly on one side.
Decoration: Bilateral decoration as follows: compass-drawn triple ring-and-dot adorns the projecting elements at back of each end-plate. A plaited motif formed by angled cuts between two incised lines runs from the ring-and-dot down the back edge of the end-plates. The side-plates bear central fields defined by paired incised longitudinal lines. These fields are subdivided by 16 groups of four vertically incised lines on one side-plate, and by 14 groups on the other, set at c.5.0mm intervals. Angled cuts appear on the back of tooth-plates, c.8 cuts per cm, continuing along end-plates up to the position of the decorative projection.
Size: Overall L. 164.0mm, Max. W. (at larger end-plate) 35.7mm, at centre of comb: 30.9mm. Side-plate Max. W. 10.3mm. L. of larger end-plate 29.0mm; L. of tooth-plates: 17.7mm, 13.0mm, 15.3mm, 14.9mm, 16.8mm, 15.3mm, 16.4mm; L. of smaller end-plate 23.9mm.
RF 6139, Context 5503, Phase 4ii. [Dump]
- 852 Single-sided composite comb, end-plate fragment. (Fig. 1.33)
Material: Antler beam.
Form: Rounded, with circular projection at back (D.c.10.8mm). Teeth graduated in length, c. six teeth per cm. A rivet-hole (D.1.9mm) at one edge.
Decoration: Compass-drawn triple ring and dot (D.7.8mm) on projection. Paired incised lines with angled cuts form a plaited motif rising along the outer edge of the end-plate. This scheme appears on both sides.
Assembly: Setting-out lines for tooth-cutting appear on both sides. Flattened zone hints at tapered terminals of side-plates, of Max. W c.11.0mm, masking other elements during rubbing down after assembly.
Size: L.27.0mm+, Max. W.32.5mm, Max. Th.2.4mm.
RF 6289, Context 5503, Phase 4ii. [Dump]
- 853 Single-sided composite comb fragment.
Material: Antler beam and tine.
Form: Curved end-plate held to the terminal of a side-plate of plano-convex profile by an iron rivet. Teeth slightly graduated towards end, seven teeth per cm.
Assembly: Rivet set c.6.3mm from inner edge of plate, but rust-staining at break may suggest another rivet at edge, now lost.
Decoration: A (?) decorative perforation at the back of end-plate (D 5.2mm), possibly undercut with some difficulty after assembly; this occupies a rounded projection at inner top edge of end-plate. Finely incised vertical lines in groups of three on the side-plates lie at, and either side of, rivet position. These were cut before assembly.
Size: End-plate L.33.7mm, Max. W.32.7mm, Max.

Th.2.7mm. Side-plate Max. W.c.11.0mm (from traces on end-plate).

RF 1646, Context 1440, Phase: 6iii. [Dark soil]

Handled combs

- 854 Single-sided asymmetrical handled composite comb fragments (Fig. 1.33).

Material: Antler beam and tine.

Form: One blank plate (at handle), two end-plates (that at handle end is straight, that at the other end curved) and four tooth-plates held by six iron rivets between side-plates of plano-convex profile. Teeth graduated in length at end-plates, seven teeth per cm.

Assembly: Rivet spacing (from handle end, centre to centre) 31.8mm, 18.6mm, c.21.0mm, c.18.0mm, c.9.0mm; rivets usually placed at junction of tooth-plates. Angled cuts on one side-plate (on the decorated side only) from cutting of teeth after assembly.

Decoration: Four finely inscribed circumferential lines at butt of handle, cut after assembly. A cross-hatch of paired incised lines runs along one side-plate.

Size: Overall L.c.140.0mm, Max. W.28.5mm, Th.10.5mm. Handle L.c.41.0mm, Max. D.10.4mm. Blank plate at handle L.c.41.0mm, squared end-plate L 10.7mm, L. of tooth-plates c.4.0mm+, 11.9mm, 12.2mm, 11.3mm, 6.5mm+, curved end-plate L 13mm+.

RF 5418, Context 4195, Phase 5B–6I [Occupation].

- 855 Handle fragment ?from a handled comb.

Material: Antler tine.

Form: Fragment from butt of flat-ended handle, of formerly plano-convex section. An iron-stained transverse rivet hole (D.c.2.5mm) lies towards one end. Polished, now abraded.

Decoration: Three circumferential lines at butt, and groups of five and four (?) saw-cut lines between this and rivet-hole, positioned nearer upper and lower edges (which is which remains uncertain).

Size: L.32.7mm. Max. W.c. 13mm+, Max. Th.9.2mm.

RF 7513, Context 6472, Phase 5B–6i. [Dump]

- 856 Single-sided comb fragment, probably from a handled comb (Fig. 1.34).

Material: Side plates of red deer antler; tooth-plates of (?) cattle long-bone.

Form: Two end-plate fragments and three tooth-plates held between straight tapered plano-convex side-plates by four iron rivets (one lost), c. seven teeth per cm.

Assembly: Rivet spacing (from narrow end, centre to centre): 26.7mm, 37.3mm, c.8.0mm. Two rivets pass through end-plates and the others at the junction of tooth-plates. Angled cuts on side-plate arise from the cutting of teeth after assembly.

Decoration: One side-plate bears six groups of between three and six vertical incised lines, defining three fields bearing cross-hatched sets of diagonally incised lines, or saltires. Rivets are set in the remaining blank fields. On the other side-plate the narrow terminal bears a set of four vertically incised lines. A further four groups of diagonal cuts are angled to form a chevron near the back of the comb, and continue along its remaining extent.

Size: L.85.0mm, Max. W.20.0mm. L. of end-plate (narrow end) 13.00mm+; L. of tooth-plates: 21.0mm, 22.6mm,

17.4mm; L. of other end-plate: 5.00mm+.

RF 14075, Unstratified.

- 857 Single-sided composite comb, side-plate fragment, possibly from a handled comb.

Material: (?) Cattle rib.

Form: Straight, with flattened sub-rectangular profile, and two slightly countersunk rivet holes (Max. D.4.0mm), narrowing to (?) terminal at one end. Five teeth per cm.

Assembly: Rivet spacing (centre to centre) 36.7mm. Angled cuts from cutting of teeth along one edge.

Decoration: Groups of five and four crudely incised vertical lines, in most cases corresponding to tooth-cutting scars, with rivet holes passing clear of these.

Size: L.66.3mm, Max. W.14.3mm, Max. Th.2.2mm.

RF 12445, Unstratified.

- 858 Single-sided comb, tooth-plate fragment.

Material: Long-bone.

Form: c. Four teeth per cm. Rivet hole (D.3.8mm) at one edge.

Size: L.11.5mm, Max. W.17.3mm, Max. Th.3.5mm.

RF 10945, Context 1457, Phase: 6iii. [Dark soil]

- 859 Single-sided comb fragment, possibly from a handled comb (Fig. 1.34)

Material: Antler beam and tine.

Form: Two tooth-plates held between slightly bowed plano-convex side-plates by three iron rivets (one lost). Comb appears to taper by c.1.0mm along its surviving length. Six teeth per cm.

Assembly: Rivet spacing (centre to centre): 17.8mm, 18.7mm. Occasional angled cuts from cutting of teeth appear on side-plates, possibly unintentionally.

Decoration: Occurs on one side-plate only. Comprises single incised diagonal lines cross-hatching along upper and lower zones of side-plate, leaving a blank central field where rivets are set. An incised longitudinal line at top of the lower zone may be a setting out line, decoration, or damage.

Size: Overall L.48.0mm, Max. W.15.5mm, Max. Th.1.2mm. Side-plate Max. W.9.6mm. L. of tooth-plates: 18.6mm, 18.0mm.

RF 14040, Unstratified.

- 860 Single-sided comb fragment, possibly from a handled comb.

Material: Antler beam and tine.

Form: Three tooth-plates held between plano-convex side-plates by two iron rivets (one lost). Five teeth per cm.

Assembly: Rivet spacing (centre to centre): 22.0mm. Rivets pass through junction of tooth-plates. Angled cuts on side-plates from cutting of teeth after assembly.

Decoration: Finely incised vertical lines, grouped in threes, appear on one side-plate. Rivets are positioned clear of these decorated zones.

Size: L.40.0mm, Max. W.14.6mm, L. of tooth-plates: 11.6mm, 10.4mm, 11.9mm.

RF 14130, Unstratified.

- 861 Handle, probably from an asymmetrical handled composite comb (Fig. 1.34).

Material: Sheep metatarsal.

Form: Single piece of hollow bone flattened at one end and broken at the other.

Assembly: Two small cuts at broken end indicate the cutting

of a slot. If this piece derived from a comb, the slot would have accommodated tooth-plates (now lost).

Decoration: Six groups of four finely incised lines run circumferentially round the shaft, with paired lines at the butt. Fields between these groups are alternately blank or filled with longitudinally incised lines, producing bands of billeted decoration.

Size: Max. L.54.2mm, Max. D. at butt 18.3mm, at broken end 12.4mm.

RF 5326, Unstratified.

- 862 Handle fragment, possibly from an asymmetrical handled single-sided composite comb.

Material: Medium-sized mammal long-bone.

Form: Curved fragments with flattened slot (W.1.9mm) cut at one end, and decoration from this point. If this piece derived from a comb, the slot would have accommodated tooth-plates (now lost).

Decoration: Ten inscribed circumferential lines run part-way round the fragment, beginning at the end of the slot.

Size: L.c.28.5, Max. W.18.0mm, Max. Th.7.0mm.

RF 2267, Context 72, Phase 5A. [Occupation deposit]

Other single-sided combs

- 863 Single-sided composite comb, end-plate fragment.

Material: Large mammal long-bone.

Form: Squared end-plate fragment with (?) originally angular corners, teeth barely graduated in length, six teeth per cm. Possible rivet scar close to inner edge.

Size: L.17.9mm, Max. W.23.7mm, Max. Th.2.0mm.

RF 5916, Context 5871, Phase 6i. [Trench fill]

- 864 Single-sided composite comb, end-plate fragment (Fig. 1.34)

Material: Antler beam.

Form: Square-ended fragment with angular corners and teeth graduated in length. Seven teeth per cm.

Assembly: No rivet present, though slight rust-trace on broken inner edge. Back very slightly chamfered, and end smoothed.

Size: L.17.9mm+ (part lost), Max. W.21.7mm, Max. Th.2.0mm.

RF 5722, Context 5555, Phase 5B–6i. [Pit fill]

- 865 Single-sided composite comb, end-plate fragment.

Material: (?) Bone, (?) long-bone.

Form: Squared, with angular corners, teeth graduated in length, c. six teeth per cm. A rivet-hole (D. 2.0mm) at a break at the inner edge.

Assembly: On one side the zone formerly masked by side-plate is discernible, W. c.10.5mm, and a chamfered form has been imparted to back of plate and at tooth points, indicating trimming after assembly.

Size: L.17.7mm, Max. W.29.9mm, Max. Th.2.7mm.

RF 7287, Context 6803, Phase: 5B–6i. [Dump]

- 866 Single-sided composite comb fragment.

Material: Antler (non-specialist identification, by MF).

Form: Squared end-plate fragment with angular corner at back, slightly rounded on lower corner, and teeth graduated in length, c. five teeth per cm, held between straight-ended side-plate terminal fragments of plano-convex profile by an iron rivet. Broken at rivet position.

Size: Overall L.10.4mm, Max. W.29.6mm, Max. Th.9.2mm.

Tooth-plate Max. Th.3.8mm.

RF 14341, Context 5988, Phase 6i. [Trench fill]

- 867 Single-sided composite comb, tooth-plate.

Material: Antler beam.

Form: c. five teeth per cm. Possible rivet scar (D. c.2.5mm) at one side.

Size: L.13.9mm, Max. W.28.4mm, Max. Th.2.1mm.

FX88 R27, Context 4, Phase 0. [Trench F, natural]

- 868 Single-sided composite comb fragment.

Material: Antler beam and tine.

Form: Tooth-plate held between bowed plano-convex side-plate fragments by an iron rivet – another rivet possibly lost. Five teeth per cm. Abraded, teeth lost.

Assembly: Rivet spacing (centre to centre) ?20.0mm. Angled cuts from tooth cutting on side-plates.

Decoration: Cross-hatched paired diagonally incised lines on both side-plates, with occasional extra ?accidental lines. Fine decoration, but perhaps a little casually executed.

Size: Overall L 29.9mm, Max. (side-plate) W.16.3mm, Th.12.1mm. Tooth-plate L.11.9mm, Th.2.7mm.

RF 7774, Context 221, Phase: 2i–4ii. [Pit fill]

- 869 (?) Single-sided composite comb, side-plate fragment.

Material: Antler tine.

Form: Plano-convex profile, with traces of rivets at each end, c. five teeth per cm.

Assembly: Rivet spacing (presumed centre to centre): c.17.0mm. Angled cuts from cutting of teeth after assembly appear along one edge.

Decoration: Closely-spaced vertical lines crossed by diagonals to form a finely executed cross-hatch.

Size: L.18.0mm, Max. W.16.2mm, Max. Th.4.0mm.

RF 11577, Context 3891, Phase 6ii. [Dump]

- 870 ?Single-sided composite comb, tooth-plate fragment.

Material: Antler beam.

Form: Fragment with iron rivet. Tooth-cutting scars suggest c. six teeth per cm.

Assembly: Rivet passes through plate.

Size: L.7.9mm+, Max. W.9.0mm. Tooth-plate Th.3.0mm. Rivet L.c.9.5mm.

RF 1896, Context 1888, Phase 6ii–6iii. [Dark soil]

Composite combs of bone and horn

- 871 (?) Single-sided composite horn and bone comb, side-plate fragment?

Material: (?) Cattle, split rib.

Form: Straight-sided flat (?) sawn strip, bearing a rivet hole (D.2.2mm) and broken at ?another. Widens between a straight end and the break. Polished or smoothed by wear.

Size: L.31.7mm, Max. W.1.6mm, Th.1.7mm.

RF 341, Unstratified.

- 872 Single-sided composite comb, side-plate fragment.

Material: ?Cattle rib.

Form: Flat-ended terminal of a straight-sided side-plate. Rivet (L.10.0mm) passes through plate, 5.5mm from its end. Tooth-cutting scars suggest six teeth per cm.

Decoration: Group of three vertical lines beyond rivet.

Size: L.18.4mm, Max. W.11.5mm, Th.2.7mm.

RF 50021, Unstratified.

Composite combs of uncertain type

- 873 Composite comb tooth.

Material: (?) Bone.

- Form: Triangular, with diagonal saw marks.
 Size: L.14.6mm, Max. W.2.3mm.
 RF 486, Context 277, Phase 5A–5B. [Pit fill]
- 874 Composite comb tooth.
 Material: Long-bone.
 Form: Thin tooth, triangular at end.
 Size: L.12.6mm, Max. W.1.6mm.
 RF 11124, Context 5988, Phase 6i. [Trench fill]
- 875 Composite comb, side-plate fragment.
 Material: ?Cattle rib.
 Form: Identified by tooth-cutting scars along one edge of fragment. Five teeth per cm. Two possible rivet-holes (D.c.2.0mm).
 Assembly: Rivet spacing (centre to centre) c.22.0mm. Angled cuts from tooth-cutting after assembly.
 Size: L.34.0mm, Max. W.7.7mm, Th.2.3mm.
 RF 12521, Unstratified.
- 876 Composite comb fragment.
 Material: Antler tine.
 Form: Side-plate terminal and rivet, with detached ?tooth-plate fragment.
- Size: L.8.0mm, Max. W.11.0mm, Th.4.6mm.
 RF 995, Unstratified.
- 877 (?) side-plate terminal fragment from a composite comb. P. Walton Rogers offers alternative identification, as a fragment from a decorated Anglo-Saxon pin beater.
 Material: Long-bone; burnt white, to c.750–850 degrees centigrade.
 Form: Fragment of originally (?) plano-convex profile. Broken at both ends and along one other edge.
 Decoration: Zone of close-spaced diagonal decoration limited by paired incised vertical lines at narrower end; wider part undecorated.
 Size: L.c.15.0mm, Max. W.10.0mm, Max. Th.8.5mm.
 RF 13200, Unstratified.
- 878 (?) Long comb tooth.
 Material: Bone; Sonia O'Connor holds it to be almost unmodified. If not, this might derive from a single-piece comb (cf. Roes 1963, pl. 33, nos 4–5).
 RF 3400, Context 3331, Phase: 3Bi–3B. [Occupation]

2 Consumption of Luxuries: The Glass and Copper Alloy Vessels

*Vera I. Evison, Catherine Mortimer, Nicola Rogers
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A number of ostentatious items from the site suggest conspicuous consumption; most of these fall into the categories of fine tableware or display items, in a variety of materials. A range of fine glass vessels include examples of palm cups, a funnel-beaker, a possible claw beaker, and some globular beakers and bowls. The copper alloy vessels are fragmentary, but include part of a hanging bowl; more utilitarian forms include a cauldron, and some possible bowls and long-handled skillets; metal vessels, in general are likely to be under-represented in the archaeological record from the site, because of the practice of recycling worn or broken vessels. Lastly, a number of mounts from the site may have adorned leather belts or small boxes; one more elaborate mount, incorporating animal heads and interlace, may have been part of a leather bag or satchel.

2.1 Glass vessels

by Vera I. Evison

Apart from window glass, the total number of Anglo-Saxon glass fragments retrieved from the site is 73, of which 69 are from vessels, and four consist of a bead, a tessera and melted waste. The fragments are mostly small, with the maximum length ranging from 6mm to 50mm (cf. Pl. 2.1). Indications of some original Anglo-Saxon forms may be deduced from rim and base fragments, and some from wall fragments with features, and there are also a number of featureless fragments which are in corresponding colours. Particularly distinctive are several wall fragments decorated with applied bicolour twisted trails or reticella.

None of the fragments appears to belong to the early

Anglo-Saxon period, AD 400–700. A rim fragment, no. 880 (RF 2048; FIG. 2.1) deeply outfolded, however, continues the palm cup form current in the 7th century (Evison 2000a, fig. 3.9, fig. 4.2), but the vivid blue-green colour was not in use before the 8th century. The small fragment no. 886 (RF 10583) in the same colour could have belonged to the same rim.

The number of forms of drinking vessels in use in the period AD 700–900 is limited, the majority being unstable forms of the palm cup which developed into the funnel beaker, together with some globular beakers and bowls (Evison 2000a, fig. 4, III). As the funnel beaker forms emerged there were changes in the rim, which were sometimes folded inwards, or only slightly thickened and cupped.

Item no. 889 (RF 13505; FIG. 2.1), a light green-blue rim folded inwards with a tubular hollow, has a diameter of c.100mm and so falls in the funnel beaker series (Evison 2000a, 4.III, 3; cf. at *Hamwic*, Hunter and Heyworth 1998, fig. 5, 36/326). Fragment no. 884 (RF 5469), a light green-blue rim thickened by rolling inwards is also a funnel beaker. The curved base of a tall palm cup (Evison 2000a, fig. 4.III, 3) is represented by five joining fragments, the light green no. 890 (RF 5521; FIG. 2.1), and there is a second possible base fragment of this type, no. 891 (RF 6020), again light green (cf. *Hamwic*, Hunter and Heyworth 1998, fig. 11, 24.426).

Fragment no. 887 (RF 11018; FIG. 2.1) is a small part of a brown, infolded rim, heat-damaged, with horizontal white trails; and this contrasting colour decoration occurs mostly on globular beakers (Evison 2000a, fig. 4.III, 6). The rim no. 879 (RF 1281; FIG. 2.1) also infolded, is blue with horizontal yellow trails up to the edge of the rim. This unusual colour and pattern combination is to be seen on the ‘inkwell’ fragment from *Hamwic* (Hunter and Heyworth

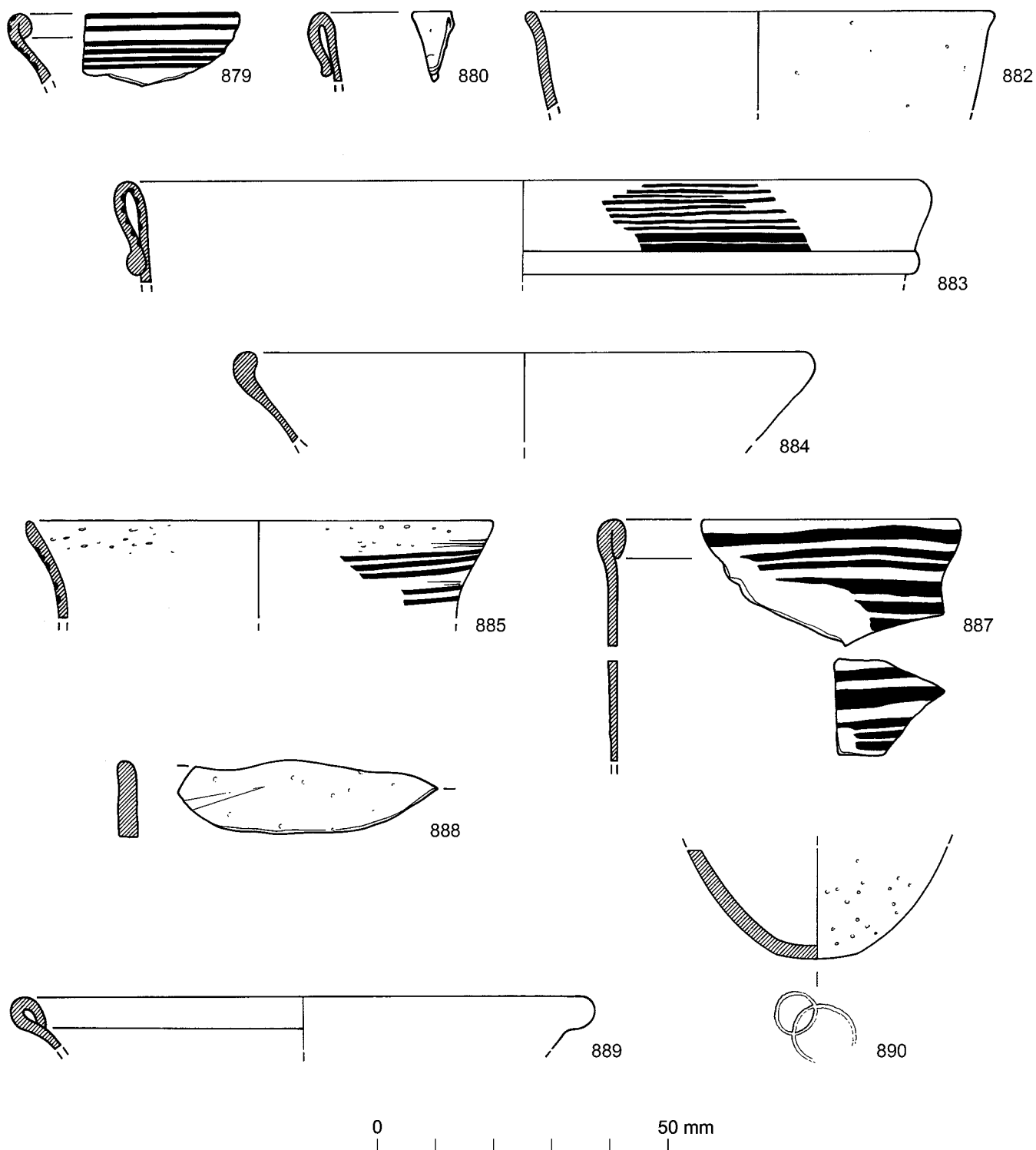


FIG. 2.1. Glass vessels. Scale 1:1.

1998, fig. 13, 24/510 and pl. 5). The simple rim no. 885 (RF 7247; FIG. 2.1), is light blue-green with yellow trails, has a diameter of approximately 80mm, and is probably from a globular beaker. Catalogue no. 888 (RF 11523; FIG.

2.1), light blue-green in colour, is misshapen and the form is not identifiable. Fragment no. 882 (RF 3543) is a rim to a conical form, possibly a funnel beaker (cf. Hunter and Heyworth 1998, fig. 8, 26/540; fig. 10, 36/333).

Vessel fragment no. 883 (RF 5000; FIG. 2.1; PL. 2.2) is a very distinctive rim. A yellow trail was wound horizontally on a colourless wall right to the edge of the rim, after which the rim was deeply folded outwards, leaving a hollow with the trails remaining visible on the inside of the fold. The estimated diameter is 140mm, and the vessel is the type of bowl found in grave 6 at Valsgärde, Sweden (Evison 2000a, fig. 4.III, 1; pl. V, 1). Rim fragments of this type occur at a number of other sites on the Continent and in England (Evison 1988, 240–1; Evison 1991, 92, 67s; Evison 2000a, fig. 7). The lower part of this type of bowl is similar to the lower part of a contemporary globular beaker form, as both can be decorated with simple horizontal trails of a contrasting colour at the top (usually yellow, or less frequently white), and with reticella trails on the lower part of the vessel, usually in a vertical direction (Evison 2000a, fig. 4. III, 6; pl. V, c). Bowls of this type from Valsgärde and Birka, in Sweden, and Dorestad, in the Netherlands, have been illustrated (Baumgartner and Krueger 1988, 70–1, nos 12–14). Comparable wall fragments of similar bowls are noted amongst the reticella fragments below.

There are ten wall fragments in all which are decorated with reticella trails. Number 898 (RF 5874; FIG. 2.2) is colourless and the yellow twisted trails are placed close together horizontally and marvered, with one trail unmarvered in a near-vertical position. This must have belonged to the same type of bowl as the rim no. 883 (RF 5000; FIG. 2.1), and is possibly from the same vessel. The angle of the unmarvered trail suggests that the pattern on the lower part of the vessel was similar to that shown more clearly on the light green-blue fragments below – nos 896–7 and 901–2 (RFs 1991, 5348, 6895 and 7012).

Items nos 896–7 and 901–2 (RFs 1991, 5348, 6895 and 7012; FIG. 2.2; PL. 2.5) are all very light green-blue fragments which have a band of six closely placed horizontal reticella trails, placed in the same order of S- and Z twist, although there is only enough of no. 897 (RF 5348) to show the lowest two trails in the same order. The arrangement of yellow horizontal trails above this band appears on three of the fragments. On no. 897 (RF 5348) there are crossing unmarvered trails below, and such diagonal trails also appear on nos 896 and 901 (RFs 1991 and 6895). It is, therefore, possible that all belong to the same bowl (FIG. 2.4, for reconstruction), although the glass of no. 897 (RF 5348) is in better condition than the others. As noted above, the colourless vessel no. 898 (RF 5874) probably also had diagonal trails. The unmarvered trails on the lower part of such vessels are usually applied singly and in a vertical position, as on the Valsgärde 6 bowl. However, one other vessel with diagonal crossing trails occurs at Ipswich, St. Stephen's Lane, in similar colouring, where a bowl base fragment in light green-blue glass (3104/185 Suffolk County Council) is decorated with yellow reticella trails crossing each other in an irregular pattern.

Fragment no. 895 (RF 1857; FIG. 2.2) is a distinctive dark green colour with a single, unmarvered yellow

reticella trail, probably vertical. The yellow thread has spread sideways, giving a dotted effect, the result of an unmarvered yellow trail twisted on a dark ?green rod (cf. Evison 1988, 243, fig. 12.5).

Catalogue no. 900 (RF 6887; FIG. 2.2; PL. 2.5) is part of the kicked base of a globular beaker, light green-blue with red streaks. The unmarvered reticella trail is one of a number which would have radiated from the centre of the base to continue vertically up the vessel wall. This trail consists of a black rod with unmarvered yellow trail which spread sideways on application. Other red-streaked globular beakers and bowls with such trails have been found at Dorestad (Baumgartner and Krueger 1988, nos 12–16). Red streaking in glass occurred frequently in the Carolingian period (Evison 1990), but the colour combination of black and yellow reticella is unusual.

The reticella trail no. 894 (RF 634; FIG. 2.2) has a white thread, and is applied in the shape of a near right-angle on a light blue-green vessel. As the wall thickness of this fragment varies from 1.5 to 3mm, this is probably part of the base of a globular beaker at the point where a vertical trail taken down the wall was turned at an angle to continue upwards. Catalogue no. 899 (RF 6398; FIG. 2.2) is from a vessel of more distinctive colour, a light but vivid green-blue, and the unmarvered reticella trail consists of a yellow thread on the same colour. The yellow has spread sideways to a considerable extent. The very small fragment no. 903 (RF 11138; FIG. 2.2) also has unusual colouring, and it can be seen that on a probably colourless base, it is the end part of a yellow, unmarvered reticella trail, on a light blue translucent rod.

In this assemblage, therefore, there are fragments of at least seven different vessels decorated with reticella trails. The forms, colours and patterns are basically consistent, but variety is achieved through different combinations of vessel colours and trails.

The vivid green-blue fragments nos 892–3 (RFs 8717 and 8723; FIG. 2.2; PL. 2.4) are both from the same context and are remarkable as to colour and form. They are both a shallow dish shape with a slightly thickened rim, and there is a fine red streak inside the rim no 893 (RF 8717), and a wider one in the same position on no. 892 (RF 8723). The other side is decorated with thirteen turns of a white unmarvered trail containing a fine red thread. The spacing of these trails corresponds closely on both fragments, so that there is no doubt they were part of the same vessel. The diameter is approximately 100mm, appropriate to the foot of a vessel with the applied trails on top, and there is a broken edge in the centre where it was broken away from the body of the vessel.

The only vessel types with a foot known in the early Anglo-Saxon period were the rare, imported stemmed beaker and the more frequent claw beaker. On the latter form, the foot was usually formed in one piece with the *paraison* by folding, and its diameter was often too small to afford stability to the vessel. One unique claw beaker, however, has a separate applied foot, 100mm in diameter,

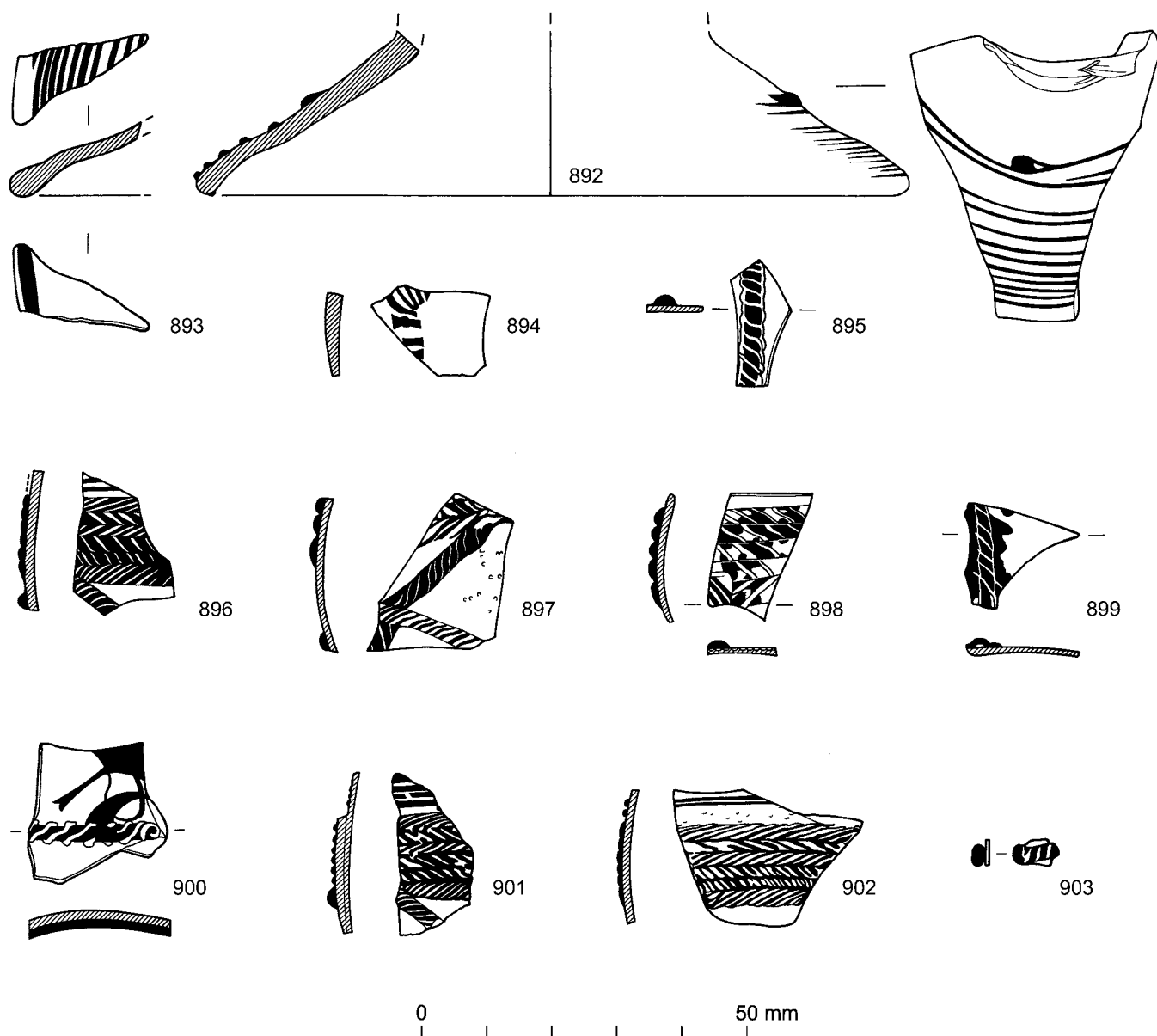


FIG. 2.2. Glass vessels. Scale 1:1. Fragments nos 892–3 and 897–8 are possibly all from the same bowl, and a reconstruction of this is offered in FIG. 2.4.

but this is the beaker of the 5th century from Mucking, Essex, grave 843 (Evison 1982, fig. 9a, pl. IVa). Three other foot fragments survive from contexts in England dating from post-AD 700, but they were all formed by folding. One of the three, from Wicken Bonhunt, Essex, (473, Suffolk County Council) is the same vivid green-blue as the Flixborough pieces, but is undecorated (Evison 2000a, fig. 16a). Another, from Barking, Essex, is in thicker glass which is opaque, red marbled in colour (382, 1783, 1734; Evison 2000a, fig. 16b). The third, from Whithorn, Dumfries and Galloway, is in yellowish, nearly colourless glass with a pink tinge.

Except for the Whithorn example, these foot fragments are over 80mm in diameter, and each is an unusual and attractive colour. They must have been vessels of substantial size, but the shape of the body of three of them is not known. At Whithorn, other fragments in this rare colouring are part also of a rim and a body showing decoration by white trails, and a hollow-blown boss or claw (Campbell 1997, 304–5, fig. 10.7.20). The diameter of this folded foot is less than the examples from eastern England, at 60mm, and it is suggested in that publication that the fold may in this case have been limited to the edge only, and that the foot was attached separately to the vessel.

However, there is no other example of a separate foot with folded edge, and it is likely that the foot was completely folded as part of the vessel *paraison*.

As the Whithorn fragments include a blown boss or claw, this suggests the form was that of a claw beaker, and the possibility exists that the other comparable bases might also have belonged to claw beakers. The folded form of the Barking and Wicken Bonhunt bases conforms to the normal claw beaker design, but the Flixborough foot breaks away from this tradition and its separate formation is similar to the foot of the early Mucking beaker, and follows the shape of metal chalices contemporary with parts of the Flixborough occupation sequence, e.g. the Trewhiddle chalice (Wilson and Blunt 1961, 81–2, pl. XXV) where the diameter of the foot is comparable. Glass chalices were well recorded throughout the 9th century, and other forms of glass fragment finds have been regarded as probable candidates for this function because of sumptuous appearance including gold decoration, once in cruciform motifs, but in this instance, in addition, the form of the vessel is close to that of the metal examples (Lundström 1971; Henderson and Holand 1992, fig. 6; Stjernqvist 1999, 84; Evison 2000a, 83–4).

The bicolour trails on the Flixborough beaker (nos 892–3; RFs 8717 and 8723; Pl. 2.4), white with a red thread, achieve a polychrome effect like the reticella trails, but without twisting (Evison 1988, fig. 12, 1). The technique makes its earliest appearance on the bag beaker from Dry Drayton, Cambridgeshire (Evison 1983, colour photograph fig. 4c), where some of the ‘zigzag’ trails are yellow and light green-blue. It was first noted on claw beakers in Sweden (Arwidsson 1932, 252, pl. XII), which are closely connected with Anglo-Saxon products. Its use as a substitute for reticella threads is to be noted on one of a group of disc beads of Anglo-Saxon type (Evison 1988, 242, fig. 9; Guido 1999; Evison forthcoming). All are decorated with twisted threads except one from Boss Hall, Ipswich, grave 912, where the threads are white and light blue but untwisted. The use of a fine red thread in a longitudinal fashion is also to be seen on a variety of tall palm cup, decorated with self-colour trails containing a fine red thread (Evison 1988, 242–3; figs 11 and 12, 1).

The vivid green-blue is a colour that occurs only infrequently; the six fragments at Flixborough are matched by only five at Ipswich. The same distinctive combination of colours as the Flixborough vessel may be seen at Barking where there is a vessel fragment in vivid green-blue decorated with red and white trails which, however, are single and combed in arcades (Evison 1991, 92, 67t). The technique of a trail of contrasting colour, white on light blue-green, applied on a vessel with vertical ribs, also appears at Barking (Evison 1991, no. 67o).

A very close parallel to the Flixborough base is to be seen in a vessel of unparalleled shape and of unknown origin (Stiff 2001). It is in vivid green-blue glass with vertical ribbing, decorated with white horizontal trails. There is also a marvered red trail on the rim, a very rare

trait, although an unpublished example of a Valsgårde bowl type sherd with this detail from Dorestad has been quoted (Stiff 2001, 178, n. 3). The chemical analysis of the complete vessel allows it only to be attributed to an Islamic or European origin (Stiff 2001, 179). The shape of this vessel is not a known type in either context; however, the top part follows closely the profile of a globular beaker, if slightly wider in the diameter of the rim. In fact, a globular beaker could have been blown, and the base simply flattened by marvering, as the blower changed his mind about the shape.

Fragment no. 907 (RF 5504; Fig. 2.3) is part of a thin-walled vessel which appears to be black, and includes a neatly applied blob. The edge of the blob is smoothly curved and, although there is no sign of the pulling strain marks sometimes visible in the claws of claw beakers, it may have been slightly hollow. There are no other fragments of this colour on the site, so the shape of the complete vessel cannot be deduced, but the form of a claw beaker is a strong possibility.

Claw beakers were the only complicated shape of vessel known in the early Anglo-Saxon period, and they were produced in England in the 6th and 7th century, and possibly as early as the 5th century. Usually the applied blob was blown into a hollow shape while being drawn down into a tail, but a few were probably not blown at all as the shape was flat. A unique 5th-century example of this feature is the lost beaker from Eastry, Kent (Evison 1982, pl. VIIIa). The claws on beakers of the 6th and 7th centuries were mostly blown to a hollow, rounded shape, but from the end of the 7th century flat claws reappear, e.g. on tall beakers in Sweden (Evison 1982, fig. 5) and in England at Brandon, Suffolk (Evison 1991, 87, no. 66i) and Loveden Hill, Lincolnshire (Evison 1982, 51–52, fig. 12g, pl. IVb). Claws in very dark colours, some of which are nearly black, are known from contexts dating between AD 700 and 900, e.g. a very dark green example from Brandon (Evison 1991, 88, 66s iii) and a dark olive green example from York Minster (Evison 1991, 146, fig. 108a ii). Continuance of the use of a flat claw into the vessel type of an even later period is known from a fragment of light-green globular form from a 9th- to 10th-century pit at Saint-Denis, Paris (Evison 1989, 140).

Amongst the body fragments with features, no. 910 (RF 11525; Fig. 2.3) is part of the incurved neck of a brown globular beaker ornamented with marvered yellow horizontal trails, some of which have decomposed, leaving hollow channels. This is similar to two small fragments found at Lurk Lane, Beverley, East Yorkshire, no. 1804 which is brown with marvered white trails, and no. 696 which has an empty channel once filled by a similar marvered trail (Henderson 1991, 126, nos 218 and 220, where the trails are described as ‘opaque red strips’). The Flixborough fragment no. 910 (RF 11525) may be compared with the brown rim with white trails no. 887 (RF 11018; Fig. 2.1). It has been noted that the yellow colour might be altered to white by overheating (Mortimer

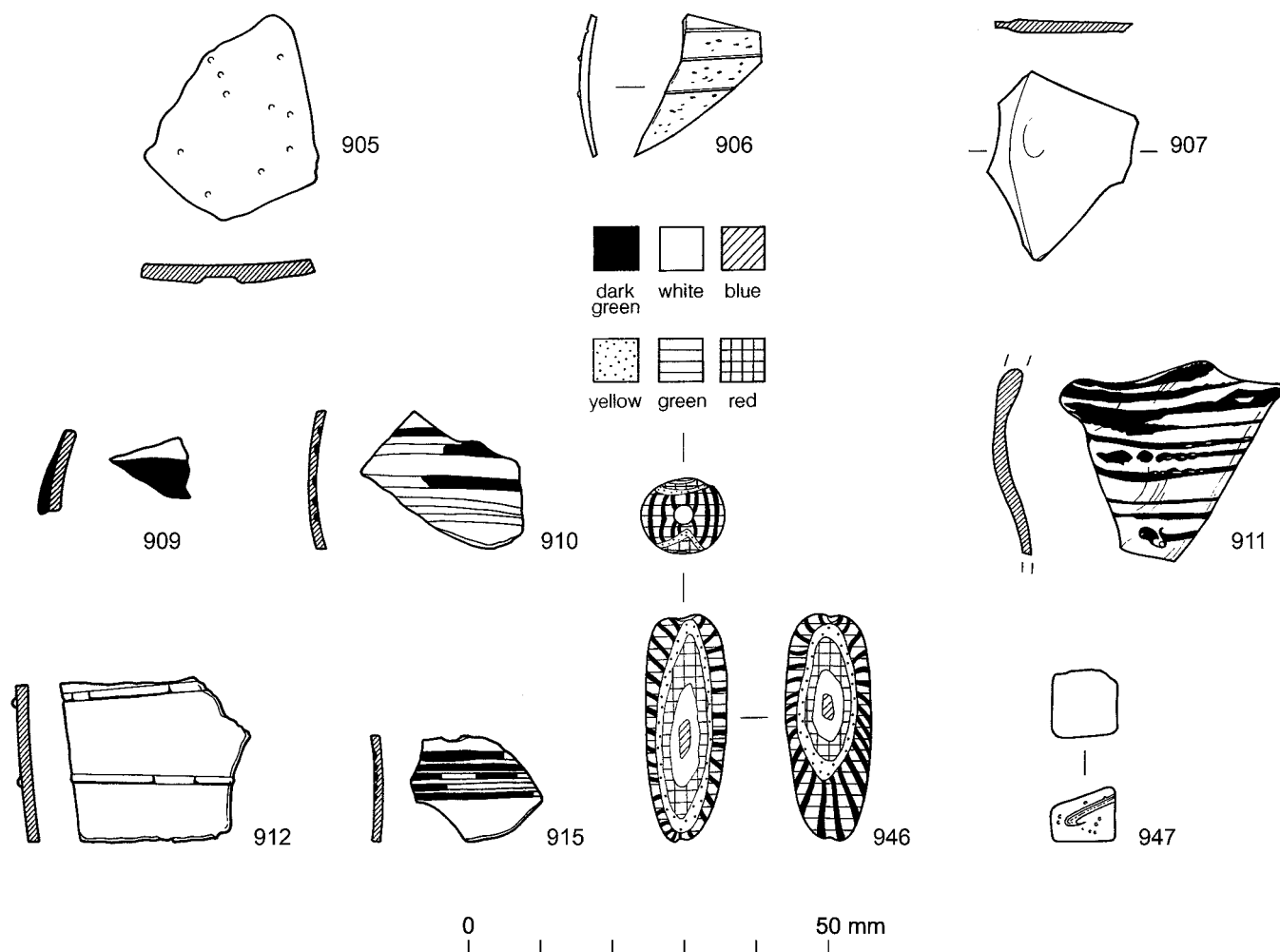


FIG. 2.3. Glass vessel fragments and bead. Scale 1:1.

below: section 2.2). Fragments of a brown globular beaker with yellow horizontal trails occurred at Brandon, Suffolk (nos 6212 and 6251) which has possible connections with a reticella-decorated vessel.

Also decorated with yellow trails are no. 913 (RF 13104), light green-blue with one trail, and no. 915 (RF 14123; FIG. 2.3), which is dark olive green with parallel yellow trails. The latter has a diameter of c.60mm, and is probably from the neck of a globular beaker. A number of similarly coloured fragments at Barking belonged to a globular beaker which also had reticella trails on the lower part of the body (438/650 and nine other fragments). Two fragments have white trail decoration: no. 911 (RF 11526; FIG. 2.3), heat-damaged but probably originally light green, and no. 914 (RF 13934) a very light green-blue.

Amongst the monochrome fragments, there are two decorated with trails of the same colour as the vessel, nos 906 (RF 5463; FIG. 2.3) and 912 (RF 11923; FIG. 2.3), and two fragments are decorated with moulded

vertical ribbing: nos 904 and 908 (RFs 2392 and 10172) – both decorative elements used on globular beakers. The piece no. 909 (RF 10173; FIG. 2.3) is a light green-blue vessel, and brown glass has been applied on the surface, apparently in a wide, straight band. In similar colouring is a brown rim from York, applied on a light green-blue vessel (Waterman 1959, 95–6, fig. 22, 35). The Flixborough application, however, appears to be purely for decoration on a vessel wall. Although applied colour is usually in the form of trails, patterns in wider areas like this do occur, e.g. in Birka, grave 557 (Arbman 1940, Taf. 192, 3; Arbman 1943, 179).

As well as the vessels, there are two other glass objects. The first, no. 947 (RF 14334; FIG. 2.3; PL. 2.5, this volume) is a streaky blue tessera. Tesserae have been found on sites of this period where they may have been used in glass-working, in the making of trails or beads, or to provide colour in batches of vessel glass. Some may have been salvaged from mosaics in abandoned Roman buildings, but

it is probable that production continued into the 7th and 8th centuries in northern Italy at places such as Torcello, where they were found in connection with a glass workshop (Leciejewicz *et al.* 1977, 289).

Tesserae have been found in considerable numbers at Ribe, Denmark (Jensen 1991, 37), Paviken, Sweden (Lundström 1981, 17) and Paderborn, Germany (Gai 1999, 160–2). In England numbers are smaller and only one or two pieces have been found. Sites where they occur comprise Glastonbury (Evison 2000b, 197, no. 102d); Fishergate, York (Hunter and Jackson 1993, 1343); Lurk Lane, Beverley, East Yorkshire (Henderson 1991, 129 nos 292–3 and fig. 101); Whitby, North Yorkshire (Evison forthcoming, cat. nos 224–5), the Brough of Birsay, Orkneys, Scotland (Curle 1982, 46–7, no. 645) and Whithorn, where they are mostly attributed to the Roman period or the 12th–13th century (Hill 1997, 269 and 296). A single tessera at Flixborough is but slender evidence for glass-working, but there is a small amount of supporting evidence for such activity in the presence of melted glass droplets, nos 948–9 (RFs 1137 and 5626).¹

The bead no. 946 (RF 3562; Fig. 2.3) is multi-coloured with a light and dark green reticella background and an elongated ring-and-dot motif on each side. It figures as type no. J001 in Callmer's system (Callmer 1977, 90), who dated its occurrence from AD 790 to 845, and less frequently until AD 990 (Callmer 1977, J001, 4, pl. 20). These beads occur in Scandinavia, Europe and also in the Middle East, where they were probably produced (Callmer 1977, 99). Its occurrence in an earlier context at Flixborough was no doubt caused by disturbance (see Volume 1, Ch. 3, and Fig. 3.2).²

Overall, the glass fragments from Flixborough are in fairly good condition with some iridescence and little decomposition, except in the yellow trails. Out of the 65 Saxon vessel fragments of unaltered colour, 18 are light green-blue, the most common colour after AD 700, and there are another 18 fragments in various shades of green-blue, from very light to vivid. Light green and light blue-green are less common than in the era pre-AD 700. Amongst the colours that require added colourants is blue, which first appeared in the 7th century. Also new in the Mid Saxon period are other more definite and striking colours which require specific additions to the metal, for example, vivid blue-green and vivid green-blue, and there are also two fragments of blue-red. One sherd appears to be black, and some are colourless.

The earliest indication of a vessel with reticella decoration at Flixborough may be deduced from the folded rim (no. 883; RF 5000) of a bowl, which must have been decorated with reticella on its lower part. This came from the fill of post-hole 5002 from building 6; the two phases of this building were standing between the late 7th and mid 8th centuries (Periods 2 and 3a). The next reticella-decorated fragment came to rest in a refuse dump (5653) from Period 3, Phase 3biv, late during the 8th century. A further fragment (no. 898; RF 5874) in the same colours

as piece no. 883 (RF 5000), possibly even from the same vessel, was finally incorporated into the huge dump 3758 from Period 4, Phase 4ii, dating from the mid 9th century. The remainder came from deposits from Period 5, Phase 5b and Period 6.

Reticella does not occur in pagan graves as vessel decoration, but it does figure on some beads and pendants which were made in England and date to the late 7th–early 8th centuries (Evison 1988, 240–4; Evison 2000a, 49, fig. 1b). On settlement sites the earliest dated occurrence of reticella on a vessel is about AD 700, and finds in contexts later than the late 8th or early 9th century were probably re-deposited, as may have been the case in dumps 3758 and 5503 from Period 4, Phase 4ii at Flixborough. The beaker base or foot fragments in vivid colours, nos 892–3 (RFs 8717 and 8723), were no doubt also an early product, although deposited in a post-hole fill of building 9 from Period 3, Phase 3bv. The bead no. 946 (RF 3562), which can be dated to c. 790–990, however, was incorporated into an occupation deposit, possibly associated with building 18, from Period 1, Phase 1b, but may have been disturbed (see endnote 2).

Similar vessel glass to that found at Flixborough, including reticella fragments, has been found at many sites in England and on the Continent, from France to Scandinavia (Evison 2000a, Distribution Map fig. 7). The nearest find spots to Flixborough are Fishergate, York; Whitby and Beverley in Yorkshire; and Monkwearmouth and Jarrow in Durham. There is a certain amount of similarity in the glass from all these places, in form, decoration and particularly in colours, and their general homogeneity has also been established through analysis of their chemical constituents (Bimson and Freestone 2000, 133).

Some of this glass was probably imported from the Continent, but historical records show that requests were sent to France and Germany for glass blowers to come to England in the 7th and 8th centuries (Cramp 2000, 105). Movement of glass-blowing personnel is therefore more likely to have taken place than the transport of finished merchandise. Actual glass-blowing is evident from ovens discovered at Glastonbury in Somerset which were probably in use in the late 7th to early 8th century (Bayley 2000; Evison 2000b). There is no evidence in England for the manufacture of glass from raw materials, but furnaces for the preliminary preparation of glass in the form of ingots, slabs or broken up into chunks, were operating in the Middle East, and this material was shipped to western Europe for secondary working into the finished forms (Foy *et al.* 1999; Bimson and Freestone 2000, 133). Some visiting craftsmen no doubt accompanied these shipments and passed on their skills to the Anglo-Saxons, so that the finished blown vessels were produced in England.

Notes for section 2.1

- 1 In any consideration of the significance of the presence of a tessera on this site, it should be appreciated that there is a quantity of other Romano-British material present amongst

the Saxon deposits; some of this may be residual from Romano-British occupation on this site, but other materials appear to have been brought onto the site from a nearby high status site (e.g. the ceramic building material and the altar fragment; see the discussion of the Romano-British material in Ch. 14, below).

- 2 Dr Loveluck comments that the bead no. 946 (RF 3562) was incorporated into an occupation deposit, possibly associated with building 18, from Period 1, Phase 1b. This bead type was given a date range between AD 790 and 990 in Callmer's typology of 1977. Given the possible spatial and stratigraphic associations of this deposit in Phase 1b (see Fig. 3.2, Volume 1, Ch. 3), two explanations for its occurrence present themselves. It has already been noted above that reticella-decorated beads did occur in graves of the pagan period in England, and it is possible that Callmer's typology may require some modification. Alternatively, given the extent of the re-use of space on the general building plot where it was found (at least six, and probably seven buildings between Phases 1b and 5a), and the truncation and treading in of material, it is eminently possible that the bead was incorporated into the surface of deposit 3348, following successive building demolition.

Catalogue

Vessel rims

- 879 Rim rolled inwards and cupped, misshapen. Six horizontal trails melted in up to the rim, few bubbles.
Colour: Blue. Decoration: Yellow. L.27mm, 1–2mm thick. (Fig. 2.1).
RF 1281, Context 1017, Phase 6iii–7.
- 880 Rim deeply outfolded with hollow at edge.
Colour: Vivid blue-green. L.10mm, wall 1 to 1.5mm thick. (Fig. 2.1)
RF 2048, Context 2018, Phase 6iii.
- 881 Rim chip, bubbly.
Colour: Light green-blue. c.2.5mm thick.
RF 2306, Context 3412, Phase 6ii–6iii.
- 882 Smooth rim, straight, outplayed, bubbly.
Colour: Colourless/yellowish. L. 22mm, 1.5mm thick, diam. 80mm (Fig. 2.1).
RF 3543, Context 3343, Phase 1b–3a.
- 883 Rim of bowl, deeply folded outwards with hollow, edge thickened, fine horizontal trails inside throughout.
Colour: Colourless. Decoration: Yellow. L.43mm, 1mm thick, diam 140mm. (Fig. 2.1; Pl. 2.2)
Wall fragment, fine horizontal trails.
Colour: Colourless. Decoration: Yellow. L.31mm, 0.5mm thick (Fig. 2.1; Pl. 2.2).
RF 5000, Context 5002, Phase 2 to 3a.
- 884 Rim thickened by rolling inwards and cupped, small bubbles.
Colour: Light green-blue. L.27mm, 0.5 to 3mm thick, diam. 100mm (Fig. 2.1).
RF 5469, Context 3758, Phase 4ii.
- 885 Slightly thickened, everted rim, six horizontal yellow trails and two more below.
Colour: Light blue-green. Decoration: Yellow. L.27mm, 1–2.5mm thick, diam. 80mm. (Fig. 2.1; Pl. 2.3).
RF 7247, Context 6300, Phase 6iii.
- 886 Thin wall with fragment of outfolded rim attached.
Colour: Vivid blue-green. L.9mm, 0.5 to 2mm thick, (? Same vessel as no. 876, RF 2048).
RF 10583, Context 3417, Phase 5b to 6i.
- 887 Infolded rim, c. seven horizontal white trails, damaged by heat.
Colour: Brown. Decoration: White. L.45mm, 1–4.5mm thick. (Fig. 2.1).
Wall fragment, c. six white horizontal trails.
Colour: Brown. Decoration: White. L.21mm, 1.5mm thick. (Fig. 2.1).
RF 11018, Context 6490, Phase 5b to 6i.
- 888 Smoothed rim, misshapen and undulating with parallel elongated bubbles, streaky.
Colour: Light blue-green. L.44mm, 2–2.5mm thick, diam. 50mm. (Fig. 2.1).
RF 11523, Context 3758, Phase 4ii.
- 889 Hollow infolded rim, small bubbles, glossy.
Colour: Light green-blue. L.23mm, 1mm thick, diam. 100mm. (Fig. 2.1).
RF 13505, Context 3758, Phase 4ii.

Vessel bases

- 890 Five joining base fragments and five chips. Base of a tall palm cup with double ring 'punky' mark, small bubbles.
Colour: Light blue-green. L.18–38mm, 1–2.5mm thick. (Fig. 2.1).
RF 5521, Context 3758, Phase 4ii.
- 891 (?) Curved base of tall palm cup, much cracked.
Colour: Light green. L.21mm, 3–4mm thick.
RF 6020, Context 5139, Phase 5a.
- 892 Fragment of a blown, applied foot, slightly thickened at edge, with one fine red streak or marvered trail inside rim. A white trail with slight red streak dropped on and turned downwards thirteen times. Many very small bubbles.
Colour: Vivid green-blue. Decoration: White and red. L.50mm, 2–4mm thick, diam c.100mm. (Fig. 2.2; Pl. 2.4).
RF 8723, Context 8708, Phase 3biv to 3bv.
- 893 A smaller fragment of the same foot with a wider red streak or trail on the inside near the edge. Eleven turns of the white trail with its terminal, the sequence of trails closely matching the spacing on no. 888, RF 8723.
Colour: Vivid green-blue. Decoration: White and red. L.24.5mm, 2–4mm thick. (Fig. 2.2, same vessel as no. 888).
RF 8717, Context 8708, Phase 3biv to 3bv.

Reticella fragments

- 894 Cylindrical, small bubbles. Marvered reticella trail, curved, S-twist, decomposed.
Colour: Light blue-green. Decoration: ?White. L.19mm, 1.5–3mm thick. (Fig. 2.2).
RF 634, Context 535, Phase 6iii.
- 895 Vertical unmarvered reticella trail, spreading to a dotted contour, S-twist.
Colour: Dark green. Decoration: Yellow. L.20mm, 0.5mm thick. (Fig. 2.2).
RF 1857, Context 1838, Phase 6ii to 6iii.
- 896 Globular, three horizontal trails at top, six parallel contiguous rows of half-marvered reticella and one diagonal unmarvered

- reticella trail below, the yellow trails decomposing. Trails in order S-Z-S-Z-Z-S twist.
Colour: Very light green-blue. Decoration: Yellow. L.23mm, 1–2mm thick. (Figs 2.2 and 2.4).
RF 1991, Context 1672, Phase 5b to 6i.
- 897 Globular, bubbly. Two horizontal marvered reticella. Below, two crossing unmarvered reticella (one ending at the top). All S-twist except the top marvered trail.
Colour: Very light green-blue. Decoration: Yellow. L.30mm, 1mm thick. (Figs 2.2 and 2.4; Pl. 2.6).
RF 5348, Context 3731, Phase 6ii to 6iii.
- 898 Five decomposed horizontal reticella trails, marvered or half-marvered, four S-twist and the lowest, Z-twist, with one unmarvered trail nearly vertical S-twist.
Colour: Colourless. Decoration: Yellow. L.23mm, 0.5mm thick. (Fig. 2.2)
RF 5874, Context 3758, Phase 4ii.
- 899 Globular. Vertical unmarvered reticella trail, S-twist, extending widely sideways.
Colour: Light, vivid green-blue. Decoration: Yellow. L.20mm, 1mm thick. (Fig. 2.2).
RF 6398, Context 5653, Phase 3biv.
- 900 Base kick of a globular beaker or bowl. The end of one unmarvered black and yellow reticella trail is present, the yellow extending. S-twist.
Colour: Light green-blue, red streaks. Decoration: Black and yellow. L.26mm, 1–3mm thick. (Fig. 2.2; Pl. 2.5 upper).
RF 6887, Context 6300, Phase 6iii.
- 901 Four horizontal yellow trails at the top. Below, six half-marvered reticella trails (S-Z-S-Z-Z-S), one diagonal unmarvered S-twist trail.
Colour: Very light green-blue. Decoration: Yellow. L.25mm, 1mm thick. (Figs 2.2 and 2.4; Pl. 2.6).
RF 6895, Context 6300, Phase 6iii.
- 902 As no. 901, RF 6895 above, two horizontal yellow trails and six half-marvered reticella (S-Z-S-Z-Z-S).
Colour: Very light green-blue. Decoration: Yellow. L.29mm, 1mm thick, diam. 160mm. (Figs 2.2 and 2.4; Pl. 2.6).
RF 7012, Context 6300, Phase 6iii.
- 903 End of unmarvered reticella rod on thin wall. Yellow trails unmarvered on light blue translucent, S-twist.
Colourless. Decoration: Yellow. L.6mm, c.0.5mm thick. (Fig. 2.2).
RF 11138, Context 2562, Phase 5b.
- Vessel body fragments with features*
- 904 Cylindrical, vertical ribbing, few bubbles.
Colour: Brown. L.25mm, 1–2mm thick.
RF 2392, Unstratified.
- 905 Slightly cylindrical, elongated bubbles. Faint vertical ribbing. Much cracked.
Colour: Light blue-green. L.29mm, 2.5mm thick (Fig. 2.3).
RF 5406, Context 3758, Phase 4ii.
- 906 Globular, tiny bubbles, three parallel self-trails.
Colour: Light green-blue. L.24mm, 1.5mm thick. (Fig. 2.3).
RF 5463, Context 3758, Phase 4ii.
- 907 Thin-walled vessel with applied blob, ?slightly blown. Glossy, iridescent.
Colour: Black. L. 26mm, wall 0.5mm thick, blob 2mm thick. (Fig. 2.3).
RF 5504, Context 3758, Phase 4ii.
- 908 Moulded rib, small bubbles.
Colour: Light green-blue. L.7mm, 1mm thick.
RF 10172, Context 7644, Phase 4i.
- 909 Vessel wall with applied brown band.
Colour: Light green-blue. Decoration: Brown. L.11mm, 1mm thick and brown band 1mm thick. (Fig. 2.3).
RF 10173, Context 6300, Phase 6iii.
- 910 Incurved ?neck of globular beaker. Four marvered yellow trails decomposing and leaving hollow channels, iridescent.
Colour: Brown. Decoration: Yellow. L.23mm, 1mm thick, diam. 60mm. (Fig. 2.3).
RF 11525, Context 3758, Phase 4ii.
- 911 Heat-damaged. Ten white horizontal trails.
Colour: Dark (?originally light) green. Decoration: Yellow. L.31mm, 1mm thick. (Fig. 2.3).
RF 11526, Context 3758, Phase 4ii.
- 912 Globular, two self-colour horizontal parallel trails, unmarvered. Iridescent, few bubbles.
Colour: Brown. L.31mm, 1mm thick. (Fig. 2.3).
RF 11923, Context 11699, Phase 3bii.
- 913 One yellow trail, unmarvered.
Colour: Light green-blue. Decoration: Yellow. L.7mm, 0.5mm thick.
RF 13104, Context 6300, Phase 6iii.
- 914 One unmarvered white trail.
Colour: Very light green-blue. Decoration: White. L.12mm, 1mm thick.
RF 13934, Context 7055, Phase 6ii–6iii.
- 915 Incurved with five horizontal trails, neck of globular beaker.
Colour: Dark olive. Decoration: Yellow. L.19mm, 1mm thick. (Fig. 2.3).
RF 14123, Unstratified.
- Vessel body fragments, featureless*
- 916 Bubbly fragment.
Colour: Light blue. L. 8mm, 0.5mm thick.
RF 183, Context 80, Phase 5a.
- 917 Cylindrical, nearly opaque, bubbly.
Colour: Light blue. L.22m, 0.5–1mm thick.
RF 517, Context 467, Phase 4i to 4ii.
- 918 Globular, tiny bubbles.
Colour: Light blue-red. L.24.5mm, c.1mm thick.
RF 852, Context 636, Phase 6iii.
- 919 Slightly cylindrical.
Colour: Blue-red. L.18mm, 1mm thick.
RF 1623, Context 1462, Phase 6iii.
- 920 Globular, bubbles.
Colour: Light green-blue. L.16mm, 0.5mm thick.
RF 1722, Context 1458, Phase 6iii.
- 921 Elongated bubbles.
Colour: Brown. L.26mm, 1mm thick.
RF 2553, Context 767, Phase 1b to 2.
- 922 Globular, bubbles.
Colour: Light, vivid green-blue. L.26mm, 0.5mm thick.

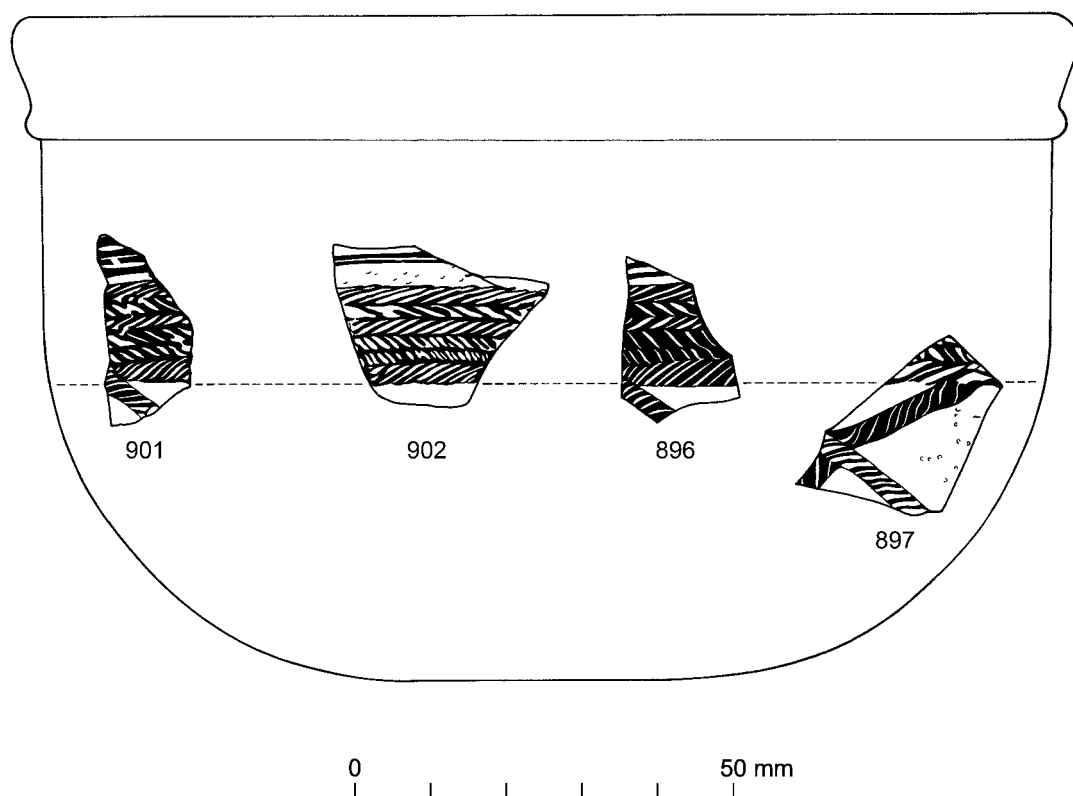


Fig. 2.4. Reconstruction drawing of glass bowl. Scale 1:1.

- RF 2733, Context 2611, Phase 5a.
- 923 Globular, bubbles (cf. no. 918, RF 2733 above).
Colour: Light, vivid green-blue. L.15.5, 0.5mm thick.
RF 2735, Context 2611, Phase 5a.
- 924 Cylindrical, small bubbles.
Colour: Light green-blue. L.14mm, 1mm thick.
RF 2757, Context 223, Phase 4ii.
- 925 Two fragments, tiny bubbles.
Colour: Green-blue. L.12mm and 9mm, 0.5mm thick.
RF 3287, Context 2612, Phase 3biv–4i.
- 926 As no. 925, RF 3287.
Colour: Green-blue. L.9mm, 0.5mm thick.
RF 3291, Context 3218, Phase 5b.
- 927 Globular, streaky colouring.
Colour: Blue-red. L. 13mm, 1mm thick.
RF 3365, Context 459 – designated as ‘natural subsoil’.
- 928 Globular, bubbles, glossy.
Colour: Vivid green-blue. L.25mm, 2.5mm thick.
RF 3259, Context 1680, Phase 6i.
- 929 Globular, bubbly.
Colour: Vivid green-blue. L.13mm, 1mm thick.
RF 3544, Context 3342, Phase 1b–3a.
- 930 Globular, small bubbles.
Colour: Light green-blue. L.17mm, 1mm thick.
RF 3885, Context 3891, Phase 6ii.
- 931 Colour: Light green. L.12mm, 1.5mm thick.
RF 4149, Context 3891, Phase 6ii.
- 932 Colour: Light green-blue. L.9.5mm, 0.5mm thick.
RF 4601, Context 3989, Phase 6iii.
- 933 Colour: blue. L.9.5mm, 1mm thick.
RF 4871, Context 4769, Phase 2–3a.
- 934 Colour: Light green-blue. L.8mm, 0.5mm thick.
RF 5292, Context 3758, Phase 4ii.
- 935 Two fragments, globular, bubbly.
Colour: Light green-blue. L.28mm and L.18mm, 0.5mm thick.
RF 5335, Context 5319, Phase 4i–5a.
- 936 Colour: Light green-blue. L.18mm, 2mm thick.
RF 5799, Context 5139, Phase 5a.
- 937 Colour: Light green-blue. L.8mm, 1.5mm thick.
RF 6101, Context 5503, Phase 4ii.
- 938 Cylindrical, bubbles.
Colour: Vivid green-blue. L.24mm, 0.5 to 1mm thick.
RF 6196, Context 5503, Phase 4ii.
- 939 Colour: Light green-blue. L.6mm, 0.5mm thick.
RF 7119, Context 4679, Phase 3bi–3bv.
- 940 Globular, streaky colouring, small bubbles.
Colour: Vivid green-blue. L. 21mm, 1–2mm thick.
RF 8451, Context 8742, Phase 1a to 6iii (pre-early eleventh century).

- 941 Globular, glossy, small bubbles.
Colour: Light green-blue. L.13mm, 1mm thick.
RF 11562, Context 2562, Phase 5b.
- 942 Cylindrical, few bubbles.
Colour: Very light green blue. L.13mm, 0.5mm thick.
RF 12206, Context 3758, Phase 4ii.
- 943 Bubbles.
Colour: Brown. L.13mm, 1mm thick.
RF 13105, Context 7054, Phase 6ii–6iii.
- 944 Chip.
Colour: Blue. L.12mm, 1mm thick.
RF 13567, Context 7383, Phase 3bv–4ii.
- 945 Bubbles.
Colour: Light green-blue. L.11mm, 1mm thick.
RF 13665, Context 2562, Phase 5b.

Miscellaneous

- 946 Bead, cylinder, tapering at ends. Dark green and light green reticella background with a marvered, elongated ring-and-dot motif on each side in yellow, red and white, with blue centres.
Colour: Dark and light green. Decoration: Yellow, red, white and blue. L.15mm, diam. 5.5mm (FIG. 2.3).
RF 3562, Context 3348, ? Phase 1b.
- 947 Tessera.
Colour: Streaky blue. Dimensions: 10 × 8 × 7mm. (FIG. 2.3 and PL. 2.5 lower)
RF 14334, Context 6300, Phase 6iii.
- 948 Droplet.
Colour: Light blue-green. L.28mm.
RF 1137, Context 466, Phase 4i–4ii.
- 949 Melted blob.
Colour: Blue. L.17mm, 6mm thick.
RF 5626, Context 5503, Phase 4ii.

2.2 Analysis of chemical compositions of the glass

by Catherine Mortimer

Compositional analysis of the vessel and window glass from Flixborough enables wider comparison with material from other sites of the same period. Chemical data can also be used to investigate whether glass fragments with unusual appearances are potentially later than the main phases of occupation, and hence whether there was a degree of post-depositional disturbance of the relevant contexts.

Analytical details

Small samples (c.2mm in size) were taken from 16 vessel glass fragments and seven window glass fragments. The sampling strategy was designed to include at least one example of each colour of vessel glass, although some of the pieces of interest were too small or deemed too rare to attempt sampling. Three of the samples were from vessel fragments with applied opaque glass decoration which could also be analysed. Two samples were taken from vessels of non-Saxon types. Similarly, one sample was

taken of each of the three colours of Saxon window glass which were present in the collection, together with four samples from colourless window fragments which were thought less likely to be Saxon, on typological grounds. Analysis was carried out using energy-dispersive X-ray analysis in a scanning electron microscope (FIG. 2.5).

Results: vessel glass

The majority of the glasses analysed are of the soda-lime-silica type which is typical for the Saxon period. The compositions are quite uniform, with the major and minor elements lying within small ranges, with few exceptions.

The major colourants for the translucent glasses analysed are oxides of iron, manganese and copper. Iron and manganese are often present in ancient glasses, introduced in minor amounts with the glass-making ingredients. Depending on the oxidation state, these two components combine to give a range of tints, from blue, through green, yellow, and pink to brown, and in strengths from very pale to very dark. Occasionally, the balance between iron and manganese oxides and the precise oxidation state can cause a colourless glass. The first 10 of the vessel samples listed in FIG. 2.5 have colours which are most likely to be attributable to the presence of iron and manganese alone. In the case of the two bright blue-green fragments analysed (nos 928 and 938; RFs 3529 and 6196), the observed colour is due to the presence of nearly 2% copper oxide; and two paler blue-green fragments (nos 924–5; RFs 2757 and 3287) also have elevated copper levels. Catalogue no. 917 (RF 517) was noted to be opaque blue. Copper is below the detection limit (0.2% CuO) in this case, and other elements may have caused the colour. The blue colour may possibly be due to the iron oxide present being in the reduced form, but the colour resembles a classic cobalt blue. As cobalt is a very strong colourant, it may be present at levels below the detection limits of this analytical technique, but may still give the blue colour. This sample has high levels of antimony oxide which may have contributed to the opacity, in the form of antimony-rich crystals. In addition, small bubbles were clearly visible to the naked eye.

Occasionally, elevated lead contents are noticeable amongst the translucent glasses. This is possibly due to contamination during the melting, and it probably does not contribute much to the glasses' colour or working properties at the low levels noted here (0.2–1.07% PbO). The highest lead level (in bright blue-green fragment no 925, RF 3287) coincides with elevated levels of copper and tin, suggesting that the copper may have been introduced in the form of a copper alloy, rather than pure copper.

Recent research suggests that the composition of early medieval vessel glass is remarkably homogeneous (Hunter and Heyworth 1998). So, for example, it is not surprising that the lightly-tinted vessel glasses from Flixborough show a very close similarity with those from *Hamwic* (*op. cit.*, Table 12), for nearly all oxides and elements. The one exception is the phosphorous content, which at Flix-

borough is half the average amount at *Hamwic*. Analytical discrepancies seem unlikely to account completely for this difference. Instead, this seems to be a genuine feature, possibly relating to the use of cullet (seen archaeologically at *Hamwic*), the re-melting of which may have allowed the incorporation of fragments of wood ash which contain phosphorous.

Hunter and Heyworth's research suggested that vessels from *Hamwic* may be distinguished from other sites on the basis of precise analyses of minor and trace elements, such as copper and nickel. Although SEM-EDX analysis has rather high detection levels for these elements – and nickel was not analysed in the current project – it is clear that none of the lightly-tinted Flixborough samples had elevated copper levels, as was noted amongst samples from London, Repton and Quentovic (*op. cit.* Table 13). The overall homogeneity of early medieval vessel glass probably represents a single source of glass, or of glass-making components, although it is impossible to say anything more about the source until more workshop evidence is available.

Fragment RF 3351 is unusual both in its appearance and its composition (see Ch. 14). The sample is dark green and has a form which is most likely not Saxon. The most obvious compositional features are the very high lime (25.35% CaO) and low soda and potash (1.1% Na₂O and 1.23% K₂O). These features make it very unlikely that this sample is Saxon. Instead, the high-lime and low-alkali composition can be compared with some from post-medieval glasses from London (e.g. Mortimer 1991, Table 5; Mortimer 1995), dating from the 17th and 18th centuries, although the lack of detectable phosphorous is unusual in this grouping. The fragment was recovered from an unassociated post-hole, floating in the site's chronology between Periods 5 and 6, in site area A (Loveluck, Volume 1, Ch. 2, Fig. 2.3). This area was subject to considerable erosion and accumulation of material as the slope of the sand spur had deteriorated or been disturbed in quarrying. This probably accounts for the incorporation of a post-medieval glass fragment into the feature, from late in the Anglo-Saxon occupation sequence (Loveluck, Volume 1, Ch. 2, Fig. 2.2).

A pale green glass fragment, sample 716 (moulded latticework, see Ch. 14) is of an unknown form, if Saxon, on the basis of its typology; however, the composition is indistinguishable from those of the Saxon glasses found at the site, so there is no scientific reason to identify this piece as suspect. Very few medieval and later glasses have comparable compositions, but three 11th–16th century parallels are known from London and Beverley (Mortimer 1998b, sample 1190 from Swan Lane; Henderson 1991, samples 18 and 22). The fragment RF 716 came from the fill of a pit associated with structures 36 and 37, in area G of the site, the shallow valley between the two sand spurs. It was subsequently overlain by 'dark soil' refuse from Period 6, and although the area was disturbed by some ploughing and animal disturbance, which introduced a small number

of medieval pottery sherds, there is currently no evidence to prove that the glass fragment was not deposited in the Anglo-Saxon period.

Opaque glass used in trails and reticella on vessels

Three vessel samples had opaque trails or reticella on them. Analysis showed that tin oxides and lead-tin oxides gave these glasses their opacity and colour. Opaque yellow glass is produced due to the presence of crystals of lead-tin oxide (PbSnO₃) and opaque white glass by tin oxide (SnO₂). However, the white trails on no. 887 (RF 11018) have a very high lead content (nearly 47% PbO), suggesting that the white colour in this case may be due to overheating a glass which was originally yellow; overheating causes the yellow colour of the lead-tin oxide to be lost irreversibly (Rooksby 1964, 21). Antimony was also detected in this sample, which may have contributed to the opacification. There is extremely close compositional similarity between the two examples of opaque yellow glass analysed (nos 897 and 902; RFs 5348 and 7012), hence they could have come from the same vessel.

The tin oxide contents seen in these two, opaque yellow glasses are typical for Saxon and medieval examples. However, a very wide range of lead oxide contents has been found in other opaque yellow glasses of the period. For example, the lead levels seen in opaque yellow glass used for some early Anglo-Saxon beads (e.g. Henderson 1991; Mortimer 1996; 1998a) and on some Viking pieces from Ribe (Henderson and Warren 1983) are closely comparable to those in the Flixborough examples, but two opaque yellow glasses used to decorate vessels from *Hamwic* (Henderson 1998) have much higher lead oxide contents (44.9 and 48.4%). This demonstrates that this type of glass did not require tight controls on composition.

The opaque white glass analysed from *Hamwic* has a relatively low lead content (9% PbO), which would have made it easier to achieve a good opaque white colour without risking developing too strong a yellow tint; a small amount of lead would have helped the initial solution of tin oxide dissolve into the glass. This makes it even more likely that the opaque white colouration of the Flixborough example was caused by overheating a yellow glass, rather than deliberate manufacture of a white glass. Amongst later opaque white glasses, lead and tin oxide contents are often nearly equal and often lower (e.g. in 16th-century Venetian glass: Mortimer 1993).

Results: window glass

The first three fragments listed (nos 1371 and 1373–4: RFs 10205, 5545 and 2684) are compositionally very similar to the Saxon vessel glass samples analysed above. The blue sample (no. 1371: RF 2684) is coloured by copper (and possibly by cobalt at levels below detection limits) and has significant amounts of antimony present, comparable to the situation in the opaque blue vessel glass sample no. 917; RF 517. Analysis shows that the compositions of the two colourless window glass fragments (nos 1382–3:

RFs 11496 and 1128) are quite comparable to the Saxon glasses at the site, hence these pieces could well be Saxon, despite their unusual appearance. It is also possible that these pieces are Roman. The colourless appearance must be due to fine control of the furnace atmosphere, since the iron to manganese ratio is very similar to those in other more highly coloured pieces.

These five pieces and window glass fragments from several other early medieval sites show close similarities in composition. The samples from Monkwearmouth and Jarrow (Frost 1970) seem a particularly good match. These were analysed by electron probe micro-analysis, which should provide good analytical comparability. However, this apparent close match may be fortuitous, related to small sample numbers, and conceals significant colour-related differences, since individual samples of particular colours are not particularly similar. It is noticeable that other groups of window glass, from *Hamwic*, Winchester and Repton (Hunter and Heyworth 1998) are also broadly similar to the Flixborough glasses.

Finally, two colourless window glasses (nos 1385–6: RFs 3431 and 11567), thought to be post-medieval on the basis of typology, proved to be soda-lime-silica glasses, but with lime and soda values which are outside the range seen in the other Saxon glasses at the site. Their alumina (Al_2O_3), magnesia (MgO), potash (K_2O), sulphur (S) and iron (Fe_2O_3) values are also outside the range seen in the Saxon glasses. Furthermore, no. 1385 (RF 3431) is the only glass analysed to have no detectable chlorine present. The high lime and low soda concentrations are similar to those found in a few medieval and post-medieval glasses, e.g. from London (Mortimer 1991, Table 2) and France (Foy 1985), but the iron, magnesium and potassium values are much lower than seen elsewhere. Fragment no. 1386 (RF 11567) was found in the fill of a post-hole (440) associated with structure 38, possibly a granary from Phases 5a to 5b. This structure was situated in site area G, on the edge of the shallow valley, which had been subject to some medieval to post-medieval ploughing. This had incorporated a small number of medieval pottery sherds into deposits in this area, although structure 38 was overlain by ‘dark soils’ from Period 6 of the Anglo-Saxon occupation sequence. It is possible that the glass is of post-medieval date, but the highly enigmatic nature of the fragment does not allow for any firm conclusion. Piece no. 1385 (RF 3431) was recovered from an occupation spread (2610) dated to Period 5a, which was subsequently overlain by deposits from Periods 5b and 6. As with the vessel glass fragment RF 3351, from the same area of the site, the window glass fragment could have been incorporated into 2610 as a result of erosion of the spur slope (Loveluck, Volume 1, Fig. 2.2).

Conclusion

The glass from Flixborough conforms to the uniform composition of the early medieval period. This uniformity indicates similar sources of glass-making components or, more likely, of glass, for all areas of Saxon England.

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2.3 Copper-alloy vessels and container mounts

by Nicola Rogers, with a contribution by Susan M. Youngs

Vessels

Copper alloy vessel fragments

Only five probable vessel fragments were recovered, three of which came from stratified deposits (nos 950–52; RFs 2550, 3279, 12354); the others (nos 953–4; RFs 1010, 13789) were unstratified. Made of sheet, no. 950 (RF 3279) was found in Period 2 occupation levels; traces of sooting indicate possible use as a vessel such as a cauldron, possibly similar to that found at the Saxon cemetery at Watchfield, Oxon. (Scull 1992, 211, illus. 69, no. 83.133). Nos 951 and 953 (RFs 1010, 12354) are rim fragments, and no. 954 (RF 13789) a body fragment; no. 952 (RF 2550) has a perforation possibly the result of a repair. All are too small to enable identification of the original vessel from which they came, but apart from the cauldron, other possible forms include bowls and long-handled skillets; two skillets were found at Whitby (Peers and Radford 1943, 66, fig. 16). Some of the sheet fragments included as manufacturing debris (see Ch. 11, Fig. 11.5) may also have originated from vessels.

Patches (Fig. 2.6)

All the sheet metal patches found at the site were unstratified (nos 955–60; RFs 1001, 1019, 12355, 13001, 13288, 13453). Nos 955, 958 and 960 (RFs 1001, 13001, 13453) are sheet fragments retaining part of a patch, while no. 957 (RF 12355) is itself part of a patch. Apart from use on sheet vessels, non-ferrous metal patches are also known to have been used on vessels or containers of leather and wood (Scull 1992, 164, illus. 28, 83.21a–b; 213, illus. 70, 83.151).

Sheet rivets

These are used to attach patches such as those described above to metal vessels, and are simply formed from a piece of sheet with two arms and used in the same way as modern brass paper fasteners; these arms go through a hole in the vessel to be repaired and are then folded back onto the wall of the vessel keeping the patch in place.

Sample RF no.	Colour	SiO ₂	Al ₂ O ₃	Na ₂ O	K ₂ O	MgO	CaO	P ₂ O ₅	SO ₃	TiO ₂	MnO	FeO	CoO	CuO	SnO ₂	Sb ₂ O ₃	PbO	Cl	Total
Vessel glass																			
5348	Green (body)	68.5	2.33	17.9	0.67	0.53	6.88	<0.1	0.3	<0.1	0.53	0.74	<0.1	<0.2	<0.3	0.43	0.39	0.95	99.49
5463	Green	69.7	2.5	16.6	0.88	0.82	7.75	0.1	0.29	0.16	0.29	0.64	<0.1	<0.2	<0.3	<0.4	<0.2	0.84	99.74
11523	Green	70	3.14	15.9	1.11	0.71	6.07	0.32	0.18	0.3	0.17	0.97	<0.1	<0.2	<0.3	<0.4	0.25	0.67	99.46
716	Pale Green	68.2	2.33	17.9	0.65	0.67	6.75	<0.1	0.28	0.18	0.7	0.63	<0.1	<0.2	<0.3	<0.4	0.2	0.93	98.81
6020	Pale Green	66.7	2.52	17	0.95	0.86	7.79	0.15	0.29	0.1	0.75	0.82	<0.1	0.2	<0.3	<0.4	<0.2	0.73	98.7
5521	Pale Green	68.5	2.45	17.7	0.89	0.67	6.87	<0.1	0.31	<0.1	0.77	0.63	<0.1	<0.2	<0.3	<0.4	<0.2	0.92	99.28
2553	Amber	71.8	3.12	13.5	0.9	0.59	8.74	0.1	0.16	<0.1	<0.1	0.6	<0.1	<0.2	<0.3	<0.4	<0.2	0.71	99.68
11525	Amber	69.1	2.94	15.3	1.42	0.96	7.31	0.36	0.12	0.27	0.33	1.27	<0.1	<0.2	<0.3	0.41	0.36	0.7	100.39
7012	Colourless (body)	68.3	2.46	17.7	0.72	0.62	6.97	<0.1	0.25	0.13	0.5	0.76	<0.1	<0.2	<0.3	0.42	0.59	0.95	99.55
11018	Brown (body)	68.1	3.17	16.2	1.44	0.89	7.27	0.27	0.13	0.26	0.29	1.24	0.2	<0.2	<0.3	0.42	0.33	0.73	100.37
2757	Pale Blue/green	68	2.86	15.7	1.38	0.76	7.65	0.16	0.17	0.15	0.49	1.17	<0.1	0.22	<0.3	<0.4	0.58	0.54	99.7
3287	Pale Blue/green	65.8	2.75	15.5	1.21	0.75	7.29	0.2	0.25	0.2	0.43	0.95	<0.1	2.12	0.39	<0.4	1.07	0.7	99.34
3529	Bright Blue/green	68.7	2.48	15.4	0.84	0.8	7.79	0.17	0.28	0.1	0.28	0.72	<0.1	1.92	<0.3	<0.4	<0.2	0.78	99.92
6196	Bright Blue/green	67.3	2.57	14.8	1.2	0.76	7.35	0.25	0.28	0.1	0.39	0.89	<0.1	1.93	<0.3	<0.4	0.98	0.68	99.4
517	Opaque Blue	67.1	2.45	15.8	0.49	0.52	7.99	<0.1	0.4	<0.1	0.55	0.73	<0.1	<0.2	<0.3	2.22	0.2	0.71	98.61
3351	Dark Green	59.9	6.28	1.1	1.23	2.67	25.4	<0.1	0.33	0.32	<0.1	2.59	<0.1	<0.2	<0.3	<0.4	<0.2	0.24	100.07
11018	Op white (trails)	30.1	1.64	8	0.35	0.41	2.83	<0.1	0.16	<0.1	0.17	0.53	<0.1	<0.2	5.37	0.62	46.9	0.57	97.41
5348	Op yellow (reticella)	43.6	1.82	12.1	0.42	0.4	4.31	<0.1	0.23	<0.1	0.4	0.54	<0.1	<0.2	5.64	<0.4	28.7	0.7	98.8
7012	Op yellow (reticella)	44.6	1.82	12.9	0.37	0.42	4.8	<0.1	0.11	<0.1	0.39	0.63	<0.1	<0.2	5.17	<0.4	27.8	0.67	99.47
Window glass																			
10205	Brown	70	3.18	14.4	1.1	0.57	8.89	<0.1	0.1	0.1	<0.1	0.59	<0.1	<0.2	<0.3	<0.4	<0.2	0.41	99.66
5545	V. Pale Blue/green	70.6	3.25	14.2	0.49	0.41	8.2	<0.1	0.22	<0.1	<0.1	0.4	<0.1	<0.2	<0.3	<0.4	<0.2	0.83	98.01
2684	Blue	67	2.23	17.7	0.64	0.64	6.7	<0.1	0.33	<0.1	0.52	0.81	<0.1	0.47	<0.3	1.49	0.55	0.69	99.17
11496	Colourless	68.6	3.1	16.6	0.95	0.66	6.18	<0.1	0.27	0.19	0.27	0.81	<0.1	<0.2	<0.3	<0.4	0.24	0.78	97.97
1128	Colourless	69.3	2.85	16	0.74	0.58	7.42	<0.1	0.26	0.13	0.36	0.64	<0.1	<0.2	<0.3	<0.4	0.28	0.81	99.16
3431	Colourless	72.5	1.19	11	0.51	0.3	14.2	<0.1	0.61	<0.1	0.29	0.31	<0.1	<0.2	<0.3	<0.4	<0.2	<0.1	101.38
11567	Colourless	71.3	1.1	13.6	0.38	0.5	12.1	<0.1	0.43	<0.1	0.27	0.23	<0.1	<0.2	<0.3	<0.4	<0.2	0.42	99.89

Fig. 2.5. Table showing chemical components of Fliborough glasses (EDX analysis of Fliborough glasses, weight percent)

Accuracy and precision are believed better than $\pm 2\%$ relative for SiO₂, $\pm 3\%$ relative for CaO, $\pm 5\%$ relative for Na₂O, \pm relative for components $< 3\%$ and $\pm 20\%$ relative for components between 1 and 3%. The minimum detectable limit for P₂O₅ may be closer to 0.2% than the given 0.1%.

Seven rivets were found in stratified deposits (nos 961–7; RFs 3591, 7952, 2082, 7040, 8170, 6570, 4348), of which five (nos 963–7; RFs 2082, 7040, 8170, 6570, 4348) came from Period 5 or 6 levels. There are also three unstratified rivets (nos 968–70; RFs 11939, 12706, 12793).

Vessel handle (Fig. 2.6)

An unstratified find, no. 971 (RF 10904; Fig. 2.6), is part of a drop handle with one surviving hooked end, and a flattened area in the handle's centre; similar examples have been found at *Hamwic* (Hinton 1996, 50, fig. 20, no. 177/821), Brandon (no. 2012) and Sedgeford, Norfolk – the last example retaining a decoratively-shaped perforated plate on one hooked end for the attachment of handle to vessel, and found in a context which also contained a 9th century strap-end (R. Ludford, pers. comm.)

Container Mounts

Pyramidal mount (Fig. 2.6)

No. 972 (RF 1245; Fig. 2.6) is a squat truncated pyramid with a central rivet-hole; it has traces of gilding on one face. Although recovered from Phase 6iii dark soil, its shape bears resemblance to gold pyramidal mounts decorated with garnets, glass inlays and millefiori found at Sutton Hoo (Bruce-Mitford 1978, 300–2, fig. 227), and to copper alloy mounts found at the Saxon sites of Barham and Coddensham, Suffolk (West 1998, 7, fig. 5.48; 22, fig. 21.22–3), and an Anglo-Saxon cemetery at Tuddenham, Suffolk (Kennett 1977, 48, fig. 5, no. 25). Unlike the Flixborough mount, all the East Anglian mounts have pairs of slots on their bases, and the Sutton Hoo mounts were interpreted as embellishments to leather or textile tapes which tied the sword blade to the scabbard (Bruce-Mitford 1978, 581); this is clearly not a function of the Flixborough mount, but it may have been riveted onto a leather belt, and it is almost certain to be earlier in date than its context suggests.

Domed mounts (Fig. 2.6)

Three plain domed mounts were recovered (nos 973–5; RFs 1348, 10585, 12802); no. 975 (RF 12802) was unstratified, while the other two mounts came from Phase 5b–6i (no. 974; RF 10585; Fig. 2.6) and Phase 6iii (no. 973; RF 1348; Fig. 2.6) deposits. This simple mount form is essentially undatable – they are known from the Roman period onwards, and would probably have been used on small boxes or on belts. No. 975 (RF 12802) would have been attached via solder, while no. 973 (RF 1348) has a rivet-hole; it is unclear how no. 974 (RF 10585) would have been affixed.

Miscellaneous mounts (Fig. 2.6; Pl. 2.7)

Sub-trapezoidal with two iron rivets, no. 976 (RF 7360) is undecorated, as is the sub-circular disc (no. 977; RF 12803) which has solder on the underside. The incomplete (no. 978; RF 13550) is sub-oval, one end being broken across

a rivet-hole, and with three other rivet-holes in the sides. All the mounts were unstratified.

No. 979 (RF 14087; Fig. 2.6; Pl. 2.7) was unstratified. Made of copper alloy, it appears to be incomplete at the upper end which retains part of an integral loop; below this, there is a rivet-hole which appears originally to have been covered by a domed – perhaps decorative – rivet or stud head, as hinted at by the circular field around it. Here the object begins to taper and then takes on a bulbous form, at which point the body has been bent; it then broadens out again at the lower end. The object terminates in an animal-shaped head with a long snout with slightly concave edges with an irregular patch of silver inlay close to the tip. The snout has a rounded tip or mouth, and appears to be of plano-convex section; the eyes are of yellow glass and each has a spiral behind, with incurved ears with rounded tips. The upper part of the object has a tapering strip field, of apparently asymmetrical interlace incorporating differing closed circuit motifs at each end.

The use of animal heads as seen from above as motifs in metalwork became popular in the 9th century, when they are commonly found as terminals on strap-ends, although examples from the late 8th century are also known (Tweddle 1992, 1149–50, fig. 575b). Aside from strap-ends, these heads occur on 9th-century rim clamps attached as repairs to the late 8th-century Ormside bowl (Webster and Backhouse 1991, 173, no. 134), and on two mid-9th century objects from East Anglia – a seal-die from Eye, Suffolk, and a censer from North Elmham, Norfolk (*ibid.*, 238–9, nos 205–6). An animal head with longish snout with concave sides also forms the terminal to the crest on the Anglian helmet found at Coppergate, and dated to the second half of the 8th century (Tweddle 1992, 975–80, 1148–56). The detail of the head and the interlace also indicate a probable late 8th-century date; the spirally-shaped ears, and the ribbing around and between them, and the glass eyes all echo the animal-headed terminals of the St. Ninian's Isle scabbard chapes (Webster and Backhouse 1991, 223–4, no. 178), while the changing nature of the interlace, the open space around it and the pellets are characteristic of late 8th–early 9th century sculpture (R. Cramp, pers. comm.; Cramp 1978, 8). Wilson notes an 8th–9th century pair of gilt bronze tweezers decorated in a remarkably similar fashion to no. 979 (Wilson 1964, 161, no. 62, pl. XXVIII), with the broad rounded snout and curled ears on the animal-head terminal, with a strip field of interlace above.

The function of this object is uncertain; although in shape the object is reminiscent of helmet crests, such as that on the Coppergate helmet, or sword mounts, such as that on sword 1 from grave 7 at Valsgårde, Sweden (Bruce-Mitford 1978, fig. 216), in size, no. 979 (RF 14087) is much too small for such a role. The rivet seems to indicate use as a fitting of some kind, perhaps from a non rigid container such as a leather bag or satchel.

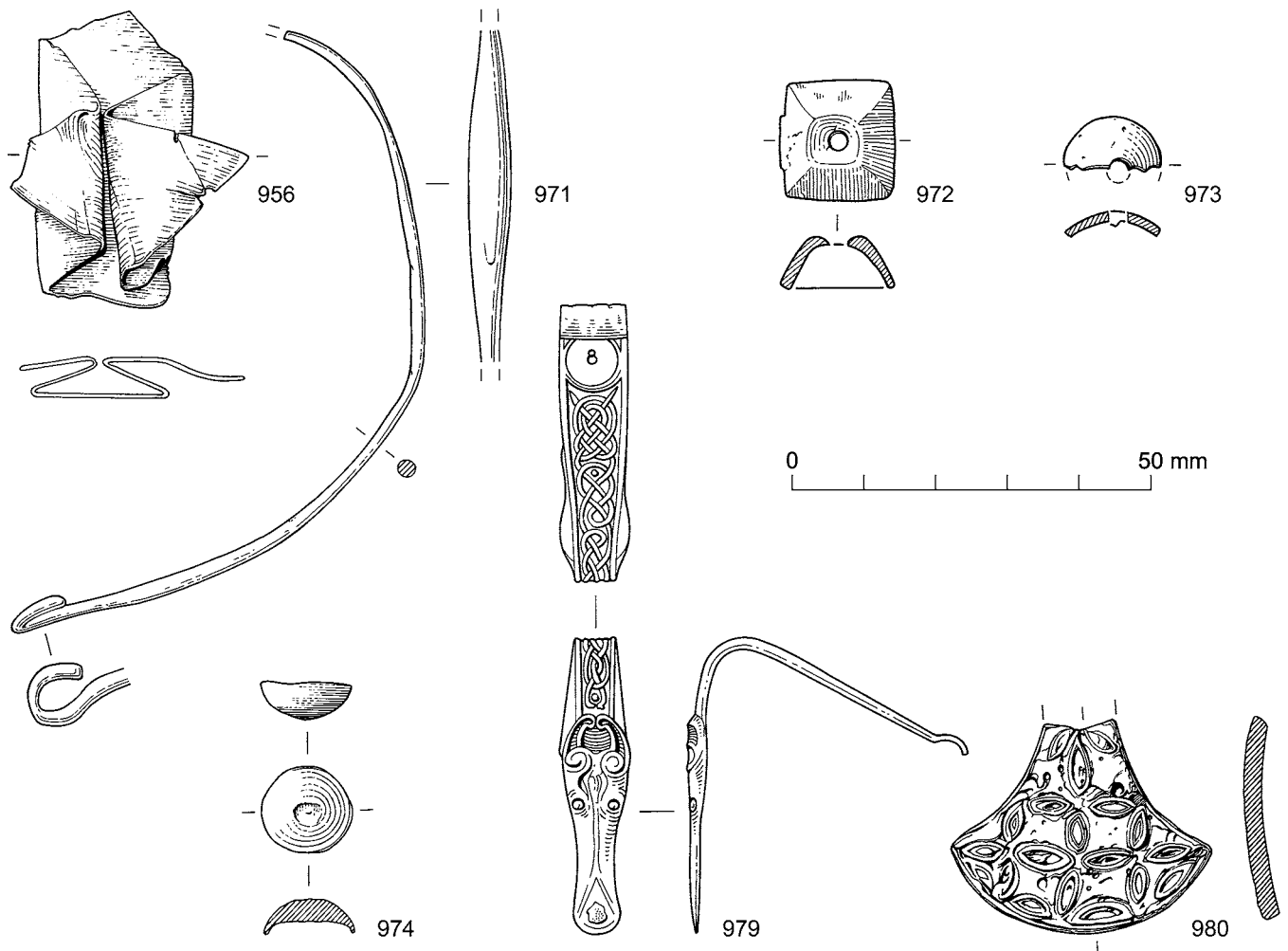


FIG. 2.6. Copper alloy vessel patch, drop handle, container mounts, and champlevé-enamelled hanging bowl mount. Scale 1:1.

An enamelled hanging bowl mount (no. 980, RF 5717; FIG. 2.6 and PL. 2.8) by Susan M. Youngs

This detached fragment is an almost complete copper-alloy casting, 24×33.5 mm, curving in two planes. The shortest edge at the apex is damaged, but part of the rim remains. The outer convex surface is recessed for enamel, leaving a pattern of open vesicas, or petals, in reserve. This is champlevé work, despite the cell shapes which give the impression of the separate walls of cloisonné enamel. Enamel remains in most of the setting, largely discoloured black but showing the original bright opaque red in places. The curvature, form, ornament and use of enamel confirm that this is a decorative appliqué mount originally made as part of a set of mounts for the body of a bronze hanging bowl.

These bowls were designed for suspension in a frame or tripod, and often have richly decorated mounts both for the suspension hooks and purely for decoration. They must

always have been prestige items. Complete examples, with one Scottish exception, have been recovered in eastern and southern England amongst the furnishings of Anglo-Saxon burials of the later 6th and 7th centuries (see Brennan 1991 for a gazetteer, detailed description and analyses of context. The finds from Lincolnshire up to 1990 are published in Bruce-Mitford 1993, with further finds in Bruce-Mitford and Raven 2005). It is clear from the evidence of repairs and the techniques of manufacture, which often include the extensive use of enamel, that these vessels were exotic imports and prized items in the Anglo-Saxon culture, like the Coptic and Frankish bowls found in the same contexts. They were not originally made for Anglo-Saxon patrons, even though the ornament of the appliqué shows increasing influence from the Germanic artistic repertoire. In the course of the 8th century hanging bowls were certainly made in the Anglo-Saxon idiom for local patrons, as the lost silver Witham bowl spectacularly demonstrated, and

the recent hooked mount from Barningham in Suffolk confirms, but the Flixborough enamel is in an earlier tradition where enamel was used extensively (for the River Witham bowl, see Bruce-Mitford 1993, 26, pl. 9; Graham-Campbell 2004. For the Suffolk mount, see Martin *et al.* 1996, 457, fig. 99e).

The Flixborough find is of interest because it comes from a settlement and not a cemetery. A circular hook mount was excavated in the Anglo-Saxon village of Chalton in Hampshire, a number of related items were found at the monastic complex at Whitby, N. Yorkshire, and an assemblage similar in range to the Whitby Celtic pieces was recovered more recently by metal-detecting at a coastal site at Bawsey in North Norfolk (for the Chalton find see Addyman and Leigh 1973, 1–25 and pl. VI; also, Bruce-Mitford 1987, pl. 11e; Bruce-Mitford and Raven 2005, 131–2, 215–17, and 300–5). Lincolnshire is exceptionally rich in hanging bowls as grave furnishings, including one in the church of St Paul-in-the-Bail, Lincoln, and the apparent ease of access to bowls in this region has implications for the economic, political and social life of the area (Leahy 2007a, 84–5). Eighteen complete hanging bowls have been recovered from Lincolnshire, more than from any other comparable region of Anglo-Saxon Britain, a peculiarly rich inheritance (Bruce-Mitford 1993). It is also a rare find which helps to bridge the archaeological gap between the tranche of bowls preserved because of Anglo-Saxon mortuary practices in the late 6th and first half of the 7th centuries, and the Irish bowls similarly preserved in Scandinavian Viking-period burials of the 9th and 10th centuries.

The form and decoration are also of considerable interest. A bowl fitted with a suite of hook mounts and decorative plates lavishly enamelled and decorated to match this piece would have been a spectacular vessel. Appliqués of similar form were used in pairs on an elaborately mounted bowl from a burial at Lullingstone, Kent, as part of a complex and varied set of mounts. Panels of this shape are described as ‘axe-shaped’ and have been related to Anglo-Saxon horse-bit fittings of this shape, an association which appears obvious in the case of the Lullingstone bowl with its Germanic-style interlace, but given the use of the pelta or ‘mushroom-shape’ in earlier and contemporary non-Germanic metalwork, the form of the Flixborough find was not necessarily derived uniquely from a recently imported model but is in the native La Tène tradition, both proposed models being based on a pattern of arcs. The same ‘axe’ or fan-shape appears in miniature as an integral appendage to a circular bowl mount with spiral ornament found at Kemsing, Kent (Youngs 2001, fig. 7), a combination of shapes which is repeated on two 8th-century Irish studs (Youngs 2003, 160). The curved apex of the Flixborough mount was presumably set against an ornamental disc, either as one of a flanking pair as on the Lullingstone bowl, or suspended below it in the design of the Kemsing mount.

The decoration on the Flixborough find is distinctive

(Fig. 2.6 and Pl. 2.8) and falls within a strand of classicising ornament used by the smiths who decorated these bowls. While they are best known for the triskeles and peltas of the archaic Iron-Age tradition, rule-and-compass derived motifs are also present in the extensive medieval repertoire. The slightly uneven pattern seen here is derived from a basic design of intersecting arcs, a pattern which has a varied range of applications, with some, as here, emphasising the intersecting arcs which form lentoid or petal shapes, while others used inlaid dots to emphasise the spaces left between.

The switch from inlaid petal-shaped recesses to reserved lines against a solid enamel background as seen here, was probably made during the later 6th or first half of the 7th century. It can be seen used in similarly open arrangement on the tail of the Kemsing mount (Youngs 2001, fig. 7). It is also a feature of an elaborately ornamented enamelled basal mount from a hanging bowl found at Bekesbourne in Kent, where open petals were used in combination with other, innovative motifs including stylised birds’ heads (*op. cit.*, fig. 8; Haseloff 1958, 209–46; Brenan 1991, 184–5). The centre is in the style of the Flixborough find, but on the latter this motif is used exclusively as a carpet. Norfolk has provided a large circular disc from Caister-on-Sea which is completely filled with a linked pattern of rather stiff open petals of the Flixborough kind, and a further variation is seen on a flat enamelled mount from Bawsey in the north-east of the county where the pattern was created from lozenge-shaped elements which interlock to cover the entire surface (Youngs 2001, fig. 9a, b, where the disc was incorrectly associated with Bawsey).

This Bawsey piece is not a cemetery find, but from an assemblage of largely Middle- and Late-Saxon material, and this raises questions about the presence of such a mount in the community at Flixborough. It could have reached this affluent settlement on a complete bowl for use on site either as a dining accessory, or as a lamp reflector in the church (two of the various uses proposed for these bowls in an Anglo-Saxon context). Material from the occupation of the site in the 7th century was recovered elsewhere. It could equally well have arrived later, or separately as a curio, or as spolia for re-use in some way, like the metal for Flixborough strap-end no. 66 (RF 552). All that can be said is that there is no piercing for re-use as jewellery, or for re-attachment, a feature of some detached bowl mounts.

The Flixborough hanging bowl mount (no. 980; RF 5717) came from a dump in which the pottery indicates deposition in the late 9th and early 10th century, but which included a number of residual finds of earlier material. The bowl mount is probably one of the earliest of the medieval items which include a Series G type 3a sceat of early 8th-century date. This phase of use of the site also saw the deposition of the late 8th- or early 9th-century inscribed lead plaque (no. 1019; Ch. 3). As to the original date of manufacture, the ornament and lavish use of red enamel suggest that this piece could have been made as

late as 700, but not significantly later, but that it could have been up to 50 years earlier in the 7th century. The present state of our knowledge about the absolute chronology of the hanging bowls found in Britain is such that this is very much a provisional opinion. The anchor-point remains the three very different and technically complex bowls found in the mound 1 burial at Sutton Hoo, Suffolk, deposited in the 620s. What we do not know is how long the British tradition of enamelling in this style persisted up to and beyond 700, by which date the production of polychrome enamelling had also become well established in Ireland.

Catalogue

Vessels

VESSEL FRAGMENTS

- 950 (?) body fragment, irregularly shaped, with traces of sooting on one edge. L.48.9, W.20, Th.1
RF 3279, Context 3281, Period 2.
- 951 Rim fragment, distorted. L.41.4, W.30.5, Th.1.3
RF 12354, Context 10772, Phase 2–5a.
- 952 (?) body fragment, with perforation. L.13, W.8.7, Th.1.3
RF 2550, Context 2208, Phase 5a.
- 953 Rim fragment, irregularly shaped, lower edge broken and partially folded up. L.55.7, W.12.9, Th.1.3
RF 1010, Unstratified.
- 954 Body fragment. L.65.1, W.27.2, Th.1.6
RF 13789, Unstratified.

PATCHES (FIG. 2.6)

- 955 (?) repaired patch, of sheet, one edge folded over and flattened, corner of other edge appears riveted down, secondary patch riveted on towards lower edge. L.40.6, W.28.4, Th.0.7
RF 1001, Unstratified.
- 956 Fragment of sheet, sub-rectangular, long edges folded in and out. L.41.2, W.32.4, Th.4.8. (FIG. 2.6)
RF 1019, Unstratified.
- 957 Fragment of sheet, irregularly shaped, one edge bent over, another edge broken across perforation. L.29.2, W.26.8, Th.1.2
RF 12355, Unstratified.
- 958 Attached to sheet fragment, also 7 other sheet fragments. L.25.7, W.24, Th.3.7
RF 13001, Unstratified.
- 959 Fragments (2), adjoining, of folded sheet. L.41.4, W.27.3, Th.3.4
RF 13288, Unstratified.
960. Fragment of sheet, irregularly shaped with three cut edges, fourth roughly broken, retains four sheet rivets, one rivet partially covered by additional sheet fragment. L.47, W.37.5, Th.0.7
RF 13453, Unstratified.

FOLDED SHEET RIVETS

- 961 Sub-rectangular. L.17, W.12.4, Th.1.6
RF 3591, Context 3194, Phase 1b.
- 962 Fragment, broken across a perforation. L.11.2, W.10.2, Th.1.8
RF 7952, Context 3107, Phase 4ii.

- 963 Fragment. L.15.8, W.14.4, Th.3.6
RF 2082, Context 1662, Phase 5b.
- 964 Fragment. L.10.5, W.9.3, Th.2.3
RF 7040, Context 6472, Phase 5b–6i.
- 965 Fragment. L.8, W.6.2, Th.0.9
RF 8170, Context 7109, Phase 6ii.
- 966 Fragment. L.16.2, W.13.7, Th.2.8
RF 6570, Context 6498, Phase 6ii–iii.
- 967 Rivet in two fragments. L.20.9, W.13.7, Th.2.5
RF 4348, Context 3989, Phase 6iii.
- 968 Rivet or patch. L.31.7, W.23.2, Th.3.9
RF 11939, Unstratified.
- 969 Incomplete. L.24.7, W.18.3, Th.3.7
RF 12706, Unstratified.
- 970 Fragment. L.12.6, W.11.4, Th.2.1
RF 12793, Unstratified.

VESSEL HANDLE (FIG. 2.6)

- 971 Fragment, one end broken away, of circular section with central flattened area with incised lines along edges, surviving end hooked up. L.115.9. Wire section diam. 2.2. Flat area W.4.9 Th.1.1. (FIG. 2.6)
RF 10904, Unstratified.

Mounts

PYRAMIDAL MOUNT (FIG. 2.6)

- 972 Truncated pyramid with central rivet-hole, hollow, slight lip on one edge, gilding on one face. L.16.7, W.15.9, Th.1, Height 5.5. (FIG. 2.6)
RF 1245, Context 1244, Phase 6iii.

DOMED MOUNTS (FIG. 2.6)

- 973 Fragment, circular, domed with central rivet hole. Diam. 13.4 Th.1.1, Height 4.2. (FIG. 2.6)
RF 1348, Context 1284, Phase 6iii.
- 974 Circular, domed. Diam. 12.1 Th.0.9. (FIG. 2.6)
RF 10585, Context 3417, Phase 5b–6i.
- 975 Domed with traces of probable solder on inside. Diam. 12.9 Th.0.9, Height 5.1
RF 12802, Unstratified.

MISCELLANEOUS MOUNTS

- 976 Sub-trapezoidal, broader end convex, with two iron rivets. L.15.9 W.12.7 Th.1
RF 7360, Unstratified.
- 977 Sub-circular disc of thin sheet, with probable solder on the underside. L.25.5 W.23 Th.0.7
RF 12803, Unstratified.
- 978 Incomplete, sub-oval, one end broken across a rivet hole at one side, three further rivet holes in sides. L.28.2, W.15.4 Th.0.9
RF 13550, Unstratified.

?MOUNT (FIG. 2.6; PL. 2.7)

- 979 Fragmentary, broken off at one end across integral loop with rivet hole below; at this point, the object begins to taper and takes on bulbous form, broadening out again at lower end where object terminates in an animal-shaped head with a long snout with slightly concave edges and silver inlay close to the tip. The snout has a rounded tip or mouth, and appears to be of plano-convex section; each of the circular

eyes which contain yellow glass, has a spiral behind, with incurved ears with rounded tips which are ribbed. The upper part of the object has a tapering strip field of apparently asymmetrical interlace incorporating differing closed circuit motifs at each end, and the whole object is bent just above the animal head. L.80 W.10 Th.2.8. (FIG. 2.6; PL. 2.7)
RF 14087, Unstratified.

ENAMELLED HANGING BOWL MOUNT (FIG. 2.6 AND PL. 2.8)

980 Almost-complete copper alloy hanging bowl mount, curving in two planes while the shortest edge at the apex is damaged, but part of the rim remains. The outer convex surface is recessed for enamel, leaving a pattern of open vesicas, or

petals, in reserve. This is *champlevé* work, despite the cell shapes which give the impression of the separate walls of *cloisonné* enamel. Enamel remains in most of the setting, largely discoloured black but showing the original bright opaque red in places. The curvature, form, ornament and use of enamel confirm that this is a decorative *appliqué* mount originally made as part of a set of mounts for the body of a bronze hanging bowl. [For the affinities of and parallels to this piece, see the discussion above in the main text, and Youngs 2001.]

L.33.5; W.24. (FIG. 2.6 and PL. 2.8)
RF 5717, Context 5553, Phase 5b.

3 Artefacts Relating to Specialist Activities

Tim Pestell, Michelle P. Brown, Elisabeth Okasha, Patrick Ottaway, and Nicola Rogers

This chapter examines the objects connected with such specialist and diverse pursuits as owning and riding horses, weaponry and combat, and literacy. Some of these shed light on the status of at least some of the inhabitants, whilst others may offer an insight into the nature and role of the settlement.

The site has yielded not only the largest single assemblage of styli from any early medieval site in Britain, but also two inscribed objects, and a possible book cover mount. The significance of this evidence for literacy at the Flixborough site, and for the changing nature of the character and lifestyles within the settlement at different periods, is discussed at length in Volume 4, Ch. 9 (see particularly Loveluck, section 9.2), to which the reader is referred.

There is also a limited amount of evidence for both horse-riding and for owning weapons at the site, but, to put this into perspective, this constitutes just over 0.1% of all the recorded finds from the site.

Lastly, a small number of iron bells and bell clappers, which might be associated with liturgical use, are included in this chapter; however, it is equally possible that some of these may have been hung around the necks of animals.

3.1 Horse equipment

by Patrick Ottaway

It is very striking that items of both horse and riding equipment were very scarce at Flixborough, although one would not expect a large number of the latter in Middle Anglo-Saxon contexts as stirrups were probably not introduced to this country and spurs not re-introduced (after previously being used in Roman times) until the late 8th or early 9th century.

Bits (FIG. 3.1)

There are two links (nos 981 and 983; RF 701 – Phase 6iii and RF 13511 – unstratified) from the usual type of snaffle bit found in Anglo-Saxon contexts. However, the most interesting item of horse equipment is no. 982 (RF 1395; Phase 2i–4ii) which exists as an incomplete cheek piece ring with a short projection attached to a bar with domed terminals (FIG. 3.1). Wrapped around the projection and bar is an incomplete fitting with a pierced, oval terminal and the stubs of two curving arms. The function of this fitting is unclear, but it presumably connected the cheek-piece to part of the bridle. The whole object is tin-plated. Cheek-pieces with bars of various forms are known from the 7th century onwards, but there is no close parallel for the Flixborough example.

A bridle fitting, seven horseshoes and 30 horseshoe nails are likely to be of medieval or later date, and so are catalogued in Chapter 14, below; only two of the horseshoe nails (RFs 6540 and 8265, from Phase 6ii and 6iii contexts respectively) may be late Anglo-Saxon as the horseshoe was probably introduced in the late 10th century (Ottaway 1992, 707–9). The D-shaped heads of RFs 6540 and 8265 are those of the ‘fiddle key’ type of nail used at this time.

Catalogue

Bits (FIG. 3.1)

981 Snaffle link. L.92mm

RF 701, Context 617, Phase 6iii.

982 Incomplete ring cheek-piece with short projection to the centre of a bar with domed terminals. One terminal has five grooves radiating from the tip, and the other has four. Wrapped around the bar and projection is an incomplete fitting with a pierced oval terminal at one end, and the stubs of two curving arms. Plated (tin). Ring: D.50; bar: L.69mm (FIG. 3.1)

RF 1395, Context 428, Phase 2i–4ii.

983 Snaffle link. L.88mm
RF 13511, Unstratified.

3.2 Weapons and armour

by *Patrick Ottaway*

Seax (Fig. 3.1)

No. 984 (RF 942; unstratified) is a small seax which in its current incomplete state measures *c.*247mm in length, but originally was probably *c.*300mm. The blade has an 'angle back' (see below, p.203) and is pattern-welded.

Arrowheads (Fig. 3.1)

There are eight arrowheads (three unstratified). Two are socketed leaf-shaped blades (nos 991 and 993: RF 9860 – Phase 6iii–7, and RF 12546-unstratified) while no. 990 (RF 9441; unstratified) is a tanged leaf-shaped blade. Nos 986 and 988 (RFs 4095 and 8973; respectively from Phases 6iii and 4ii) are incomplete tanged blades. The form of the arrowhead in Early and Middle Anglo-Saxon England is not well understood as very few have been found, although socketed leaf-shaped blades have been recorded in early Anglo-Saxon contexts at West Stow (West 1985, 124, fig. 241, 3–4) and in a Middle Anglo-Saxon context at *Hamwic* (SOU169, 895 unpublished, excavated by Southampton City Council).¹ Two tanged leaf-shaped blades were found in a grave at Morning Thorpe, Norfolk (Green *et al.* 1987, 129, fig. 404, D and G), and *Hamwic* also produced a tanged leaf-shaped blade (SOU169, 257). The tanged form appears to be by far the most common in the Late Anglo-Saxon / Anglo-Scandinavian period (Ottaway 1992, 710–11).

No. 989 (RF 8982; Phase 4ii) is a socketed blade with a rounded tip, on which the edges angle outwards slightly at the base (Fig. 3.1). It is similar in form to some Early Anglo-Saxon spearheads, notably Swanton's Series H, and it is likely to be no later than the 7th century (Swanton 1973, 101–14).

Nos 985, 987, and 992 (RFs 1005, 5243 and 11929) are fragmentary blades.

Chain Mail

No. 994 (RF 13865; unstratified) is a small lump of rings, possibly a fragment of chain mail.

Notes for section 3.2

- 1 One could also cite the 6th-century arrowheads from the Chessel Down and Boscombe Down Anglo-Saxon cemeteries on the Isle of Wight (Arnold 1982, 66–7).

Catalogue

SEAX (Fig. 3.1)

984 Blade end missing. Back runs straight from the shoulder before sloping down towards the tip at 13°. Cutting edge pitted, but roughly straight. The blade has a pattern-welded core. Tang tip missing. L.247mm (Fig. 3.1)
RF 942, Unstratified.

ARROWHEADS (Fig. 3.1)

- 985 End of blade. L. 42, W.19mm
RF 1005, Unstratified.
- 986 Tang and base of blade. L.38mm
RF 4095, Context 3107, Phase 4ii.
- 987 Incomplete blade. L.60, W.12mm
RF 5243, Context 3730, Phase 6ii.
- 988 Stub of tang and incomplete blade. L.64, W.17mm
RF 8973, Context 3107, Phase 4ii.
- 989 Incomplete socket, and a blade with edges which are angled outwards slightly at the base, and a rounded tip. L.62, W.21mm (Fig. 3.1)
RF 8982, Context 3107, Phase 4ii.
- 990 Incomplete tang and incomplete leaf-shaped blade. Random organic material present. L.55, W.15mm
RF 9441, Unstratified.
- 991 Socketed, leaf-shaped blade, tip missing. L.98, W.13mm (Fig 3.1.)
RF 9860, Context 6300, Phase 6iii–7.
- 992 Incomplete blade. Convex faces, pointed tip. L.58, W.18, T.9mm
RF 11929, Context 10961, Phase 6i–6ii.
- 993 Socketed, leaf-shaped blade. L.87, W.13mm
RF 12546, Unstratified.

CHAIN MAIL?

- 994 Small lump of rings. L.33mm
RF 13865, Unstratified.

3.3 Writing and literacy-related items

by *Tim Pestell, Michelle P. Brown, Elisabeth Okasha and Nicola Rogers*

The styli by Tim Pestell

Introduction

Flixborough is remarkable for having yielded 20, probably 22, styli. They bear witness to literate ability among this settlement's occupants during certain periods, in contrast to their possession of textual material which may have been written elsewhere. The following discussion aims to outline the use of these writing implements, their significance when considering the site at Flixborough, and their implications for understanding Anglo-Saxon literacy.

The stylus, a pen-like writing implement, was used to scratch letterforms into wax-filled writing tablets, called *pugillaria* or *tabellae*. Their use in the Anglo-Saxon world was directly derived from Roman traditions where, for drafting short-term notation or the study and contemplation of text, they were ideal tools of literacy. Because wax tablets were most usually made from wood, very few have survived from the early medieval world. They include the unique six-tablet, waterlogged example made of yew, recovered from Springmount Bog, Co. Antrim, Ireland (Armstrong and Macalister 1920; Webster and Backhouse 1991, 80; cat. 64) and a whalebone example from Blythburgh, Suffolk (Waller 1901–3).

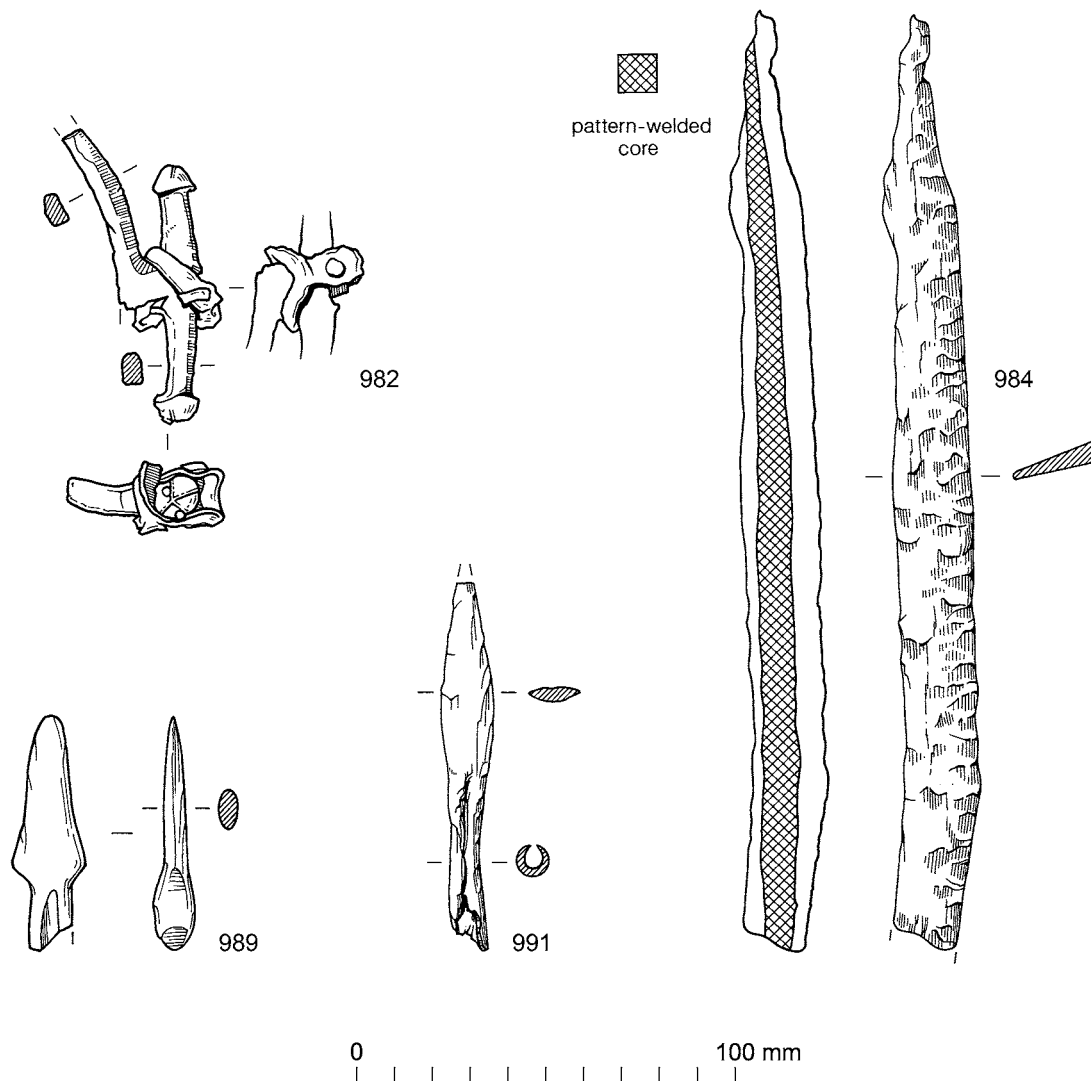


FIG. 3.1. Iron horse equipment, weapons and armour. Scale 1:2.

It is difficult to be sure of the form taken by these wax tablets in the Anglo-Saxon period. In the Roman world, for which far more evidence exists, they usually consisted of two or three tablets, recessed on one side only, forming a diptych or triptych. The tablets were bound together by leather thongs passing through holes bored in their long sides. This is the format of the Springmount Bog examples, except here six tablets were used, the four interior ones being recessed on both sides. Preservation of the wax infilling in this particular find has also allowed the survival of an incised text, written in an Insular minuscule script probably no later than AD 600 (J. Brown 1984, 312). On all but the first page a vertical line divides the text into two columns, a format used in many Roman wooden writing tablets (Bowman and Thomas 1983, 37–40), and while a number of Early Medieval manuscripts depict *tabellae* in use, these are frequently stylised illustrations. Usually they

depict a single tablet or a diptych, but a curious exception is the bat-like tablet with a handle at the base, shown in the *Registrum Gregorii* (Trier, Stadtbibliothek, MS.171). Sadly beyond this, understanding the use of wax tablets in the Anglo-Saxon world is severely compromised by the lack of surviving examples and some visual depictions (M.P. Brown 1994, 1–15). Our evidence for the employment of literacy on sites is instead limited to those writing implements used to create text.

Anglo-Saxon styli

At present, some 105 styli are known to have been recovered from Anglo-Saxon sites, while there are uncertainties over a few other examples. For instance, three from Blythburgh in Suffolk no longer exist (Waller 1901–3), while one from Santon Downham, also in Suffolk, is of uncertain date and possibly Roman. All four are excluded from statistical

calculations. Additional examples of styli from sub-Roman or 'British' sites, again not included within the statistics, have been found at Cadbury Congresbury, Somerset (Rahtz *et al.* 1992); Dinas Powys, Glamorgan (Alcock 1963) and at Carraig Aille, Lough Gur, Co. Limerick, Ireland (Ó Ríordáin 1949). After these exclusions, 38 sites have yielded styli for a corpus of 104 examples, to which may be added an unprovenanced example (now in the Ashmolean Museum, Oxford). Of the 38 locations, only 13 have been documented as having had Anglo-Saxon *monasteria* at them, leaving twice as many places with no such evidence. The 25 undocumented sites include seven of the type which some archaeologists have termed 'productive', that is, locations from which especial quantities of coinage and prestige metalwork have been recovered, typically through metal-detector use (Ulmschneider and Pestell 2003, 2–4). Recently, Blair (2005, 209 fn.116) has contested this interpretation, arguing many of these 'productive' sites are what he describes as 'crypto-minsters'. However, this is simply one interpretation of these sites' function, and one in turn partly influenced by the presence of material like styli. More recent finds have continued to expand the number of sites with single, stray, styli from those figures Blair used (based on Pestell 1999), so that of the 38 sites now known, 18 now yield 21 styli or 20% of the total known.

Classifying and dating Anglo-Saxon styli

Anglo-Saxon styli have frequently been accorded a Middle Anglo-Saxon date range, often upon very little secure evidence. It is apparent from the survival of stylus-use into the post-Conquest period that these writing implements might be expected equally in later deposits, and that stylistic developments may be anticipated. Disappointingly, the examples from Flixborough do little to enhance our understanding of their use in the Later Anglo-Saxon period. Of the 22 styli recorded from Flixborough, seven (one-third) were not even stratified. Even with the two-thirds of the assemblage which can be accorded a context, the high degree of finds residuality within features (often dumps) makes it difficult to create an accurate chronological sequence for different classes of stylus and therefore to help establish a typology.

The classification system currently being developed (Pestell, in prep.) is based upon the shape of the eraser, as it is this element which principally defines the tool as a writing implement rather than any other object, most notably a dress pin. Styli have a wide variety of eraser shapes, but they may be broadly categorised into ten classes. The styli from Flixborough include examples from five of these, the majority of which are the most simple Class I and II types, with 14 and possibly 15 examples, that is, nearly two-thirds of the site total. Class I styli feature a plain, undecorated, eraser extending from the shaft in a gentle outward curve. The eraser may be divided from the shaft by a collar of decorative bands. Class II styli have similarly undecorated erasers, but with a definite straight-edged triangular shape. They are always divided from the

shaft by a collar with two possible exceptions, the iron styli nos 1004 and 1016 (RFs 465 and 4316) from Flixborough. Naturally, the similarity in shape between the two classes can make precise definition difficult at times, especially for those styli made of iron and now corroded.

The remaining Flixborough styli include examples of Class IV, characterised by proportionately short D-shaped erasers; Class VI, defined by their decorative treatment (in most cases of an applied foil mount, although two examples from Whitby, and one from Pentney, Norfolk, have decorative treatment cast or applied directly to the eraser); and Class VII, distinguished by the curved axe-shaped erasers. This latter class is further subdivided into VIIa and b, the latter having not one but two outward flanges; Flixborough has yielded one example, of Class VIIa.

The Flixborough styli

Flixborough is important for the study of Anglo-Saxon styli for three principal reasons. First, it has yielded the largest single assemblage of these writing implements from any early medieval site in the British Isles. Second, the excellent stratification of the site raises the prospect of dating several examples accurately, allowing chronological distinctions in a future typology. Finally, many of the styli excavated were of iron, providing an important corrective to the predominant picture of these implements being of copper-alloy.

With some 105 extant Anglo-Saxon styli, the 22 recovered in the Flixborough excavations represent over a fifth of all examples. This is a remarkable assemblage and it should occasion no surprise that many of the styli find parallels with examples from a variety of other sites. Despite this, there is a striking homogeneity among the Flixborough examples. Two-thirds belong to the simple Classes I and II, but within this are themselves very simple. Several more decorative copper-alloy styli also shared certain characteristics, most importantly four having faceting of the lower shafts. This is a design element found on only 15 Anglo-Saxon styli, meaning the incidence of this embellishment is high when it is remembered that there are only seven non-ferrous styli from Flixborough.

Faceting is clearly an extra decorative element and is also employed on the upper shaft, immediately below the eraser, on two other styli – one each from Barking, Essex and Coddanham, Suffolk. That this extra decorative element appears to reflect a higher-status object is apparent not simply from the extra work involved in the manufacture, but also when considering other features of these styli. One, from Flixborough (no. 1006; RF 6143; PL. 3.2) is of solid silver, while two examples, again from Flixborough, are of Class VI, that is, where the eraser has been embellished with a foil mount. Similarly, the two facet-stemmed examples from Brandon are of Class VIIb, where the erasers are shaped in an elaborate flaring double axe-head design (Webster and Backhouse 1991, 86–7, cat. 66r-s). In these, especially Brandon SF 4993 (*ibid.*, cat. 66r), the

stylus has transcended a purely functional design. There may once have been more facet-stem styli, as only the evidence of the non-ferrous examples survives, but this design element occurs at only 11 of the 38 known stylus-producing sites. Of these, four are documented religious sites (Barking, Bradwell-on-Sea, Whitby and Whithorn), while the remainder have no such definite evidence. With the exception of Bradwell (Essex), South Walsham (Norfolk) and Norton Subcourse (Norfolk), all these sites have produced wealthy artefact assemblages, and elaborate styli might be anticipated. The high number of styli with faceting from Flixborough – and indeed two of the three found at Brandon – is of interest, and it will be instructive to see whether future finds with this element continue to enjoy other forms of elaboration too.

There are other individual elements within the Flixborough assemblage which share similarities: for instance, the point of silver stylus no. 1006 (RF 6143) is demarcated by two small grooves. This same detail, which would appear to have no practical function, reappears on two other Flixborough styli, nos 1011–12 (RFs 7518 and 11568), the elaborate Class VI examples. These three are not simply more ornate styli, but share a fundamentally similar formal composition. All three use a collar beneath the eraser, of two rings, a spherical bulging, two more rings and then a narrow baluster-shaped upper shaft. This is divided from the faceted lower shaft by a second collar; nos 1006 and 1011 (RFs 6143 and 7518) use a spherical bulge, no. 1012 (RF 11568) a wide scooped ring. The use of the ‘ringed point’ is not seen in any other Anglo-Saxon styli, with the possible exception of iron stylus SF 1430 from Barking Abbey, which is otherwise very different in overall composition. Again, therefore, there is an elaboration in detail associated with styli that are distinct from ‘run-of-the-mill’ examples, in a formula presumably employed by the same workshop, and possibly the same metalworker, supplying Flixborough.

One stylus is of interest when considering the assemblage as a whole. No. 1016 (RF 465) is unusual in having a hole piercing the lower end of the eraser. Many styli have close formal similarities with Middle Anglo-Saxon dress pins in the use of faceting, collars and shaft rings. Throughout, the defining characteristic of a stylus is the presence of a prominent eraser. The occurrence of a stylus with a hole in this eraser is, though, fundamentally similar to many styliform pins with pierced heads, often of a Middle Anglo-Saxon date. When, therefore, does a styliform pin become a stylus? It would be futile to attempt any rigid definition. Rather, the overall look of an object will essentially remain the key. In the case of Flixborough no. 1016 (RF 465), the definite Class II triangular shape of the head is most certainly eraser-like, suggesting a stylus. Only two other artefacts suggested as being styli have such a piercing, sf 2279 from Winchester, catalogued as a ‘possible stylus’ (Biddle and Brown 1990, 741), and the stylus from Norton Subcourse, Norfolk. If these are in fact pins, then what of the Flixborough find? It too may be a styliform pin, but it is equally possible that this is a stylus

which has subsequently been modified by the drilling of a hole. This is almost certainly the case with the Norton Subcourse example, and in either case, a close relationship is suggested between pins of this period and styli. Not only might it be possible that styli were on occasion worn, constituting a powerful means of displaying one’s literate abilities to a wider audience, but on occasion pins too could have been pressed into service as styli.

Dating

The dating of styli continues to be problematic, with ‘Middle Anglo-Saxon’ attributions frequently being applied. The good stratification at Flixborough allows several plain examples to be given more accurate dates to complement their more decorative counterparts: for instance, iron stylus no. 996 (RF 10349) was incorporated into the surface of a Phase 3bv dump (6304) of the late 8th to early 9th century. Stratification similarly shows silver stylus no. 1006 (RF 6143; Pl. 3.2) to have been manufactured no later than the early to mid 9th century, as it was found within a Phase 4ii deposit of the middle decades of that century (dump 5503). It has already been mentioned that no. 1006 (RF 6143) has stylistic similarities with the copper alloy stylus no. 1011 (RF 7518), also found in a Phase 4ii dump – 3758; and stylus no. 1012 (RF 11568), incorporated into the surface of 3bv dump 6235, which like dump 6304 formed the activity surface of Period 4 within the excavated area (see Volume 1, Ch. 4). The incorporation of styli into the surface of deposits dating from the late 8th or early 9th century makes it possible that some were 8th-century products. The three examples nos 1006 and 10011–12 (RFs 6143, 7518 and 11568) have baluster-like upper shafts (Pl. 3.2) not dissimilar to the architectural balusters found in excavations at Jarrow Abbey or *in situ* at St Peter’s church, Monkwearmouth (Webster and Backhouse 1991, 148–50, fig. 9 and cat. 109).

The three styli with foil appliqué provide more readily-datable stylistic elements. Two have interlace ribbon ornament, that on 1012 symmetrical, although of slightly crude form, and that on 1013 a fatter ribbon but better balanced overall. They take as parallels a similar foil-applied stylus from Whitby (Peers and Radford 1943, 64 fig. 15.7) which is of late seventh or eighth century date (Webster and Backhouse 1991, 142 no. 107c), and a recently-discovered stylus from Pentney, Norfolk, with an integrally-cast design on the eraser, again of eighth century date (Gurney 2006, 119 fig. 5d). The third Flixborough eraser with a foil appliqué is of more sophisticated design, portraying a stylised long-necked beast, entwined within an interlace ribbon of late eighth-century date. Taking its cue from contemporary Mercian metalwork, this is by far the most elaborate eraser in the Anglo-Saxon corpus and reflects the status of this particular piece. Together, these erasers emphasise an eighth-century date for those styli capable of stylistic analysis. By contrast, it will always be more difficult to suggest date ranges for the manufacture of the many plain iron styli from Flixborough.

As described at the outset, Anglo-Saxon styli are the direct heirs of a Roman tradition. Although the 'classic' Roman stylus is of a fundamentally different design from its typical Anglo-Saxon counterpart, both periods have produced examples with close similarities. Nowhere is this seen more clearly than in the case of iron styli which are frequently very simple, and in which corrosion can mask stylistic details. This is particularly true for Class I and II styli, where the form of the eraser is both simple and closely related; Roman styli very similar to Anglo-Saxon examples are illustrated in Manning 1976 (e.g. fig. 21, nos 102, 108 and 109). With residual Roman pottery and other material at Flixborough emerging from dump deposits in Phase 5b (late 9th to early 10th century), the *possibility* exists that some of the simple iron styli from the site are of Roman date. The frequent occurrence of styli, usually of iron, on Roman sites does nothing to mitigate against this possibility. However, the quantities of Roman material on this site are relatively small, and their significance in the excavation area lies chiefly in showing the deposition of reworked material, either derived from elsewhere on the site, or imported onto the site with building materials.

If the possibility of a Roman origin is at least remote, the potential for Later Anglo-Saxon styli at Flixborough is far stronger. Stylus use continued well into the 12th and 13th centuries, with erasers developing into T-shaped bars (see for instance Armstrong *et al.* 1991, 136–7). The difficulty is that the ornate, and therefore more immediately datable Middle Anglo-Saxon styli (typified by the Class VI erasers, such as Flixborough nos 10011–12: RFs 7518 and 11568) do not seem to appear later; certainly, there are no examples, to this author's knowledge, employing later ornamental motifs. One explanation is that the elaboration, or perhaps even the excesses, of the Middle Anglo-Saxon period gave way to a fashion for increasingly functional, plain examples. Indeed, it may not be completely inappropriate to point out that of those few styli stylistically datable to the 8th century (nos 1006, 10011–14; RF 3775 unstratified, and RFs 6143, 7518, 11568 and 12268), three were found in deposits dated to between the end of the 8th and mid 9th century, and one was unstratified. Only no. 1013 (RF 12268), the iron stylus with a silver foil mount (Pl. 3.3), was found in a later deposit (12270 from Phase 5b, dating from the late 9th to early 10th century). This could suggest that the many other examples of simple and stylistically undatable design might have been manufactured later, and not all need be residual elements in deposits from Periods 5 and 6.

Potentially, therefore, Flixborough provides evidence for stylus use in the Later Anglo-Saxon period. Notwithstanding the difficulties in using manuscript illustrations as evidence for contemporary material culture, as opposed to the simple copying of earlier exemplars (Carver 1986), styli with simple Class I and II erasers can be seen in late 10th- and early 11th-century manuscript illustrations, for instance in the *Benedictional of St Æthelwold*, c.970–80 (BM Add MS 49598 fol. 92v); and the early 11th-century

Bury Gospels (BL Harley MS 76 fol. 8). If these do indeed depict contemporary objects, simplicity of design may have ensured longevity. Thus, some Flixborough styli of these classes, although in deposits including earlier, residual material, may be near-contemporary with the date of the context. This would make Flixborough one of the few sites with known Late Anglo-Saxon styli. Other instances of Late Anglo-Saxon deposits yielding styli include two, and a possible third, from York (Ottaway 1992, 606–7, nos 3010 and 3011; Tweddle 1986, 189 and 192, no. 1252); two from Winchester (Biddle and Brown 1990, 741, nos 2280 and 2281); and two probable examples from Canterbury (Radford 1940, 506–7, nos 1 and 2). The difficulties surrounding this question aptly sum up many of the problems with the Late Anglo-Saxon material at Flixborough, and the more general observation that this period seems to see a reduction in the conspicuous consumption of wealth expressed through decorated, non-ferrous metal objects (Loveluck 2001, 118–19).

In conclusion, the stratification at Flixborough, while excellent, has failed to provide a radical progression in the creation or refinement of a workable typology for Anglo-Saxon styli. If this difficulty is a source of disappointment, a more positive approach is possible through the observation that Flixborough has not simply the largest stylus assemblage yet recovered in the British Isles, but the largest number and proportion of iron styli within an assemblage.

Iron styli

It is clear that iron styli were once far more common. In part, the overall numbers and proportion have been made to appear smaller by the increase in stylus finds made through metal-detection; some 31 styli, or 29.5% of the known Anglo-Saxon total have been found in this way. A further six copper alloy styli have been discovered as stray finds (those from Blythburgh, Suffolk, now lost; those in the Ashmolean Museum and the Museum of London; and a stylus from Sudbourne, Suffolk). The absence of iron examples found by metal-detection is directly related to the practice of discriminating against this material during normal metal-detector use; the most obvious corollary is that all new examples have been of copper-alloy. This seriously distorts the quantity and proportion of these writing implements known in other materials. Examples of iron styli are known from eight sites other than Flixborough: Barking and Bradwell-on-Sea, Essex; Bury St Edmunds, Ipswich and West Stow, Suffolk; Sedgeford, Norfolk; Winchester and York. All are from excavations and hint at the likely frequency with which this material was once used for these implements. The total of 28 known iron styli represents 26.6% of the total corpus, but of these, 15 come from Flixborough (that is, 53.5% of all known iron styli or 14.3% of all Anglo-Saxon styli). The Flixborough assemblage, therefore, is of fundamental importance for our understanding of the use and manufacture of these implements of literacy.

Analysis of those styli recovered from excavated assemblages, 19 sites yielding 72 styli, shows a proportion of 1.39 to 1 of copper-alloy to iron styli. This is likely to be a far more reasonable ratio than suggested by the full corpus total, yet at Flixborough itself, there were over twice as many iron to copper-alloy examples (15 and 6 respectively). The use of far more ferrous than non-ferrous styli should not be surprising. Most immediately, iron was clearly favoured for these objects in the Roman period and in deriving from antique traditions, the same material might be anticipated for Anglo-Saxon examples. The overwhelming majority of Roman styli found in modern excavated assemblages appear to be of iron, although many examples in museum collections, typically from antiquarian investigations and stray finds are of bronze, apparently having received preferential recovery and retention (Manning 1976, 34). This is exactly the same bias towards copper-alloy that may well be the case for Anglo-Saxon examples. The general preference for iron styli in the early medieval period is also suggested in our few textual sources. In Prudentius' *Crowns of Martyrdom*, IX, 'The Passion of St Cassian of Forum Cornelli', the martyr Cassian is described as having 'a thousand wounds, all his parts torn', a consequence of his pupils 'stabbing and piercing his body with the little styles with which they used to run over their wax tablets' (Thomson 1961 ii, 223). The material of these tools is twice mentioned, 'others again launch at him the sharp iron pricks' and 'you yourself as our teacher gave us this iron' (*ibid.*, 225 and 227). An Anglo-Saxon example appears in Aldhelm's riddles, written at the end of the 7th century. In describing writing tablets in riddle 32, he uses the phrase 'An iron point / In artful windings cuts a fair design...' (Pitman 1925, 19). It may be that the Flixborough assemblage represents a more accurate picture of stylus use than many other excavated sites.

The context of stylus use

As we have seen, Flixborough has yielded by far the largest single assemblage of styli from any early medieval site in the British Isles; the next largest collections are from Whitby, the old excavations of which yielded 12 examples (Peers and Radford 1943); Bawsey in Norfolk, where metal-detection has recovered seven; and Winchester, where six were recovered in the extensive urban excavations (Biddle and Brown 1990). Following received wisdom, this might lead to the proposition that the Flixborough styli demonstrate the clerical or perhaps monastic nature of the settlement. This explanation has often been applied uncritically, but the simple equation of these finds correlating with monasticism is no longer tenable. Instead, a far wider range of interpretations can be made.

First, the entire question of lay literacy has been more widely explored by scholars in recent years. It is now clear that literate abilities were far more widely available within secular society throughout Anglo-Saxon England, and similarly on the Continent (Kelly 1990; McKitterick

1989). Not only were the first Anglo-Saxons literate, bringing with them a runic alphabet, but text was also important enough to be employed on sceatta coinage from the mid to late 7th century (Rigold 1960 and 1977). Of course, we must certainly include the caveat that the term 'literacy' probably disguises a whole raft of abilities and levels at which the ability to write was practised, ranging from accomplished biblical exegeses in classical Latin, to a basic or even poor understanding of text. Regardless, the transmission of instructions, records or ideas by text was clearly not some form of Christian secret code, exclusive to the clergy. The presence of styli advances this knowledge of literacy further, since using temporary texts provides a bridge between simple or short transmissions of information, and more intense compositional work evidenced in manuscripts. It is this sense of 'literacy' with which we are most familiar in our own society.

What documentary references we do have show examples of secular literacy resting with figures in the upper echelons of society. As brief examples, Bede described two 7th-century kings, Sigeberht of East Anglia and Aldfrith of Northumbria, as *doctissimus* or 'very learned', while nobles are recorded as sending their sons to Bishop Wilfred to be educated, their sons choosing whether to become warriors or priests when they had grown up (Kelly 1990, 59–60). This same secular influence has been used to explain the preservation of Anglo-Saxon poetry such as *Beowulf*, *Waldhere* and *The Finnsburgh Fragment*, reflecting a warrior society (Wormald 1978).

Perhaps as important is the symbolic power of literacy, 'a mentality through which power could be constructed and influence exerted' (McKitterick 1989, 320). This is an aspect probably extending back to the writing of runic inscriptions, which have been seen as both cryptographic and a professional skill (Lerer 1991, 167). Still further back, the ability to read and write had an importance in the Roman world where the 'correct' understanding of grammar and literature had been essential as a social marker indicating membership of the ruling caste, rather than developing a simple literate ability (Heather 1994).

This social dimension provides a convenient point of departure for considering further the materials from which styli were manufactured. The presence of styli on very many Roman sites reflects not simply a widespread access to literacy, but the essentially functional view taken of writing implements. Most were made of iron, with little embellishment either with other metals (a few instances have decorative inlays of copper-alloy) or in shape. The presence of so many iron styli at Flixborough might similarly be taken to imply a more functional attitude to literacy relative to the use of copper-alloy examples: Little wonder that St Cassian's pupils learned to write using iron styli. If the picture from the Flixborough assemblage is more representative of the wider situation prevailing in Anglo-Saxon England, it seems likely that these writing implements were also once more common.

A principally functional view of iron styli might also

be understandable in the light of Flixborough's non-ferrous examples. Of the seven copper-alloy and silver styli, most have elements which may be interpreted as more decorative, and therefore, deliberately erring away from the purely practical, into one in which literacy or the literate abilities of the stylus owner are promoted to a more symbolic or status-based level. This is seen nowhere more clearly than in the case of Flixborough's silver stylus, no. 1006 (RF 6143). We have similarly seen the elaboration of two copper-alloy Flixborough examples with foil mounts (nos 1011–12; RFs 7518 and 11568); the use of decorative octagonal faceting to the bottom of four Flixborough stylus shafts; and the decorative Class VIIa axe-shaped eraser of no. 1014 (RF 3775). If these were our only examples of elaboration, we would be in a stronger position to declare a difference in use or ownership between iron and non-ferrous styli. Flixborough has, however, iron stylus no. 1013 (RF 12268) whose silver foil mount on the eraser fuses elements of the simple iron styli with the decoration of copper-alloy examples. It also suggests that others may once have had such mounts. This fusion suggests that we need to be wary of viewing all iron styli simply as workaday tools. The fact that an iron stylus with an interlace-decorated foil mount was also recovered from Barking Abbey (Webster and Backhouse 1991, 90, cat. 67k), and that the suggested iron stylus from Parliament Street, York, had a tinned finish reiterates this (sf 1252; Tweddle 1986, 192). Evidently, even with iron styli there was a diversity of elaboration and value attached to these tools.

Less clear is the way such differences were perceived among the Anglo-Saxons themselves. The sheer paucity of styli in Middle and Later Anglo-Saxon England, in comparison to the numbers of Roman examples, shows that overall they were neither common nor used by large numbers of people in society. Instead, they are largely restricted to sites of known ecclesiastical origin (as we might expect) or those with evidence for high-status activity. In either case, the context would allow for styli of high elaboration and expense, where statements of literate ability could be united with expensive tools that transcended practical needs.

These observations present an obvious dichotomy because most styli, and many from Flixborough in particular, are very plain, ordinary examples. Very different users and uses for them are likely. The most eye-catching, elaborate styli were shiny items that were meant to be seen. In an ecclesiastical context this may have meant their use with *tabellae*, forming diptychs, perhaps preserving the names of those for whom special commemorative prayers may have been due. Given the elaborate carving of diptychs or triptychs in the early medieval period, it would be easy to imagine the silver stylus from Flixborough forming a matching accoutrement to such a piece, positioned on an altar.

It is possible that styli had an additional literary association as pointers used in the reading of manuscript text. There is only limited evidence for such a suggestion, but

it is interesting to note the presence of many manuscript glosses up to the 11th century being 'personal ones made at the moment of reading and scratched unobtrusively with a stylus' (Parkes 1997, 3). This suggests individuals having a stylus to hand when reading. The use of book pointers has been most extensively argued for in the interpretation of objects such as the Alfred and Minster Lovell jewels as *aestels*. There is an extensive literature on this thorny identification (Keynes and Lapidge 1983; Harbert 1974; Howlett 1975; Hinton 2008). While it takes little imagination to picture an ornate gilded stylus being used to help an ecclesiastic read in full view of others during a service, we may do well also to imagine the accoutrement of a self-indulgent secular aristocrat reading or in private devotion.

If we have a ready context for these elaborate objects at the upper end of the social scale, it should be unsurprising to see individuals at both intermediate and lower ends of the same spectrum perhaps using an iron stylus with elaboration, or a plain copper-alloy example, such as Flixborough examples nos 1008 and 1000 (RFs 12268 and 4762). Either may have been treasured personal possessions for those with less wealth, while plain iron examples could have been working items perhaps shared in an everyday working environment, yet still found within a restricted circle of users with literate abilities.

If the variety of materials employed in stylus manufacture illustrates the wide uses and social resonance of these tools, it may be instructive to return briefly to examine what types of text were written on wax tablets. Only that from Springmount Bog has been found with a readable text, in this case of passages from Psalms 30–2 (Armstrong and Macalister 1920). This Irish example might suggest literacy as an ecclesiastical preserve. The Blythburgh tablet is of little help, for though it preserves letter-forms scratched through the wax into the tablet's bone surface, they cannot be read. Intriguingly though, they show all the identifiable characters to be runic, but in Latin word-forms (Parsons 1994, 222). This is analogous to the observation of Thomas Bredehoft that at least two Latin inscriptions on Anglo-Saxon objects use *fecið* rather than *fecit*, implying knowledge of the writing of vernacular characters (Bredehoft 1996, 107).

If we look back to the Roman use of wax tablets, an interesting picture emerges. The term most frequently applied is *pugillaria*, usually used to refer to notebooks, derived from the word to mean small tablets easily held in the hand (Bowman and Thomas 1983, 43). Not only is this term's use frequent in Roman sources, it is the same term Aldhelm used with which to title his riddle (Pitman 1925, 18–19). Their use in the Anglo-Saxon world has been interpreted consistently as that of short-term notation of text, perhaps in spiritual meditations of biblical passages, as potentially suggested by the Springmount Bog tablets. Yet for the Romans, the vast majority of writing tablets that have survived were used to record legal and monetary transactions (Bowman and Thomas 1983, 33; Tomlin 1996).

As such, the recording of transactions might be said to have represented medium- to long-term preservation of text. The picture of a longer-term textual use, fundamentally secular and business-based in the Roman world, forces us to acknowledge the variety of Anglo-Saxon audiences who might potentially have owned and used wax-tablets. With this, we may return to the question of the ownership of styli and examine further the contexts for their use.

The most frequently cited application has been for learning to read and write, or for writing sections of text for private contemplative study. Both have been anticipated as showing an ecclesiastical element, either through use in a monastic school or for clerical devotion, but this need not be the case. The commitment of King Alfred to educating himself and the attempts by Charlemagne to learn to write, to the extent of keeping writing tablets under his pillow, caution us against this (Keynes and Lapidge 1983; Thorpe 1969). Instead, the basic *raison d'être* of the wax-filled tablet in the Roman world may have been equally applicable in that of the Anglo-Saxon, for the maintenance of records and administrative tasks. The fact that the majority of the Flixborough styli are not only plain, but of iron, does much to suggest that this functional task might have been the primary use of literacy within the settlement, and one which continued into the Late Anglo-Saxon period.

This proposition may be pursued further. It has already been pointed out that of those 38 sites with a provenance for Anglo-Saxon styli, only 13 have documentary references leading to the identification of the sites as ecclesiastical or 'monastic'. This not only leaves the majority of stylus-producing find-spots with little or no evidence for being an ecclesiastical preserve, but it also includes a number of sites for which there is no evidence of a communal ecclesiastical component. Thus the finds from Crimlesham, Grimston, Sedgeford or Tibenham in Norfolk, or Otley and Santon Downham in Suffolk, suggest that styli were once in more widespread use in Anglo-Saxon society. It is surely no coincidence that this cluster of finds from East Anglia lies in the same region where liaison between metal-detectorists and archaeologists has been strong for many years. The distribution of styli in East Anglia may well be representative of the use and loss of these objects in other areas too. While these finds could be argued to show clergy patrolling the countryside, it might be questioned whether this was always on ecclesiastical business, or was rather 'clerical' work for secular masters – people who we increasingly realise had literate abilities, too.

Sedgeford in Norfolk is of more than passing interest. Two styli have now been recovered from excavations on the site, the same total as from the known and well-documented monastic settlements of Bradwell-on-Sea, Canterbury and Jarrow, and surpassing the single-stylus finds at a number of other documented ecclesiastical sites. Sedgeford has no evidence for any former monastic or ecclesiastical importance, although in the Late Anglo-Saxon period it possibly acted as a secular estate centre. It is this

aspect which brings it into direct dialogue with a number of other high-status sites, most notably Flixborough, but also Brandon in Suffolk, and Bawsey and Wormegay in Norfolk (Pestell 2003, 133–7). It has most commonly been the literate nature of the occupants of these sites that has encouraged an ecclesiastical component to be advocated. Yet, if we take into account the radical differences in the likelihood of secular documents surviving from this period, which are minimal in contrast to some contents of monastic libraries, the presence of styli on these sites might as easily be seen as a standard element of royal, aristocratic or high-status settlement administration.

In following this line of discussion, there is a notion that styli do not appear in urban contexts or more precisely, at *emporia* or *wic* sites. There are, to my knowledge, no styli known from *Hamwic* for instance, despite extensive excavations there. What evidence, therefore, is there for secular use in the context of trading or commercial activity? We may respond in two parts. First, it is incorrect to assert that there are no styli from any urban centres. York, Winchester and Ipswich have all yielded examples, and those from Winchester and York have been excavated from a variety of contexts. For instance, five styli of more or less certain identification were found at Brook Street, Winchester, although their dates of use are not certain; they were deposited in 10th-, 11th-, and 12th- to 13th-century contexts (Biddle and Brown 1990, 741–2). Three, and possibly four, were recovered from Parliament Street, Coppergate and Clifford Street, York (Tweddle 1986, 192; Ottaway 1992, 606–7; Waterman 1959, 81–3). Only one Anglo-Saxon stylus from York comes from a certain religious site, namely the excavations beneath York Minster (I. H. Goodall 1995, 484–5).

Ipswich provides a more curious instance. Here, a stylus was discovered buried with an unsexable, adolescent individual in grave 4269, within a cemetery at the Buttermarket site. The body has been radiocarbon-dated to Cal AD 645–680 at 95% confidence (Scull forthcoming). The iron stylus was of plain Class I form, very similar to the Flixborough example no. 1003 (RF 11238). It was buried at the waist with traces of mineralised leather adhering, suggesting that it had been carried in a pouch hung from the belt. Since the cemetery appears to be that of a trading community, in which several individuals appear from their grave-goods to be continental, Ipswich may provide an instance of a book-keeper.

Perhaps more pressing is to question the likelihood of finding evidence of administrative records being made on sites with possible craft-working quarters, and with industry based on small, probably familial, workshop practices. Their current absence might once again suggest that it is the larger, higher-status sites such as Flixborough that might be expected to produce styli. Only the larger administrative centres with developed bureaucracies and centralised control might be considered likely to have the infrastructure, staff and basic *need* for such literate practices.

Conclusion

The foregoing discussion has attempted to provide a wider context for the presence and use of Anglo-Saxon styli. Above all, it has tried to show that despite the limited evidence for literacy in secular society (a phenomenon difficult to examine in our predominantly ecclesiastical sources), its extent and therefore the use of styli are likely to have been known by the aristocracy and others with specialist social roles. Stylus use has long been seen in simplistic terms, as a tool for ecclesiastics to write temporary texts. Instead, their use had deeper resonances and implications, perhaps the most important of which is that we can no longer afford to see them solely as ecclesiastical accoutrements. Undoubtedly, styli were tools that might be expected most often on religious sites, but this does not oblige us to interpret their presence in such a light, even in the numbers recovered from Flixborough. Indeed, we may do well to conclude, as did Lönnroth in his discussion of early Norse saga writing, that 'it is perhaps not terribly important to know whether it was a monk or secular chieftain that held the pen ... the important thing is ...[the] close contact, perhaps sometimes a confrontation, but usually co-operation, between secular sponsors and clerical scribes' (Lönnroth 1991, 10). This greyness may not seem terribly satisfactory to everyone, but it was only by co-operation with the secular elites, and their gaining of distinct advantages, that the pen was to become mightier than the sword.

Acknowledgements

For their help in my research into Anglo-Saxon styli, and for making examples available for me to examine, I am especially grateful to Leigh Allen, Steven Ashley, Paul Barford, Bob Carr, Helen Geake, Chris Loveluck, Andrew Rogerson, Mark Watson and Leslie Webster.

Catalogue

Introduction

The following is a basic cataloguing of the 22 definite and probable styli found in excavations at Flixborough, describing their various attributes, including material, dimensions and decoration. The styli are described according to the classification system being developed by the author (Pestell in prep.).

Class I Styli (Fig. 3.2)

IRON STYLUS – CLASS I

995 Class I stylus, corroded but retaining enough shape to show the eraser is long and relatively unpronounced, forming an oar-like shape. The corrosion makes measurement difficult, and so those taken are approximate. There appears to be no division between the eraser and shaft, and there is no indication of any decoration or mouldings on the shaft, suggesting a straightforward forged pin with the end flattened to form a larger area for the eraser. The shaft appears to be consistent in diameter for most of its length, before tapering off to form the point.

Length: 121mm. Length of eraser: 29mm approx. Width of eraser: 13mm approx. Diameter of shaft: 5mm approx. (Fig. 3.2).

RF 3779, Unstratified.

IRON STYLUS – CLASS I

996 A Class I stylus with a flat-ended eraser developing from the shaft simply by being flattened, rather than with a sudden curved 'stop' at the shaft end like on many other styli. Yet again, corrosion on the stem has caused blisters which mean that no decoration of moulded bands can be seen, and even the shaft diameter is difficult to measure accurately. The tip was broken off, making the original length impossible to determine, although the shaft does seem to show a slight taper.

Length: 138mm (incomplete). Length of eraser: 24mm approx. Width of eraser: 13.75mm. Diameter of shaft: 5.25mm approx. (Fig. 3.2).

RF 10349, Context 6304, Phase 3bv.

IRON STYLUS – CLASS I

997 This corroded iron stylus is of Class I form, although the eraser head is well pronounced. The corrosion means that details are difficult to pick out, but it would appear that the eraser was divided from the shaft by a collar of at least one band, approx. 2mm wide. The eraser end appears to have been flat, with a slight nick out of one end. The eraser seems to flatten down from the stem on only one side, but this is probably due to it being both corroded and slightly bent.

Length: 44mm (incomplete). Length of eraser: 28mm. Width of eraser: 14.75mm. Diameter of shaft: 4.5mm. (Fig. 3.2).

RF 12144, Context 6490, Phase 5b–6i.

IRON STYLUS – CLASS I

998 A corroded iron stylus of Class I form. The exact dimensions are difficult to establish since the object is now bent, corroded, and has its tip broken off. The eraser flanges directly from the short thickness, and so its exact length is somewhat subjective. The eraser end is not quite straight, although it has possibly been slightly damaged through corrosion. The eraser is created by flattening from the shaft thickness, and tapers evenly on both sides. Although corroded, the stylus shape is quite well preserved and there is no evidence that the piece ever had collars or other decoration. The shaft appears to taper down very gradually to the now-missing point. The shaft is approx. 2.5mm in diameter where the tip is now broken off. This piece is very small and in many respects feels more like a pin, but its small size is not dissimilar to other styli, for instance examples from Otley, Suffolk (OTY 020) and Bawsey, Norfolk (Webster and Backhouse 1991, 231, no. 188c).

Length: 75mm now (81mm flattened out), end broken. Length of eraser: approx. 14mm. Width of eraser: 11.75mm. Diameter of shaft: 3.5mm.

RF 12315, Unstratified.

IRON STYLUS – CLASS I

999 This end fragment has an eraser directly expanded from the shaft, in the manner of Class I. The eraser is quite slender in relation to its length; this appearance is compounded, as its length cannot be measured easily due to the lack of any collar rings at the end of the shaft. The shaft is corroded, and so a detailed appreciation is difficult, although it would appear to flatten slightly near the eraser on one side. The proportions of the eraser make it similar to those of Class VIII which are more oar-shaped, but this is clearly of Class I. Although corroded, the object has been conserved and it shows no evidence of having once had rings or collars to the shaft end. The corrosion makes it difficult to see

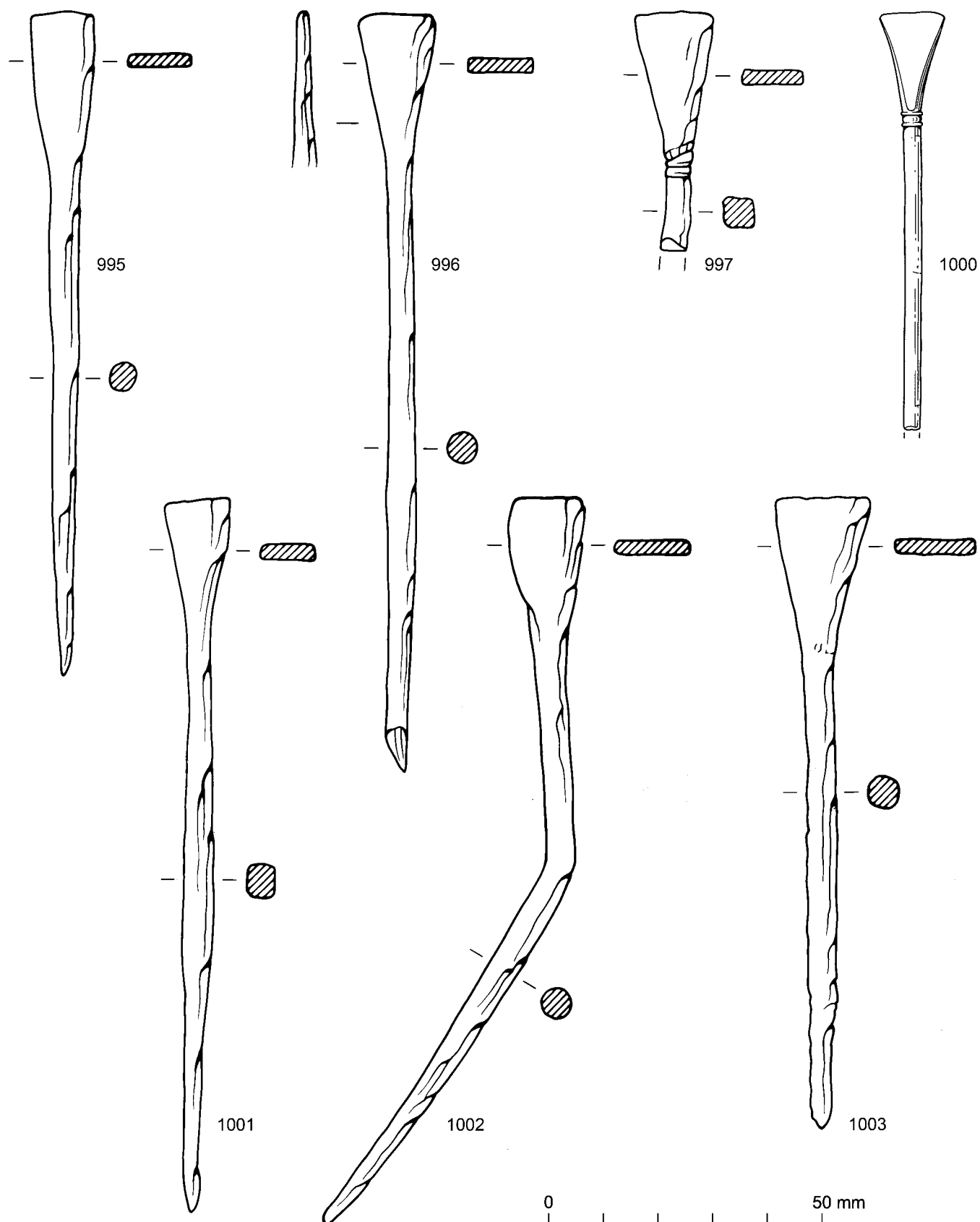


FIG. 3.2. Class I and Class I/II styli in iron and copper alloy. Scale 1:1.

precisely, but the eraser head appears to be flat-ended. Length: 49mm now (incomplete). Length of eraser: approx. 21mm. Width of eraser: 12.5mm. Diameter of shaft: 3–4.5mm. RF 13450, Unstratified.

COPPER ALLOY STYLUS WITH GILDING – CLASS I

- 1000 A small, delicate and simple stylus, Class I. The eraser progresses directly and quite smoothly from the thickness of the main shaft, which is of a consistent circular cross-section. The eraser is demarcated from the shaft by a small collar of three bands, the central one of 1mm width, flanked by two smaller bands c.0.5mm wide. These bands are barely wider than the main shaft. The eraser's end is slightly rounded in section, and the end edge slightly bowed. The eraser appears to bear a lighter golden surface on both sides, possibly the remains of a gilding, but this is unclear. Since the metal is in very good condition, it may just be the good patination of the copper alloy after cleaning in conservation. Length: 76mm (incomplete; end broken off). Length of eraser: 18mm. Width of eraser: 11.75mm. Diameter of shaft: 3mm. (Fig. 3.2). RF 13546, Context 12243, Phase 5a–6ii.

Class I/II Styli (Fig. 3.2)

IRON STYLUS – CLASS I/II

- 1001 A borderline Class I/II stylus that sits best in Class I at present. There are heavy soil/corrosion deposits over the entire object, making it difficult to determine its character. There does not appear to be any decoration in the form of moulded bands/collars, but the entire stylus seems to be present, giving an accurate length. There is also a pronounced taper to both ends of the thick shaft. The overall shape is quite good and probably representative of the original, despite the corrosion. Length: 130.5mm. Length of eraser: 27mm approx. Width of eraser: 14mm approx. Diameter of shaft: 6mm max. approx. (Fig. 3.2). RF 1567, Unstratified.

IRON STYLUS – CLASS I/II

- 1002 This stylus has a large amount of concretion and blistering, hindering examination. The eraser is of a good triangular form and borders Class I/II. The corrosion makes it impossible to see whether there is any decoration, and has left a thick shaft, tapering to the point, which still survives. If the corrosion has not exaggerated the object too severely, this would have been a sturdy stylus. Length: 153mm approx. (now bent and 137mm, tip to tip). Length of eraser: 26mm, approx. Width of eraser: 16.75mm. Diameter of shaft: 7mm approx., but corroded. (Fig. 3.2). RF 1595, Context 1440, Phase 6iii.

IRON STYLUS – CLASS I/II

- 1003 A borderline Class I/II stylus. Corrosion makes it difficult to determine where the end of the eraser lies. The shaft is similarly corroded, but it is clearly very thick in comparison to most other styli (*cf.* no. 1004: RF 4316). In tapering outwards from the shaft, the stylus is best classified as Class I, although the triangular shape is quite strong. So far as can be determined through the corrosion, there is no decoration

in the form of moulded bands or collars. However, there is a slight thickening in the middle of the shaft. The eraser has a straight, flat edge which does not appear to chamfer in when seen side-on. The stylus point, if not broken off, is very blunt in comparison to other examples, but this impression may have been exacerbated by the corrosion. Length: 116mm. Length of eraser: 29mm approx. Width of eraser: 18mm. Diameter of shaft: 6mm approx. (Fig. 3.2). RF 11238, Context 10772, Phase 4ii.

Class II Styli (Fig. 3.3; PLS 3.1–3.2)

IRON STYLUS – CLASS II

- 1004 This iron stylus is too heavily corroded for any worthwhile analysis, except to say that the eraser seems large and broad and tending towards Class II. The shaft has no visible traces of decoration, but it appears to be complete to the tip. The shaft is very thick and tapers towards the point. This thickness is no doubt influenced by the extent of the corrosion, although a stylus now in the Ashmolean Museum, Oxford, also has a very thick shaft (Hinton 1974, 8, no. 2 and pl. IV). Length: 118.25mm. Length of eraser: 27mm approx. Width of eraser: 20mm approx. Diameter of shaft: 6.75mm. (Fig. 3.3). RF 4316, Context 1773, Phase 3bv–4i.

COPPER ALLOY STYLUS – CLASS II

- 1005 An extremely simple Class II stylus with a plain straight-edged triangular eraser joined to the stem by the collar 2.25mm wide, consisting of three narrow 0.75mm bands, slightly uneven in their circumference. The shaft is completely plain with a slight broadening in thickness tapering away to a point. A slight scratching on one side of the eraser is shiny and suggests gilding, but this is probably just a scrape made during recovery or conservation. The eraser tapers with a slightly rounded section ending at the collar. Length: 120mm. Length of eraser: 24.5mm. Width of eraser: 24mm. Diameter of shaft: 4.5mm. (Fig. 3.3; Pl. 3.1). RF 4762, Context 4702, Phase 3bv.

SILVER STYLUS – CLASS II

- 1006 This is a Class II stylus, but one which shares many characteristics with others from Flixborough. Its bold triangular eraser is typical of Class II. Its corners are slightly rounded off, and in side view the eraser tapers towards the edge, giving a sharper chisel-end finish. The eraser is divided from the shaft by a collar with a small spherical bulge 2.5mm wide, flanked on either side by two small bands, each one approx. 0.75mm wide. The shaft is divided into two zones by a second collar, again featuring a spherical bulge flanked on either side by a pair of bands. The bulge is approx. 2.5mm wide, the bands each approx. 0.5mm wide. The shaft upper zone is baluster-shaped, of circular section, up to 4.25mm in diameter, and has at its widest point a pair of bands formed by three grooves within the stem. The lower zone bulges quickly out from the collar, then attaining a taper. This lower zone of the stem is octagonal in section. 1.5mm from the stylus tip is the start of a final band 0.5mm wide, formed by two grooves. The final 1.5mm of the tip is round in section.

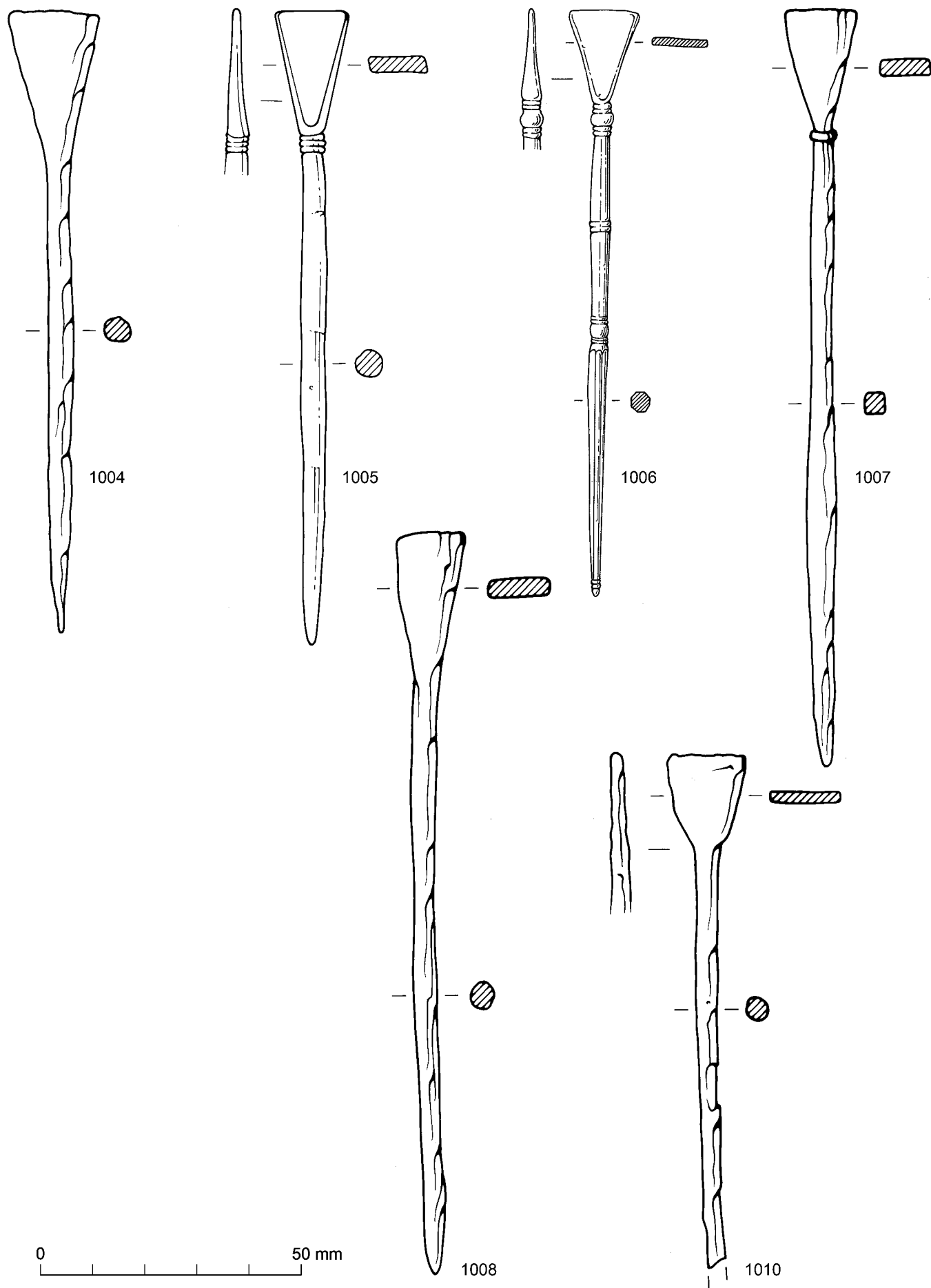


FIG. 3.3. Class II and Class IV styli in iron, copper alloy, and silver. Scale 1:1.

The eraser bears several scratches, but this cannot be associated with use wear, as it is unclear whether they may instead have been caused by taphonomic processes, recovery, or even in cleaning during conservation.

The stylus is an exquisite piece and, although small, is perfectly balanced when held. In its composition, it is identical to nos 1011–12 (RFs 7518 and 11568), in having divisions of the shaft into upper and lower zones, the former having a baluster shape with two integral bands at its centre, the latter being octagonal in section, with a division to isolate the actual tip. The weight of the stylus is 9.056g (or 0.319oz/139.32 grains). Put another way, this is the equivalent of about 9 *sceattas*, based on an average weight of 15.5 grains per *sceatta*: At 15.5 grains, =8.988 coins, at the ideal of 16 grains =8.7 coins. The ideal Offa penny of 18 grains =7.74 coins (Keary 1887, xxxviii–xxxix).

Length: 112mm. Length of eraser: 18mm. Width of eraser: 14.5mm. Diameter of shaft: 4.25mm. (Fig. 3.3; Pl. 3.2). RF 6143, Context 5503, Phase 4ii.

IRON STYLUS – CLASS II

1007 A Class II iron stylus, the eraser well-preserved with a straight-edged end, the flat lateral sides tapering slightly in a wedge shape in long section. The edges of the eraser taper from the shaft in a straight line. The eraser is divided off from the shaft by a single band, approx. 1mm thick. The shaft is of circular section.

A large concretion of mineralised wood and corrosion adhering to the shaft means that details of any further decoration are obscured. The shaft is of a fairly consistent thickness before tapering to its point, which still survives. This stylus is of importance for showing the survival of at least one decorative element, demonstrating that iron styli had the potential to be just as ornate as their copper-alloy counterparts.

Length: 146mm. Length of eraser: 23.5mm. Width of eraser: 14mm. Diameter of shaft: 4.5mm approx. (Fig. 3.3).

RF 12304, Unstratified.

Class IV Styli (Fig. 3.3)

IRON STYLUS – CLASS IV

1008 A very heavily corroded stylus that makes any identification and comments difficult. The eraser seems to be slightly oar-shaped and therefore of Class IV form. The stylus is slightly bent, but retains a pointed end. There is no decoration visible due to the corrosion, which also means that the recorded shaft diameter thickness and shape (circular at present) may not be totally accurate.

Length: 142.5mm. Length of eraser: 29mm approx. Width of eraser: 24mm. Diameter of shaft: 5.25mm. (Fig. 3.3).

RF 1345, Context 1284, Phase 6iii.

IRON STYLUS – CLASS IV

1009 This stylus is similar to Class IV in having a more rounded taper from the end of the eraser. The eraser itself can be measured only approximately, as there is no collar dividing it from the shaft. The end of the eraser is bent through about 45° and its end is now broken - so it might have once been a bit longer. The eraser is formed from the shaft thickness, tapering gradually, to produce an eraser that, as it survives, is quite thick. The shaft is quite squared off, although both attributes might be affected by the corrosion. Adding a

large fragment, which has flaked off, back onto the eraser thickens the whole piece up quite considerably.

Length: 32.5mm (broken). Length of eraser: approx. 16mm. Width of eraser: 15.25mm. Diameter of shaft: 4mm.

RF 9170, Unstratified.

IRON STYLUS – CLASS IV

1010 A Class IV stylus of iron with the tip missing. This eraser is one of the longest in this class, but its rounded edges are clear despite the corrosion. The eraser is of a broad, rounded form, directly joining the top of the shaft with no apparent trace of a collar/bands. The eraser thins down from the stem, evenly on both sides. There is a reasonable amount of corrosion on the shaft, making it difficult to tell whether any former decorative bands or mouldings were once present, but there seems to be a slight thickening of the shaft to the middle and tapering toward the broken end. The rounded shape of the stylus takes as its best parallels a stylus from Whitby (Peers and Radford 1943, fig. 15, no. 5) and a metal-detector find from Otley, Suffolk (OTY 020), in private possession.

Length: 99mm (incomplete). Length of eraser: 19mm.

Width of eraser: 15mm. Diameter of shaft: 4.25mm approx. (Fig. 3.3).

RF 10574, Context 1835, Phase 6ii–6iii.

Class VI Styli (Fig. 3.4; Pl. 3.3)

COPPER ALLOY STYLUS WITH SILVER FOIL MOUNT – CLASS VI

1011 This elaborate Class VI stylus is, in its composition, fundamentally identical to no. 1012 (RF 11568) below, in having an interlace eraser panel, and shaft divided into two zones by collars with a smaller pair of bands in the bulging upper zone of the shaft.

The stylus is much corroded, meaning that the shaft diameter is only approximate. The foil mount is decorated in repoussé, showing within a bell-shaped outline, a long-necked stylised beast, its legs running into the interlace. The bell-shaped eraser is divided from the shaft by a spherical moulding approx. 4.75mm wide, flanked on either side by pairs of bands, each some 0.75mm wide. The shaft is divided into two by a second collar nearly midway along the stem. This is again a spherical moulding, approx. 4.25mm wide, flanked on either side by pairs of bands, each some 1mm wide. The upper zone of the stem, of circular section, bulges up to 5.5mm in diameter. In the centre, at its thickest point, two more bands are formed within the shaft thickness by three grooves. The lower zone of the shaft is heavily corroded, but a small area near the tip retains its original structure, showing at least six faceted edges. Unfortunately these facets do not extend completely around the shaft, and so the number of sides is unclear, although it appears to have been eight. Approximately 3mm in from the tip, a single band, 0.5mm wide, is preserved, just visible within the corrosion.

This stylus, although very heavily corroded, provides a striking parallel to no. 1012 (RF 11568), being fundamentally identical in composition. The only differences are in the shaft's central collar being of a different shape, the different eraser shape, and the foil mount having a slightly different interlace pattern.

Despite bad corrosion, those parts still retaining their original structure retain many traces of their original gilding.

Length: 151.5mm. Length of eraser: 21.75mm. Width of eraser: 18mm. Diameter of shaft: 5.5mm. (FIG. 3.4).
RF 7518, Context 3758, Phase 4ii.

COPPER ALLOY STYLUS WITH FOIL MOUNT – CLASS VI

- 1012 An elaborate stylus of Class VI. The eraser is divided from the shaft by a collar consisting of a spherical bulge 4mm wide, flanked on either side by two narrow bands each approx. 0.8mm wide. The shaft is divided into two zones by another collar. The first length, of round section, is baluster-shaped, bulging up to 4.5mm in diameter. At its widest point, two bands are formed by the use of three grooves. The collar that divides the shaft is comprised of a concave central band 4mm wide, flanked on either side by two bands each about 0.75mm wide. The second section of the stem tapers to a point after a brief bulging, immediately beneath the collar. This section of the shaft is octagonal. The last 3mm of the shaft is divided off, a 0.5mm band just 2mm from the point tip, the band and the last 2mm tip being of round section.

Side-on, the eraser is centrally placed at the end of the shaft, a feature that would have been unbalanced by the addition of the foil mount. The former presence of a foil mount cannot, therefore, be inferred from the position of the eraser, making it possible that many more styli had such attached plaques which have been lost. The foil mount bears an 8th-century interlace design contained within two concentric triangular bands, all formed in repoussé. Elements of gilding appear to be left on the bands and stem and also partly the eraser, suggesting a two-tone gilded and silvered former appearance. In its composition, this stylus finds direct parallels in nos 1006 and 1011 (RFs 6143 and 7518).

Length: 136.5mm (unbent). Length of eraser: 25mm. Width of eraser: 13.75mm. Diameter of shaft: 4.5mm max. (FIG. 3.4).

RF 11568, Context 6235, Phase 3bv.

IRON STYLUS WITH SILVER FOIL MOUNT – CLASS VI

- 1013 A Class VI stylus. The eraser is distinguished by the addition of a silver foil repoussé mount in which, within a triangular border line, is an 8th-century interlace design. The end of the eraser is unclear, and probably extended slightly beyond the end of the foil mount. There is no trace of there having been a moulded collar of bands to separate the eraser from the shaft, and as preserved, the shaft itself has no evidence of any decorative bands along its length. The shaft is also of a more or less consistent thickness with only minimal thinning before its broken-off end. The eraser is flat-ended with one corner lost through corrosion.

The presence of the foil mount is crucial in showing iron styli to have been as sophisticated as their copper-alloy counterparts, and it makes it likely that many were also originally decorated with bands of decoration, dividing the shaft into different zones, which may have varied in the shape of their section. The heavier corrosion of the ironwork may mean that more styli of iron from Flixborough had such decorative panels, but which have simply become detached leaving plain-looking instruments.

Length: 104mm (incomplete). Length of eraser: 23mm approx. Width of eraser: 15mm. Diameter of shaft: 5mm approx. (FIG. 3.4; PL. 3.3).

RF 12268, Context 12270, Phase 5b.

Class VII Styli (FIG. 3.4; PL. 3.4)

COPPER ALLOY STYLUS (GILDED) – CLASS VII

- 1014 A well-formed stylus of copper-alloy, Class VII. The bell-shaped eraser has flat sides tapering off to an end which is bow-shaped, and chisel-ended in section. The eraser is connected to the shaft by a collar featuring two narrower bands, each about 1mm in width, then a longer, bulging band 2mm wide, followed by a further two 1mm wide bands. The bands can be seen to be slightly uneven from the side. The shaft has a neat octagonal section for the 57.5mm of its upper zone, before a further collar of two 1mm bands, a bulging 2mm central band, and two more 1mm bands. The final part of the shaft bulges slightly, before tapering away to a point 43mm further on. Traces of gilding survive on the collar bands nearest the eraser, suggesting that either this end, or more probably the whole object, was once gilded.

Length: 139mm. Length of eraser: 23mm. Width of eraser: 12.5mm. Diameter of shaft: 4mm. (FIG. 3.4; PL. 3.4).

RF 3775, Unstratified.

Other (FIG. 3.4)

COPPER ALLOY STYLUS – FRAGMENT

- 1015 This is a short length of shaft ending in a point that has been classified as a stylus, although there is little morphologically to confirm this, and it is unclassifiable: it could equally be the end fragment of a pin. Severe corrosion lumps/products adhere. The main interest of this piece is that it does not appear to have been snapped or broken, but cut, an angled edge going through most of the thickness before stopping at a flat-cut edge.

Length: 39.25mm (incomplete). Length of eraser: –. Width of eraser: –. Diameter of shaft: 3.5mm max. (FIG. 3.4).

RF 6119, Context 3758, Phase 4ii.

- 1016 An iron stylus classified as Class II on the basis of its straight-edged eraser. As usual, corrosion makes it impossible to see whether there were decorative elements such as rings or collars, although what remains makes this seem unlikely. A band of heavy encrustation along the shaft compounds the difficulty. Conservation has suggested that this particular find is plated, although it is not clear with what, and no XRF examination has been undertaken. The stylus is unusual in two principal respects. First, it is very short, especially in relation to the size of its eraser. This may be because it has been cut down slightly from an earlier, longer, length. At 94mm, with a clear pointed tip, it is the shortest of the complete Flixborough styli and shorter than the vast majority of other Anglo-Saxon styli. In length, only an example from Fen Ditton in Cambridgeshire is close in length, and this seems likely to have been cut down. The second unusual feature is the hole drilled through the eraser, considered in more detail in the preceding general discussion.

Length: 94mm. Length of eraser: 30mm approx. Width of eraser: orig. approx. 15mm. Diameter of shaft: 4.25mm

RF 465, Context 463, Phase 2–4.

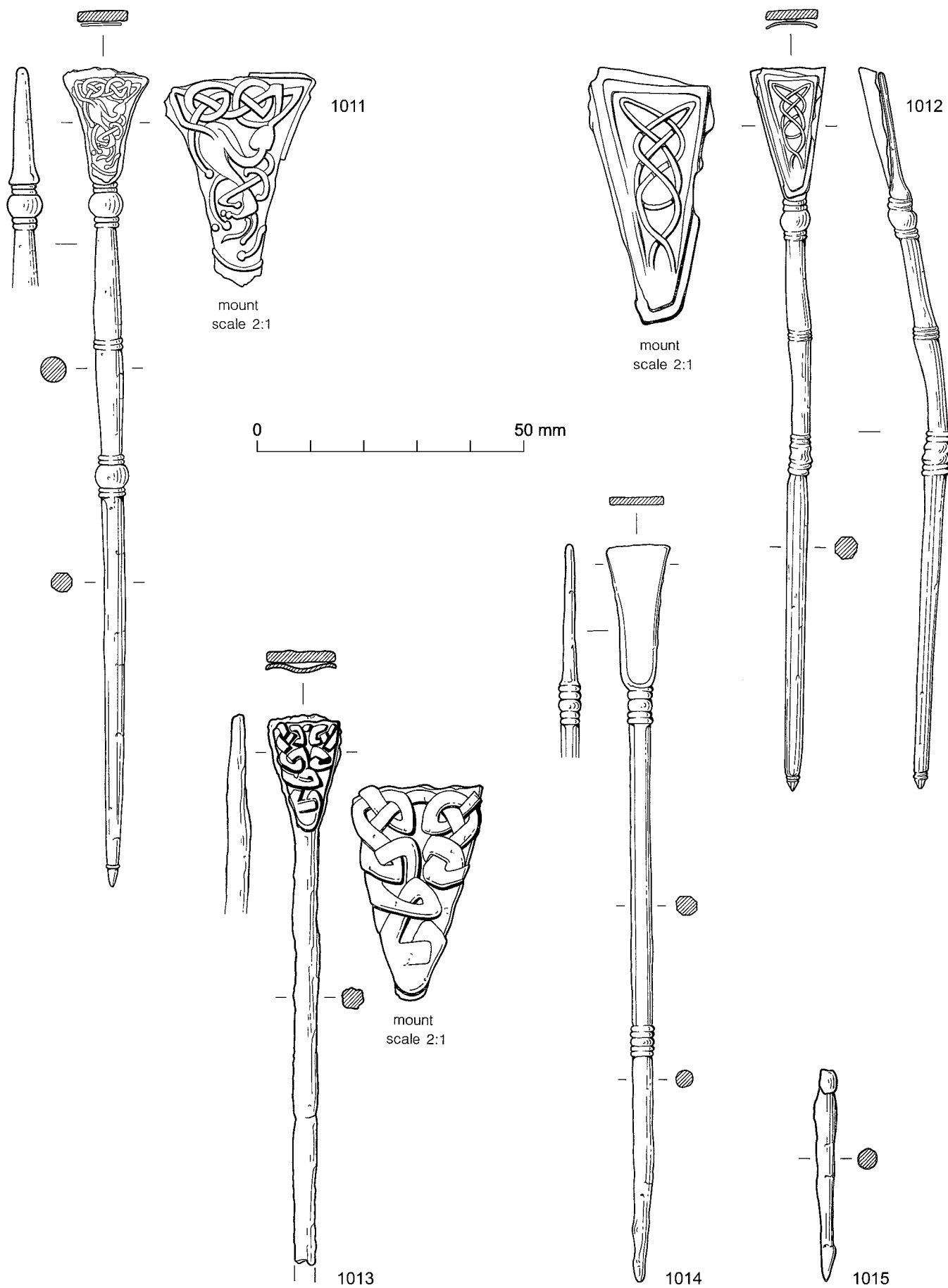


FIG. 3.4. Class VI styli in copper alloy and iron with foil mounts, and Class VII styli in copper alloy, and a copper alloy stylus fragment. Scale 1:1.

A decorated silver plaque, possibly from a book cover

by Nicola Rogers

Made of debased silver with mercury gilding, no. 1017 (RF 6767) is a slightly convex chip-carved sub-square plaque, one corner of which has been broken away; a rivet-hole in each side indicates the means of attachment (FIG. 3.5; PL. 3.5). Deep chip-carved interlace enmeshes a bi-ped with a pricked ear and an extended wing and back leg; interlace also pours forth from its mouth. The border and the beast are decorated with punched dots. Two-legged beasts became common motifs of decorated metalwork and manuscripts in the second half of the 8th century (Tweddle 1992, 1156–7), as well as in other media such as embroidered textiles, e.g. the early 9th century Maaseik panels (traditionally said to be from a chasuble made by Saints Harlindis and Relindis, and subsequently moved to the parish church of Maaseik / Maeseyk in Belgium: Webster and Backhouse 1991, 184–5, no. 143), and sculpture: see the 9th century cross-shaft from Croft on Tees, North Yorkshire (Webster and Backhouse 1991, 153, no. 115). The punching on the body and the border, the pricked ear, the wing and the two legs of the beast on no. 1017 (RF 6767) are all closely paralleled on the Witham pins – particularly the middle pin – a set which dates to this period (Webster and Backhouse 1991, 227–8, no. 184). The horned creature may also be seen as somewhat similar to the horned beast on the Ormside bowl (Webster and Backhouse 1991, 173, no. 134). As with the contemporary no. 25 (RF 5467; see Ch. 1.1, above), this plaque represents a fine example of decorative metalwork of the second half of the 8th century.

Metal rectangular or square plaques are often interpreted as mounts from book covers – see for example the early 9th-century gold plaque depicting St. John the Evangelist from Brandon, Suffolk (Webster and Backhouse, 1991, 82, no. 66a), and no. 1017 (RF 6767) may have had a similar function, although it has no obvious iconography indicating use on a religious item.

Catalogue

1017 Plaque, sub-square, complete apart from one corner which has broken off; chip-carved interlace incorporating winged two-legged beast with ?horn, angular snout, one leg extending behind, short front leg appears clawed; body decorated with punched dots, as is the square border which has a single rivet-hole in the centre of each side. Mercury-gilt all over, some worn away on edges. L.25, W.23.4, Th.1.1. (FIG. 3.5; PL. 3.5)
RF 6767, Context 6499, Phase 6ii–iii.

The inscribed objects

by Michelle P. Brown and Elisabeth Okasha

with catalogue entries by Nicola Rogers

Two objects inscribed with text in the Latin alphabet were found during the excavations at Flixborough. The first to be

found was the finger-ring illustrated in FIG. 3.5 and PL. 3.6. It was found in November 1989 as an unstratified find in topsoil. The second was the lead plaque illustrated in FIG. 3.5 and PL. 3.7. It was found in refuse dump 1728, dating from Phase 5b, overlying the demolished building 29.

The Finger-ring (no. 1018; FIG. 3.5 and PL. 3.6)

The ring is made of debased silver and measures 20.6mm in diameter. It is composed of a flat strip of silver, 7mm in width, the overlapping ends being secured by two rivets; it has a lentoid or lozenge-shaped bezel. The outer face contains some mercury gilding, but this has worn off around the edges, presumably during use of the ring. The outer face contains a text of deeply-incised letters, 4–5mm in height, formed with a V-shaped tool. The background to the letters is decorated with small punched ovals. The text is set completely round the hoop, with the initial cross overlying the joint. This indicates that the text was incised after the hoop was riveted.

The text reads (see Note 1) ±ABCDEFGHIKL. The B and probably also the cross are upside-down, presumably in error. The letter-forms are half-uncial, a script which was in use in manuscripts throughout the Insular period. Similar letter-forms occur on a number of inscriptions dating from the 8th to the 9th century (Okasha 1968, 321–8, Table 1b; Okasha 1992, 47, no. 194 and 56–57, no. 208).

Partial alphabets occur on other Anglo-Saxon inscribed objects. There is, for example, a small stone from Barton St. David, Somerset, containing the letters A to E (Okasha 1992, 41–2, no. 186) and a piece of leather from Dublin with the letters A to F followed by two illegible letters (Okasha 1992, 44–5, no. 190). These parallels suggest that the Flixborough ring was intended to contain a partial alphabet, and that we need not assume the loss of another ring containing the letters M to Z.

There are 17 other inscribed finger-rings dating from the Anglo-Saxon period (Okasha 1971; Okasha 1992, no. 204; and an example in private possession from Sleaford, Lincolnshire). They contain various different sorts of texts, but no other text on a finger-ring consists of any part of an alphabet. There are various possible reasons why a partial alphabet might be inscribed on a finger-ring. It could, for example, have been done to display knowledge on the part of the maker of the ring. It could also have been to raise the status of the ring, and hence of its owner, by association with literacy. Another possibility is that the ring served as a devotional mnemonic: *abcedarial* prayers in which supplications are arranged in alphabetic order marked by initials are found in some early 9th-century prayer-books, for example, London BL Royal MS 2.A.XX (Kuypers 1902, 200–25; M. P. Brown 1996).

The finger-ring is dated to some time within the 8th and 9th centuries. Since it was an unstratified find, the ring lacks any precise archaeological context, but two other sorts of evidence confirm its dating. Firstly, the half-uncial script used is typical of this period. Secondly, of the 17 other Anglo-Saxon inscribed rings known, 10 are likely

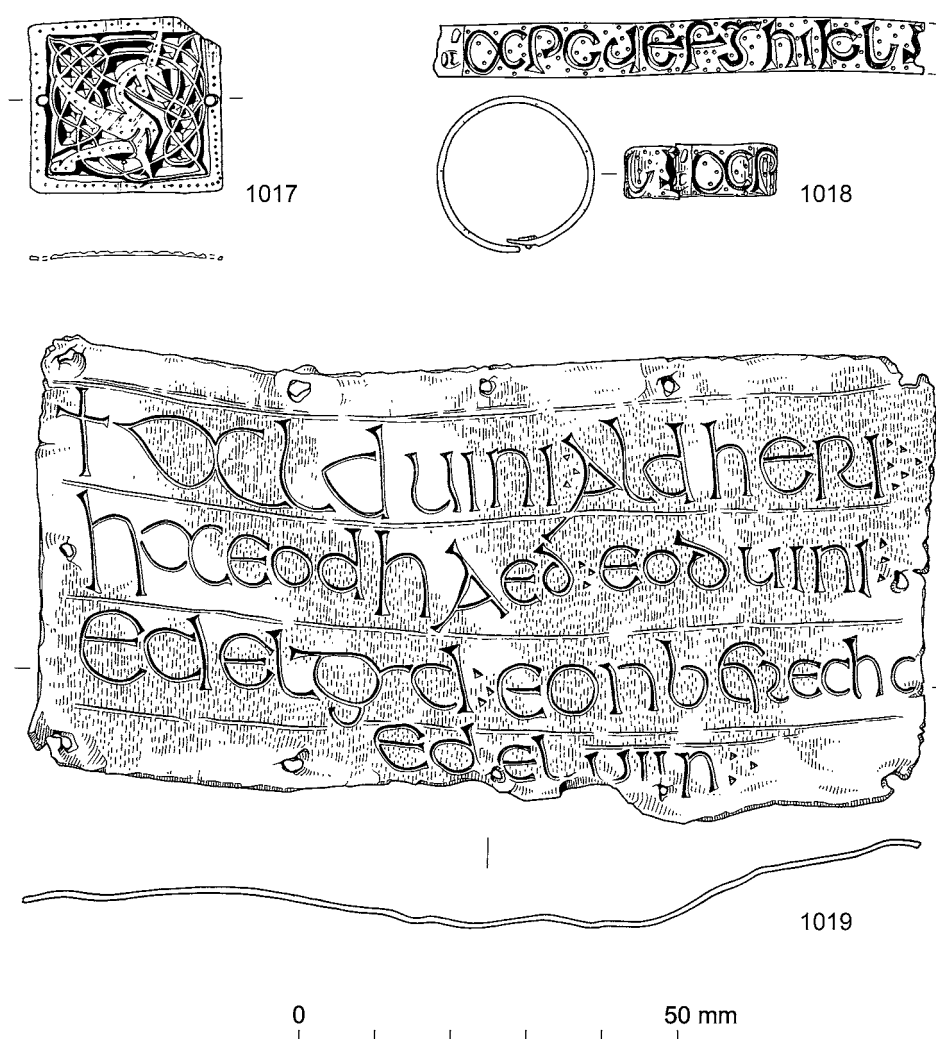


FIG. 3.5. A decorated silver plaque (possibly from a book cover), an inscribed silver finger-ring, and an inscribed lead plaque. Scale 1:1.

to date from the 9th century, or the 9th–10th centuries, while six cannot be more closely dated (Okasha 1971). The Flixborough ring is certainly to be dated to the 8th or 9th century, but there is insufficient evidence to date it more precisely within this period.

The lead plaque (no. 1019; FIG. 3.5 and PL. 3.7)

The plaque is made of sheet lead and measures 59mm in height, 117mm in length and 1mm in thickness. It contains twelve holes, presumably to attach it with nails to another, probably wooden, object. The nail holes vary between 1 and 3mm in diameter. Five of the holes are damaged in such a way as to suggest that the plate had been forcibly pulled off some other object. On the other hand, there is no sign of staining or corrosion around the holes, nor any sign of flattening of the lead around the back of the holes:

both of these might have been expected had the plaque been actually nailed onto another object.

The face of the plaque contains four lines of text separated by four lightly incised horizontal ruling lines. The letters vary in height between 5 and 13mm, and generally do not touch the ruling lines. Many of the letters of the lowest line of text do, however, touch the ruling lines; moreover, these letters are small and seem to have been squashed in around the nail holes. All this suggests that the lowest line of text may have been incised after the rest, and that the plate may have originally been designed to contain only six names.

Beneath the existing text some traces of other marks are visible. When enhanced by xero-radiography these marks may be seen as letters, although they are not sufficiently legible to be read. It is possible that there was

an underlying text which may have formed an initial stylus sketch for the existing inscription. It seems unlikely that the Flixborough text is a palimpsest, since it would be easier to melt down the lead, or use another piece of lead, and start afresh, rather than to re-inscribe over an existing text.

The text reads (see Note 1):

+ALDUINI:ALDHERI:
HAEODHAED:EODUINI:
EDELG/YD:EONBE/RECH[T]
EDELUI[I]N:

It consists of an initial cross, followed by seven Old English personal names: *alduini*, *aldheri*, *haeodhaed*, *eoduni*, *edelgyd*, *eonberech[t]* and *edelui[i]n*. The names *alduini*, *aldheri*, *eoduni*, and *eonberech[t]* are forms of the male names Ealdwine, Ealdhere, Eadwine and Eanbeorht respectively. The name *edelgyd* is a form of the female name Aedelgyð. The name *haeodhaed* is probably a form of the male name Eadhaeð. The spelling *aeod-* for *ead-* is recorded; instances occur amongst the Old English names in Bede (Sweet 1885, 134–5, lines 40 and 72). An intrusive *h* is occasionally found before vowels (Sweet 1885, 139, lines 174–5). The name *edelui[i]n* may be a form of the male name Aedelwine with the last two letters transposed in error. Alternatively, it could be a form of the female name Aedelwyn, although the spelling of double *i* for *y* would be unusual.

The forms of the names can all be paralleled in the name forms of the Durham *Liber Vitae* and in the pre-Viking Northumbrian coinage (Sweet 1885; Smart 1987, 245–55). The spellings of the Flixborough names exhibit features associated with non-West-Saxon dialects of Old English. Examples include the monophthongs in *ald-* (two examples) and in *-berech(t)* (first *e*). Non-West-Saxon spellings might be expected if the composer of the text was from Flixborough or the surrounding area. The spelling of the names gives some linguistic dating evidence: the three instances of final *-i* for *-e* in the name-elements *-wine* and *-here*, and the intrusive second *e* in *-berech(t)*, probably suggest a date before the end of the 9th century, although similar forms occur sporadically in the 10th-century Northumbrian glosses added by Aldred to the Lindisfarne Gospels and the Durham Ritual.

The script used is a hybrid (or high-grade) minuscule, a manuscript script using a mixture of uncial, half-uncial and minuscule forms. In the manuscript tradition, this script was enjoying increasing popularity as a formal alternative to half-uncials in southern England, during the late 8th and early 9th centuries. The closest manuscript parallels to the script are found in some Mercian charters of this date, for example, a charter issued by King Offa of Mercia in 793–6 (London BL Add. Ch.19790), and in the later manuscripts of the ‘Tiberius’ group, for example, the *Royal prayer-book* (London BL Royal MS 2.A.XX) and the *Book of Nunnaminster* (London BL Harley MS 2965; see also M. P. Brown 1996, 164–9). Close epigraphic parallels also occur on stones from Durham and from Yarm, North Yorkshire,

both of which date from the 8th or 9th centuries (Okasha 1971, 65–6, no. 30; and 130, no.145). The evidence of the script and the language therefore suggest a date during the 8th or 9th centuries. There is, however, insufficient evidence to date the plaque more precisely within these centuries.

The forms of the ligatures and of the word-division symbols used in the Flixborough text can be paralleled in both manuscript and epigraphic texts. The word-division symbol used is a triple dot (a common Insular form of punctuation derived from the Irish system of *distinctiones*), which follows all the names except for the second and the fourth. The symbol following the second name, *aldheri*, consists of six dots, not three. This may have served to separate the first two names from the rest, perhaps to indicate that these people were of higher status than the others. There is no word-division symbol following the sixth name, *eonberech(t)*. If, as suggested above, this name was originally intended to be the final one, this might explain the lack of symbol here; however, the seventh name, *edelui(i)n*, is also followed by a word-division symbol.

All the personal names in the text are recorded Old English names; many indeed are common names. None of the persons named can therefore be identified securely. The plaque was intended to be fastened to some other object, probably a wooden one. Since seven names are given, it seems unlikely that this object was a coffin (although the coffin of St. Cuthbert also contained relics of other subsequent saints, e.g. Oswald). The text could well have been commemorative, however, perhaps used to mark seven graves or to act as a sort of epigraphic *Liber Vitae*. Alternatively, it might have recorded relics or the remains of revered people such as the founders or worthies of a religious establishment.

Other than the Flixborough example, there is only one other inscribed plaque or plate from Anglo-Saxon England, discovered in six fragments at Kirkdale, North Yorkshire (Watts *et al.* 1997). There are twelve Anglo-Saxon lead crosses, most of them funerary crosses, including two from Lincolnshire (Okasha 2004).

Notes for section 3.3

1. The text is transliterated according to the following system:
A = a legible letter A; A = a letter A, damaged but legible;
[A] = a damaged letter where the restoration is fairly certain;
A/B = a ligature of A and B; : = a word-division symbol.

Catalogue entries by Nicola Rogers

(The following two entries are based on those prepared for Webster and Backhouse 1991 by Kevin Leahy. Dimensions are in mm. L. = length; W. = width; Th. = thickness; Diam. = diameter)

FINGER-RING

- 1018 Silver hoop formed from strip, ends overlapped and secured by two rivets whole mercury-gilded, gilding worn off on the edges. Decorated with incised letters of half-uncial

form reading A–L (lacking J), letters deeply cut with V-shaped tool, small punched ovals scattered around and within inscription, upside down Latin cross separates beginning and end of inscription, and has been cut over the join. Diam. 20.6 Section W.7, Th.1.3. (Fig. 3.5 and Pl. 3.6)

RF 693, Context 0.

LEAD PLAQUE

1019 Sheet lead plaque bearing four lines of text which have been cut with a V-shaped chisel. Between the lines of text are four lightly incised horizontal lines used in setting out the letters. The individual words are separated by groups of triangular incisions. Underlying this is an earlier inscription. Around the edge of the plaque are 12 nail-holes ranging in size from 1mm to 3mm diameter. Five are damaged in a way which suggests that the plaque had been torn away from the surface – probably wooden – to which it was fixed. Distortion may have occurred during burial.

L.117mm; W.59mm; Th.1mm. (Fig. 3.5 and Pl. 3.7)

RF 1781, Context 1728, Phase 5b

3.4 Possible liturgical objects: Iron bells and bell clappers

by Patrick Ottaway

Bells

There is a complete bell no. 2450 (RF 60001), 160mm high, and its clapper no. 2451 (RF 60002) from the Flixborough hoard (see Ch. 7.2, Fig. 7.5), but from the excavation site there are eleven bell case fragments (five unstratified) and seven clappers (three unstratified). The usual method of bell construction in the Anglo-Saxon and equivalent periods in northern Europe as described by Bourke (1980, 52–4) is exemplified by no. 2450 (RF 60001). The case was made from a single sheet of iron folded over in the centre to give a characteristic triangular fold on each shoulder and a seam on each side soldered with the copper alloy brazing metal which also covered the entire surface of the object. On occasions the seam was nailed as can be seen on no. 1020 (RF 138; Period 7), an incomplete case, which also has a strip nailed to the base for strengthening purposes. Before folding, two holes were punched in the head of the case and after folding a ring was usually set into them, both to serve as a handle and to suspend the clapper.

The clappers exhibit a variety of forms. No. 1031 (RF 2527; Phase 5b) has a slight waist between the shank and a globular base and no. 1032 (RF 4295; Phase 6ii) also has a globular base. No. 1036 (RF 12722; unstratified) has a spherical expansion at the base of shank. The stems of nos 1034–5 (RF 6536, Phase 6ii; and RF 9894, unstratified) expand in regular manner to the tip (Fig. 3.6).

Coppered bells of the form described above have a long history in England and elsewhere in northern Europe. They were known in the Roman period and early Anglo-Saxon examples come from Sutton Courtenay, Berks. (Leeds

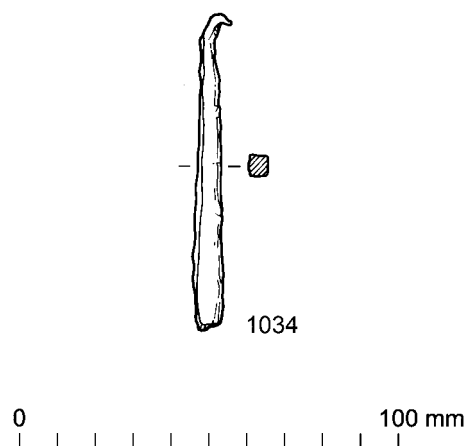


Fig. 3.6. Iron bell clapper. Scale 1:2.

1923, 181, pl. 27, fig. 2 B) and a grave of probable 7th-century date at Tattershall Thorpe, Lincs. (Hinton 1993, 156, fig. 10). There are also numerous 8th- to 11th-century examples and they occur in many sizes as is implied by the Flixborough assemblage, the largest (apart from no. 2450, RF 60001) being no. 1026 (RF 8114; unstratified) which was at least 84mm high. Other bells from Flixborough were probably comparable to two small bells, height 30mm and 36mm, from Anglo-Scandinavian contexts at 16–22 Coppergate, York (Ottaway 1992, 557, 2752–3) and another from Gauber High Pasture, North Yorks. (King 1978, 22). A larger bell similar in size to the bell in the hoard comes from a late 9th-century context at Repton, Derby. (unpublished, excavated by M.Biddle and B.Kjølbye-Biddle, sf3812).¹ Bells in the Anglo-Saxon or equivalent periods in Britain and Ireland are thought to have been used to summon Christians to worship and in the liturgy, but they were also, presumably, hung around the necks of cattle and sheep.

Note for section 3.4

1. There is another recently found large bell from a high Pennine site at Asby Winderswath, Cumbria (unpublished).

Catalogue

BELLS

All the bell cases have been made from a single piece of iron folded over in the centre to give a seam on each side. A ring was inserted through two holes at the head to serve as a handle and from which to suspend the clapper. All cases have plating material in various forms of copper alloy and this was also used to solder the seams. Details of metal given, if it has been analysed.

- 1020 One side of a case with a seam that was nailed and soldered. There was also a strip, of which a fragment survives, which was nailed around the base of the case. Plating is copper with trace of tin. L.48, W.49mm.
RF 138, Context 1, Topsoil.

-
- 1021 Case fragment. Plating is copper alloy. L.42, W.33mm.
RF 738, Context 617, Phase 6iii.
- 1022 Corner of case and fragment of ring. Plating is copper alloy. L.62mm.
RF 1039, Unstratified.
- 1023 Case fragment. L.24, W.14mm.
RF 2054, Context 2017, Phase 6iii.
- 1024 Incomplete case and ring fragments. Plating is copper alloy. L.57, W.77mm.
RF 2566, Context 2181, Phase 6iii.
- 1025 Corner of case and ring fragment. L.22, W.25mm.
RF 7174, Context 7123, Phase 6iii.
- 1026 Crushed case fragment. L.84, W.82mm.
RF 8114, Unstratified.
- 1027 Two plate fragments fused together. L.28, W.25mm.
RF 8320, Unstratified.
- 1028 One side of a case and a ring fragment. L.62, W.30mm.
RF 8937, Context 3107, Phase 4ii.
- 1029 Fragment of case – two plates brazed together. Plating is leaded copper. L.30, W.26mm.
RF 12608, Unstratified.
- 1030 Incomplete case and fragment of ring. Plating is copper, tin, lead alloy. L.43, W.52mm.
RF 13014, Unstratified.
- BELL CLAPPERS (FIG. 3.6)
All have a looped terminal at the head.
- 1031 Slight waist between shank and globular base. L.40mm.
RF 2527, Context 2491, Phase 5b.
- 1032 Globular base. L.72mm.
RF 4295, Context 3891, Phase 6ii.
- 1033 Incomplete. L.40mm.
RF 5152, Context 5193, Phase 4ii–5a.
- 1034 Shank expands from head to base. L.83mm (FIG. 3.6).
RF 6536, Context 6471, Phase 6ii.
- 1035 As no. 1034 (RF 6536). L.84mm.
RF 9894, Unstratified.
- 1036 Spherical expansion at base of shank. L.41mm.
RF 12722, Unstratified.

4 Building Materials and Fittings

*Patrick Ottaway, Lisa M. Wastling, and Rosemary Cramp,
with contributions by Glynis Edwards[†], Ian Panter and Jacqui Watson*

The structural and stratigraphic evidence for the various buildings excavated at Flixborough is considered in detail in Volume 1 (see Loveluck and Atkinson, Chs 3–7), whilst their plan forms, reconstructions, and analogies with buildings of similar date from other sites in Britain and N.W. Europe are considered in Volume 4 (see the essays by Loveluck and Darrah in Ch. 3 of that volume). This chapter examines the artefactual evidence for these various structures.

The excavations produced a wide range of structural ironwork and fittings: clench bolts, roves, staples, collars, hinges, hinge pivots, and a variety of carpentry nails, rivets, studs and tacks. Many of the timber buildings yielded fragments of fired clay and daub, which were used both as a walling component, and as a construction material for ovens and hearths. Lastly, a few of the buildings were glazed, and this chapter includes a study of the glass quarries and lead window comes.

4.1 Structural ironwork and fittings **by Patrick Ottaway, with contributions** **by Lisa M. Wastling, Glynis Edwards[†],** **Jacqui Watson and Ian Panter**

Iron nail typology *by Lisa M. Wastling*

1463 iron nails were found, 644 of which were stratified, representing 44% of the total.

344 stratified nails were assigned to seven types (A–G), based on the form of the head. These are as shown in the table at the foot of the page and are illustrated in Fig. 4.1.

Of the 537 stratified nails, where the form of the shank could be ascertained, 94% bore shanks of square cross-section; the remaining 6% were rectangular in section.

Types A, E and F could be used on nails or studs, although no complete examples of type E were recovered. A stud is generally taken to be a nail with a short shank and a head larger than c.25mm in width.

The overwhelming majority of nails were of type A, bearing a flat head. Most were of a size likely to be used in carpentry. When used, the nail was possibly hammered into a bored hole, of narrower dimensions than the nail

Type	Description	Range of length (mm)	Quantity
A	flat-headed, round, sub-rectangular or occasionally diamond-shaped	17–120	315
B	L-shaped head	34–42	3
C	headless	29–35	3
D	expanded oval or T-shaped head	None complete	2
E	hollow domed head	None complete	6
F	solid domed head	31–130	14
G	globular head	43	1

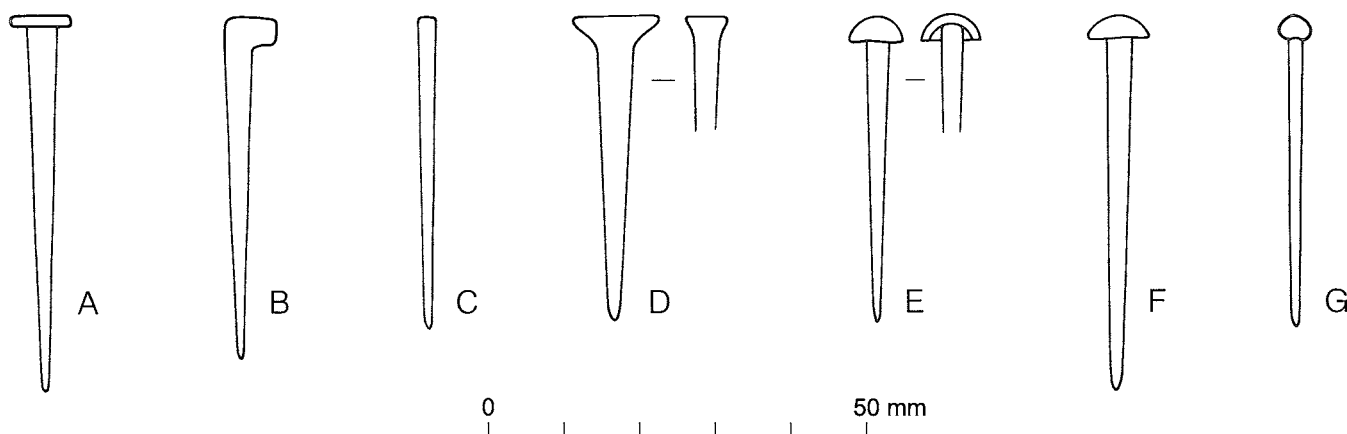


FIG. 4.1. Iron nail types A–G. Scale 1:1.

shank, in order to prevent the splitting of the wood, or lessen the force needed to penetrate dense timber.

Type A nails have been the most universally used hand-wrought nails from the Roman period onwards. The heads were possibly formed with the use of a nailing iron, such as the Roman examples illustrated by Mercer (1960, fig. 204), or using a punch or nail-heading hole on an anvil, which can be seen on one of the two examples of Anglo-Saxon anvils so far found in Britain, in the smith's grave at Tattershall Thorpe, Lincolnshire (Hinton 2000, fig. 15, 4). Twenty nails have their shanks off-centre; these appear to be a small proportion where the hammering of the head has been slightly miss-aimed, though they still are functional enough to be used. It may be the case that some off-set heads were occasionally deliberate, for example those at Wharram Percy, where they are relatively common (Watt 2000, 141).

There appears to be no direct correlation between the size of the head and the length of nails up to 100mm in length. Some have been utilised as studs, with heads playing a large and possibly decorative role. Once the length of the nail is increased to 100mm and above, however, both the shank and head increase in dimension. The longest two nails of head form A (RFs 1269 and 5503) bear the largest heads and thickest shanks: these represent a group of heavy-duty nails, possibly with a specific function. The heads of these two types may not have originally been as flat, as they may have been distorted by the force of hammer blows required to drive in such large nails.

Type E bears a similar head form to Roman upholstery studs (cf. Manning 1985 fig. 32, 8). It appears possible that the six examples of this type may also have been used as such. The domed head would be more effective than a flat head at gripping the fabric or leather, and holding it in place, thus preventing wear around the nail shank. In addition, the domed head would have given a decorative appearance. These types of nails may also have been used

during the manufacture of leather harness. This form of nail is still in use today as an upholstery nail, albeit of copper alloy. The earliest nail of this type was recovered from a Phase 2 floor (3336), within building 20.

Type G, of which a single example was found (RF 3499), was also possibly used for upholstery (*ibid.*, 135).

Types B, C and D were probably used for carpentry, when the use of a nail with a protruding head would have been unsuitable or unsightly, such as in wooden floor surfaces and on fine carpentry. Their slender heads, or lack of a head, would have enabled them to be hammered completely into the wood. It seems likely that some of the headless nails at Coppergate, in York were deliberately fashioned so (Ottaway 1992, 611), though there is a possibility that the three from Flixborough may represent nails which are either unfinished, or which have subsequently lost their heads.

Nails, rivets, studs and tacks

by Patrick Ottaway

Included amongst the above examples are at least 46 items which merit specific description and catalogue entry.

Plated nails

There are 15 nails, or tacks, which are plated with non-ferrous metal. This served both to prevent corrosion and to act as decoration. Where analysed, the plating is tin-lead alloy. No. 1052 (RF 9858; Phase 6ii–7) stands out from the other nails in having a solid and pronounced dome-shaped head.

None of these plated nails needs be earlier than Phase 5a and most, if stratified, are from Phase 6. However the tin-plating of nails (and other iron objects) appears to have begun in the early 8th century, and as time went on the practice became more widespread. Forty-four plated nails were found in Anglo-Scandinavian contexts at 16–22 Copper-

gate, York (Ottaway 1992, 611–13). In addition, tinned dome-headed nails have been found used for decoration in a number of surviving wooden objects in Scandinavia, including a sledge and chest from the Viking Age ship burial at Oseberg (Grieg 1928, figs 17, 34 and 134).

Split rivet

No. 1054 (RF 12566; unstratified) is a small split rivet, used for repairing a vessel. RF 8045 (Phase 6ii–iii) is a split rivet holding two fragments of plate together.

Studs

There is a very distinctive group of objects from Flixborough which may be described as studs, of which there are 29 examples (nine unstratified). They usually exist as a round or roughly rounded head which is slightly domed, and a short shank no more than 20mm long, often set slightly off the centre of the head. There are also, however, two objects classified under this heading (nos 1055 and 1066; RFs 352 and 8133 – respectively from topsoil and Phase 6ii–iii) which have sub-rectangular heads and lengths of 53mm and 50mm.

The stratified studs come largely from Phase 6 contexts. There are no obvious parallels for them from other Anglo-Saxon contexts and their function is uncertain, although they may have been used to attach coverings of leather or

other materials to doors or items of furniture. They may also have been considered decorative.

Mount or stud

No. 1084 (RF 8962) is an unstratified tin-plated mount or small stud with a domed head in the form of a cross.

Clench bolts and roves (FIG. 4.2)

There are 27 clench bolts, or 'clench nails' (five unstratified), and 23 additional roves. A clench bolt was used for joining overlapping timbers, and consisted of a nail-like component which, once it had passed through the timbers to be joined, had a small pierced plate – the rove – set over its tip. The tip was then burred, or more usually hammered over (i.e. clenched) to hold the bolt in place. [For a description of the use of clench bolts, see Christensen 1982, 331.]

All the examples from Flixborough have shanks of rounded cross-section, and 22 of the bolts have diamond-shaped roves, while 20 of the additional roves are also diamond-shaped; the remaining roves, where the shape is determinable, are rectangular. The Flixborough bolts are for the most part substantial. Although no. 1106 (RF 12914; unstratified) is only 25mm long, the others are 42–87mm long, and seven are over 70mm. The shanks are up to 10mm thick.

It is hard to estimate the thickness of wood these bolts

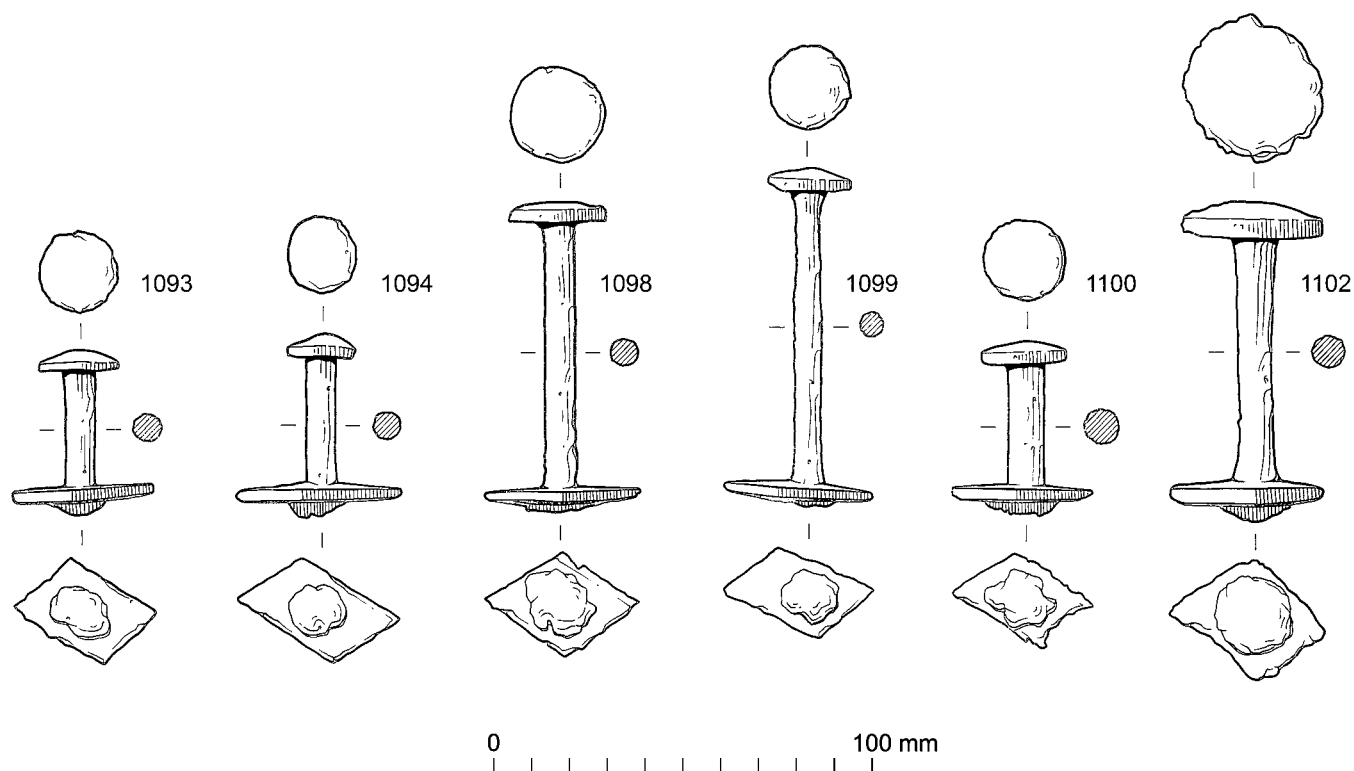


FIG. 4.2. Iron clench bolts. Scale 1:2.

would have joined, because they could either have passed through the thickness of two pieces of wood, or, of only one, if the timbers were scarf-jointed. Nonetheless, the size of the Flixborough clench bolts suggests their use in either large timber objects, or clinker-built ships in which they would have joined the strakes and secured other elements. For comparative purposes, it may be noted that the clench bolts from the strakes of the Sutton Hoo ship measured *c.* 54, 70 and 92mm (Evans and Bruce-Mitford 1975, 355–65, figs 277 and 279).

While the most common context for the discovery of clench bolts in the Anglo-Saxon period is ships, they do occur on occupation sites, and another large group was found in Anglo-Scandinavian contexts at 16–22 Coppergate, York. It may be noted, however, that the pattern of dimensions was quite different from that at Flixborough. In the Coppergate group only three out of 55 examples were over 60mm in length, the majority measuring 27–45mm. Although these smaller bolts could have come from ships, they may have been more suited to service in doors, wagon bodies or even coffins – all uses which are attested in the 8th–10th centuries (Ottaway 1992, 617–18). Another difference between the clench bolts from York and those from Flixborough is that the York examples, like nails of the Anglo-Saxon period, usually had shanks of rectangular cross-section, while those from Flixborough all, as noted, have shanks of rounded cross-section. While the York clench bolts could have been hammered into wood, the Flixborough bolts being thicker and of rounded section were probably set in pre-drilled holes; the hole is likely to have had a either a slightly smaller or identical diameter as the bolt, as in the way that wooden pegs/dowels are used.

The only multiple instances of clench bolts within the same context are as follows:

Contexts 2488 (3 examples), 2562 (2) and 3107 (2).
The low numbers of such incidences suggest that few overlapping sections of articulated timber, joined in this way, were discarded on the site.

Staples

Both clench bolts and staples are ubiquitous forms of fastening which can be found from the Romano-British period onwards, with no very obvious changes in form: on their own, they are undiagnostic, and this clearly causes a problem on a site like this which has not only a small but marked presence of Romano-British material surviving in what are clearly Anglo-Saxon contexts, but also a continuum into the post-Conquest medieval period.

There are *c.* 225 staples which may be divided into four groups: rectangular, U-shaped, looped, and a fourth group the members of which are usually U-shaped, but are made from flat strips of iron which are relatively thin compared to the strips of rectangular cross-section used for the other groups.

There are *c.* 75 rectangular staples, many of which are now incomplete. The arms taper to wedge-shaped tips, and in many cases they are bent outwards or inwards. Width

varies from 19–56mm, and the length of the arms varies from 11–45mm.

There are 102 U-shaped staples. The arm tips are usually pointed, and in a few cases the wider faces of the arms are in the same plane as the staple itself, rather than at 90° to it as is normal. In some cases, the arm tips are bent outwards, and in rather fewer cases bent inwards. Width varies from 12–45mm, and length from 15–68mm, except for one staple (no. 1265; RF 9181, Phase 4ii) which is 106mm long. An unstratified staple (no. 1296; RF 13090) is plated. This is very unusual, and it presumably came from a chest or casket with other plated fittings.

There are 18 looped staples. These are staples with a loop at the head, and arms which then lie close together below it; in some cases the tips are turned outwards. Length varies from 33–66mm, and width 10–23mm.

The fourth group of staples, of which there are *c.* 30, are those made from thin flat strips. In form they are typically U-shaped, with arms which are bent outwards at *c.* 90°, and often looped over in an extravagant manner. The U-shaped part of the staple is usually small; maximum length is 50mm, but most measure *c.* 15–30mm. Overall width is rarely more than *c.* 40mm. Whereas staples in the previous groups would usually have been hammered into place, those in this group are insufficiently robust. They were presumably passed in a part-formed state through pre-drilled holes, before being given their final form.

The function of staples was varied, but principally it was to join pieces of wood together, or to hold fittings such as chains, hasps and handles in place. In view of the small size of most of the Flixborough staples, and the lack of large specimens comparable to those found in Roman and later Anglo-Saxon contexts, the second function is likely to have predominated at this site. This is to some extent confirmed by the survival of staples attached to other fittings, such as hasps nos 1718–20 (RFs 586, 733 and 1799), and stapled hasp no. 11 (FX 88, R16) from the burial chest (see Ottaway in Volume 1, Ch. 8.3, catalogue no. 11). While on the subject of staple function, it should finally be noted that two objects, closely resembling rectangular staples with inturned arms, and measuring 48 × 20mm, were found serving as belt clasps in an Anglo-Saxon burial at Yeavering, Northumberland (Hope-Taylor 1977, fig. 87.2).

All the forms of staple described here are well-known in Anglo-Saxon contexts elsewhere, although the fourth is rare in those of the late Anglo-Saxon period. It may also be noted that when the staples from Flixborough are compared with those in the large assemblage from 16–22 Coppergate, York (Ottaway 1992, 619–23), there is a striking difference in the relative numbers of the rectangular and U-shaped forms, as can be seen in FIG. 4.3.

In addition, when rectangular and U-shaped staples are considered in terms of their size, it appears that while there is considerable variation in both groups, there are no examples at Flixborough of the large and robust rectangular staples found at York which have lengths of up to *c.* 80mm.

	Rectangular	U-shaped
Flixborough	75 (42%)	102 (58%)
Coppergate	98 (78.5%)	27 (21.5%)

FIG. 4.3. Flixborough and 16–22 Coppergate, York: number of rectangular and U-shaped staples.

Context	Rectangular	U-shaped
3107	9	7
3989	4	7
10772	4	3
6300	3	1
3891	1	2
6472	1	3
2611	0	3
3758	0	3
2177	2	0

FIG. 4.4. Incidence of multiple finds of staples in the same context.

There are some notable concentrations of staples recovered from the same contexts: as many of these are dump layers, or deposits in the ditch, these suggest that large pieces of structural woodwork (presumably from redundant or derelict buildings) were being discarded in these layers.

Collars

There are 10 small collars, objects which are similar to staples, but have overlapping arms; in two cases (nos 1361–2; RFs 5454 and 6607) – respectively from Phases 4ii and 6ii–iii – the arms ends are twisted around each other. No. 1364 (RF 6812) is pierced for attachment with a rivet. Collars were used in a similar way to small staples for holding fittings in place, although no. 1364 (RF 6812) may have served to grip the end of a wooden handle, such as might be found on an awl.

Hinges, hinge pivots etc.

This broad heading includes 58 examples of hinge straps, hinge pivots, U-eyed hinges and fittings; as many of these could also relate to domestic fittings, this whole category is discussed in Ch. 5, below.

Catalogue

Nails, studs and rivets

PLATED NAILS

Plating metal given if analysed.

- 1037 Plating is tin
RF 786, Context 636, Phase 6iii.
1038 Plating is tin-lead

RF 1200, Context 1182, Phase 6iii.

- 1039 Lead detected at top of shank
RF 2254, Context 2024, Phase 6iii.
1040 Head only. D.15mm Plating is tin-lead
RF 2401, Context 2365, Unstratified.
1041 Domed head. L.12mm
RF 2495, Context 2488, Phase 5b–6ii.
1042 Domed head. Plating is tin. L.17mm
RF 3868, Context 3730, Phase 6ii.
1043 Shank largely missing. Head: D.16mm
RF 5486, Context 3758, Phase 4ii.
1044 Plating is tin-lead.
RF 6851, Context 6300, Phase 6iii–7.
1045 Head only. Plating is tin. D.33mm
RF 6984, Context 6300, Phase 6iii–7.
1046 Shank bent at 90° in centre. Plating is tin-lead. L.22mm
RF 8316, Context 3989, Phase 6iii.
1047 Plating is tin.
RF 8899, Context 3989, Phase 6iii.
1048 Plating is tin-lead.
RF 8903, Context 3107, Phase 4ii.
1049 Plating is tin-lead.
RF 9183, Context 3107, Phase 4ii.
1050 Plating is tin-lead.
RF 9262, Context 3107, Phase 4ii.
1051 Plating is tin-lead.
RF 9683, Unstratified.
1052 Domed head. Plating is tin. L.39mm
RF 9858, Context 6300, Phase 6iii–7.
1053 Plating is tin.
RF 12668, Unstratified.

SPLIT RIVET

- 1054 Arms splayed in opposite directions. Head: D.16mm
RF 12566, Unstratified.

STUDS

Unless stated all these objects consist of a round or roughly round head which is slightly domed. A short shank projects or projected from the concave face.

- 1055 Sub-rectangular head. L.50, W.41mm
RF 352, Context 1, Topsoil.
1056 Head only. D.38mm
RF 1236, Unstratified.
1057 Head only. D.48mm
RF 1806, Context 1479, Phase 6iii.
1058 Shank off-centre. D.56mm
RF 1965, Context 1728, Phase 5b.
1059 Oval head only. D.56mm
RF 3619, Context 3451, Phase 6iii.
1060 D.56, L.18mm
RF 3769, Context 3241, Phase 6ii.
1061 D. 44, L.12mm
RF 4607, Context 3989, Phase 6iii.
1062 Shank missing. D.43mm
RF 5225, Context 3730, Phase 6ii.
1063 D. 44, L.16mm

- RF 6671, Context 6343, Phase 6ii–6iii.
- 1064 Head incomplete. D.51, L.10mm
RF 7919, Context 6343, Phase 6ii–6iii.
- 1065 Shank missing. D.42mm
RF 7993, Unstratified.
- 1066 Sub-rectangular head. L.53, W.50mm
RF 8133, Context 6343, Phase 6ii–6iii.
- 1067 D.40, L.11mm
RF 8266, Context 3989, Phase 6iii.
- 1068 D.43, L.12mm
RF 8378, Unstratified.
- 1069 D. 41, L.10mm
RF 9020, Context 3107, Phase 4ii.
- 1070 Head only. D.64mm
RF 9190, Context 3107, Phase 4ii.
- 1071 D.70, L.8mm
RF 10613, Context 10393, Phase 6ii–6iii.
- 1072 Shank off-centre. D.45, L.10mm
RF 10957, Unstratified.
- 1073 Flat oval head only. D.50mm
RF 11000, Context 6472, Phase 5b–6i.
- 1074 Head only. D.42mm
RF 11345, Context 10772, Phase 2–4ii.
- 1075 Incomplete. D.53mm
RF 11441, Context 11436, Phase 3bii–3bv.
- 1076 Head only. D.48mm
RF 12318, Unstratified.
- 1077 Damaged. Shank off-centre. D.37mm
RF 12348, Context 10772, Phase 2–4ii.
- 1078 Incomplete flat head, stub of shank. D.33mm
RF 12365, Context 10772, Phase 2–4ii.
- 1079 Shank off-centre. D.50, L.12mm
RF 12927, Unstratified.
- 1080 Damaged head only. D.48mm
RF 12969, Unstratified.
- 1081 Head only. D.32mm
RF 13207, Unstratified.
- 1082 Shank off-centre. D.40, L.12mm
RF 13327, Unstratified.
- 1083 Shank off-centre. D.44, L.12mm
RF 13586, Unstratified.
- MOUNT OR STUD
- 1084 Mount or small stud with domed head in form of a cross, shank largely missing. Plated (tin-lead). L.15, W.26m
RF 8962, Unstratified.
- Clench bolts (Fig. 4.2)*
All have rounded heads and shanks of rounded cross-section.
- DIAMOND-SHAPED ROVES
- 1085 L.43mm
RF 1566, Context 1587, Phase 6iii.
- 1086 Rove incomplete. L.39mm
RF 1594, Context 1588, Phase 6iii.
- 1087 L.77mm
RF 1882, Context 1728, Phase 5b.
- 1088 L.48mm
RF 2011, Context 2016, Phase 6iii.
- 1089 L.51mm
RF 2174, Context 2020, Phase 6iii.
- 1090 L.47mm
RF 2537, Context 2488, Phase 5b–6ii.
- 1091 L.51mm
RF 2679, Context 2488, Phase 5b–6ii.
- 1092 L.47mm
RF 2680, Context 2488, Phase 5b–6ii.
- 1093 L.42mm (Fig. 4.2)
RF 2767, Context 2611, Phase 5a.
- 1094 L.44mm (Fig. 4.2)
RF 2786, Context 2562, Phase 5b.
- 1095 L.70mm
RF 2789, Context 2562, Phase 5b.
- 1096 Incomplete rove and stub of shank. L.33mm
RF 2806, Context 268, Phase 2i–4ii.
- 1097 Rove has one rounded end. L.76mm
RF 2937, Context 2562, Phase 5b.
- 1098 L.81mm (Fig. 4.2)
RF 3297, Context 3217, Phase 5b.
- 1099 L.87mm (Fig. 4.2)
RF 3373, Context 3320, Phase 4i–4ii.
- 1100 L.44mm (Fig. 4.2)
RF 3466, Context 3464, Phase 4i–4ii.
- 1101 Rove and stub of shank only. L.37mm
RF 3866, Context 3730, Phase 6ii.
- 1102 L.81mm (Fig. 4.2)
RF 4342, Context 3107, Phase 4ii.
- 1103 Rove fragmentary, shank bent. L.42mm
RF 4595, Unstratified.
- 1104 Head missing, shank incomplete. L.53mm
RF 9182, Context 3107, Phase 4ii.
- 1105 Head missing, shank incomplete. L.62mm
RF 10436, Context 1892, Phase 6ii–6iii.
- 1106 L.25mm
RF 12914, Unstratified.
- OTHER ROVE SHAPES
- 1107 Roughly rectangular rove. L.73mm
RF 13180, Unstratified.
- 1108 Rounded rove. L.53mm
RF 13522, Unstratified.
- 1109 Square rove. Shank bent into C-shape. L.c.40mm
RF 12852, Unstratified.
- FRAGMENTARY ROVE
- 1110 L.29mm
RF 8592, Unstratified.
- SHANK ONLY
- 1111 L.50mm
RF 130, Context 1, Topsoil.
- ROVES ONLY: DIAMOND-SHAPED
- 1112 L.36mm
RF 1908, Context 1891, Phase 6ii–6iii.
- 1113 L.44mm
RF 2191, Context 2020, Phase 6iii.

- 1114 Incomplete. L.28mm
RF 2427, Context 2176, Phase 6iii.
- 1115 L.35mm
RF 2813, Context 51, Phase 4ii.
- 1116 Incomplete. L.32mm
RF 3785, Unstratified.
- 1117 L.55mm
RF 3845, Context 3989, Phase 6iii.
- 1118 Incomplete. L.40mm
RF 4063, Context 3891, Phase 6ii.
- 1119 L.32mm
RF 6087, Context 3758, Phase 4ii.
- 1120 Fragment
RF 6149, Context 6136, Phase 3bv.
- 1121 L.25mm
RF 7350, Context 3758, Phase 4ii.
- 1122 L.36mm
RF 7473, Context 6803, Phase 5b–6i.
- 1123 Fragment.
RF 7831, Context 7817, Phase 6iii.
- 1124 Fragment
RF 7685, Context 7383, Phase 3bv–4ii.
- 1125 Incomplete. L.35mm
RF 9561, Unstratified.
- 1126 Curved in cross-section. L.38mm
RF 9829, Unstratified.
- 1127 Incomplete. L.17mm
RF 11299, Unstratified.
- 1128 L.33mm
RF 11584, Context 6235, Phase 3bv.
- 1129 L.26mm
RF 11667, Context 11631, Phase 3biii.
- 1130 Incomplete. L.33mm
RF 12478, Unstratified.
- 1131 L.26mm
RF 13153, Unstratified.
- ROVES ONLY: RECTANGULAR
- 1132 L.25mm
RF 5194, Context 4963, Phase 2–3a.
- 1133 L.16mm
RF 6801, Context 6300, Phase 6iii–7.
- 1134 L.25mm
RF 7161, Context 7123, Phase 6iii.
- Staples*
L. = length of arms
- RECTANGULAR
- 1135 Arms incomplete. L.10, W.39mm
RF 401, Context 400, Phase 2i–4ii.
- 1136 One arm largely missing. L.20, W.27mm
RF 735, Context 617, Phase 6iii.
- 1137 One arm missing, surviving arm tip in-turned. L.19, W.36mm
RF 798, Context 636, Phase 6iii.
- 1138 L.22, W.43mm
RF 1332, Context 1286, Phase 6iii.
- 1139 Arm tips clenched. L.29, W.53mm
RF 1848, Context 1831, Phase 6ii–6iii.
- 1140 L.28, W.38mm. Wood traces on one arm, grain going across. Seems to be a ring-porous wood, but not enough to identify.
RF 1977, Context 2137, Phase 5a.
- 1141 One arm missing, surviving arm tip in-turned. L.30, W.50mm
RF 2014, Context 2023, Phase 6iii.
- 1142 Surviving arm bent into U-shape. Probably random plant stems. L.18, W.40mm
RF 2259, Context 459, “natural”.
- 1143 Twisted, one arm missing. L.30, W.51mm
RF 2332, Context 51, Phase 4ii.
- 1144 Fragment.
RF 2467, Context 2177, Phase 6iii.
- 1145 One arm tip out-turned. L.17, W.26mm
RF 2472, Context 2177, Phase 6iii.
- 1146 Bent out of shape. W.39mm
RF 3147, Context 3106, Phase 4ii.
- 1147 L.28, W.47mm
RF 3252, Context 3238, Phase 6ii.
- 1148 L.37, W.20mm
RF 3375, Context 3331, Phase 3bi–3bv.
- 1149 Incomplete. L.18, W.15mm
RF 3608, Context 3610, Phase 6ii.
- 1150 Arm tips clenched. L.28, W.49mm
RF 3796, Unstratified.
- 1151 Surviving arm tip in-turned. L.21, W.50mm
RF 4079, Context 3891, Phase 6ii.
- 1152 One arm missing. L.13, W.40mm
RF 4100, Context 3107, Phase 4ii.
- 1153 Arms tips in-turned. L.17, W.22mm
RF 4256, Context 3989, Phase 6iii.
- 1154 One arm missing. L.24, W.63mm
RF 4355, Context 3107, Phase 4ii.
- 1155 One arm missing, surviving arm tip in-turned.
RF 4594, Unstratified.
- 1156 One arm missing. L.45, W.26mm
RF 5563, Context 5139, Phase 5a.
- 1157 Both arms incomplete. L.20, W.21mm
RF 6191, Context 5503, Phase 4ii.
- 1158 Arm tips in-turned. L.21, W.56mm
RF 6528, Context 6471, Phase 6ii.
- 1159 One arm missing, surviving arm tip in-turned. Slight trace of random organic material. L.27, W.32mm
RF 6641, Context 6489, Phase 6ii–6iii.
- 1160 One arm missing, other incomplete. Trace of wood on side but probably random as the grain orientation is unusual for this position on a staple. L.24, W.59mm
RF 7208, Context 7150, Phase 5a–5b.
- 1161 One arm missing, surviving arm tip in-turned. L.17, W.40mm
RF 7429, Context 6472, Phase 5b–6i.
- 1162 Both arms largely missing. Trace of organic? inside, but no identifiable features. L.10, W.35mm
RF 7514, Unstratified.

- 1163 One arm bent inwards and incomplete. L.28, W.41mm
RF 8122, Context 6343, Phase 6ii–6iii.
- 1164 Incomplete. L.35, W.21mm
RF 8132, Context 6343, Phase 6ii–6iii.
- 1165 Incomplete. L.20, W.21mm
RF 8281, Context 3989, Phase 6iii.
- 1166 Incomplete. L.24, W.14mm
RF 8375, Context 3989, Phase 6iii.
- 1167 Bent out of shape, one arm missing. L.23, W.31mm
RF 8601, Unstratified.
- 1168 One arm missing. L.35, W.25mm
RF 8910, Context 3107, Phase 4ii.
- 1169 Both arms incomplete. L.14, W.37mm
RF 8981, Context 3107, Phase 4ii.
- 1170 One arm largely missing. L.27, W.22mm
RF 8997, Context 3107, Phase 4ii.
- 1171 One arm missing. L.20, W.41mm
RF 9006, Context 3107, Phase 4ii.
- 1172 One arm missing. L.17, W.22mm
RF 9013, Context 3107, Phase 4ii.
- 1173 Both arms incomplete. L.10, W.48mm
RF 9078, Unstratified.
- 1174 One arm incomplete. L.22, W.61mm
RF 9101, Unstratified.
- 1175 Incomplete. L.18, W.13mm
RF 9282, Context 3107, Phase 4ii.
- 1176 One arm missing, surviving arm tip in-turned. Possible organic material at one end, but no structure. L.23, W.26mm
RF 9550, Unstratified.
- 1177 One arm incomplete. L.19, W.31mm
RF 9621, Unstratified.
- 1178 Arms largely missing. W.36mm
RF 9652, Unstratified.
- 1179 One arm incomplete. L.16, W.34mm
RF 9657, Unstratified.
- 1180 Incomplete. Surviving arm tip in-turned. Possible wood traces, nothing visible now. L.27, W.26mm
RF 9662, Unstratified.
- 1181 Arm tips in-turned and clenched. Possible organic traces, probably random. L.19, W.27mm
RF 9708, Unstratified.
- 1182 One arm missing. L.20, W.26mm
RF 9737, Context 3107, Phase 4ii.
- 1183 Incomplete. L.19m
RF 9766, Context 3107, Phase 4ii.
- 1184 Incomplete. L.16mm
RF 9805, Context 3989, Phase 6iii.
- 1185 Arm tips in-turned. L.26, W.45mm
RF 9823, Context 6300, Phase 6iii–7.
- 1186 One arm incomplete, other in-turned. L.27, W.45mm
RF 9826, Unstratified.
- 1187 One arm incomplete, surviving arm tip out-turned. L.16, W.23mm
RF 9859, Context 6300, Phase 6iii–7.
- 1188 Arm tips in-turned. L.28, W.38mm
RF 9861, Context 6300, Phase 6iii–7.
- 1189 Arms incomplete. L.16, W.49mm
RF 10448, Context 10393, Phase 6ii–6iii.
- 1190 Incomplete. Surviving arm tip in-turned. L.18, W.24mm
RF 10610, Context 7054, Phase 6ii–6iii.
- 1191 Arms largely missing. L.14, W.26mm
RF 11208, Context 10772, Phase 2–4ii.
- 1192 L.13, W.46mm
RF 11214, Unstratified.
- 1193 One arm only. L.34mm
RF 11262, Unstratified.
- 1194 Arms largely missing. L.14, W.37mm
RF 11267, Context 10772, Phase 2–4ii.
- 1195 Arms missing. W.34mm
RF 11310, Context 10772, Phase 2–4ii.
- 1196 L.26, W.38mm
RF 11628, Context 6235, Phase 3bv.
- 1197 One arm missing. L.20, W.49mm
RF 11719, Context 11637, Phase 3bi–4ii.
- 1198 One arm largely missing. L.27, W.19mm
RF 12069, Context 6312, Phase 5a.
- 1199 Arms incomplete. L.8, W.26mm
RF 12074, Context 6312, Phase 5a.
- 1200 Arms bent. Charcoal. L.11, W.35mm
RF 12317, Unstratified.
- 1201 One arm missing. L.22, W.37mm
RF 12683, Unstratified.
- 1202 Both arm tips missing. Charcoal. L.28, W.30mm
RF 12725, Unstratified.
- 1203 One arm missing. L.33, W.15mm
RF 12775, Unstratified.
- 1204 One arm missing, surviving arm tip out-turned. L.14, W.30mm
RF 13246, Unstratified.
- 1205 One arm missing. Slight possible wood traces. L.35, W.19mm
RF 13394, Unstratified.
- 1206 L.9, W.32mm
RF 13419, Context 10772, Phase 2–4ii.
- 1207 One arm tip out-turned, other in-turned. L.28, W.28mm
RF 13512, Unstratified.
- 1208 Arm tips in-turned. L.27, W.50mm
RF 13880, Unstratified.
- 1209 One arm incomplete, other has tip missing. L.29, W.28mm
RF 13910, Unstratified.
- U-shaped*
- 1210 Wood remains survive. Small trace of wood, but nothing definite. L.41, W.19mm
RF 179, Context 72, Phase 5a.
- 1211 L.62, W.26mm
RF 1180, Context 1168, Phase 6iii.
- 1212 Both arms incomplete. L.25, W.18mm
RF 1380, Context 1307, Phase 6iii.

- 1213 One arm tip in-turned, other missing. L.30, W.32mm
RF 1534, Context 1286, Phase 6iii.
- 1214 One arm tip in-turned, other out-turned. Possible organic material but no clear structure. L.25, W.20mm
RF 1939, Context 1018, Phase 6iii.
- 1215 One arm incomplete. L.40, W.29mm
RF 2009, Context 2015, Phase 6iii.
- 1216 One arm tip out-turned. L.35, W.24mm
RF 2057, Context 2016, Phase 6iii.
- 1217 Both arms incomplete. L.18, W.19mm
RF 2288, Context 767, Phase 1b–2.
- 1218 Both arms incomplete. L.26, W.18mm
RF 2333, Context 51, Phase 4ii.
- 1219 One arm incomplete. L.33mm
RF 2539, Context 2488, Phase 5b–6ii.
- 1220 One arm largely missing. L.43, W.21mm
RF 2581, Unstratified.
- 1221 Arm tips bent forwards. L.68, W.20mm
RF 2645, Context 2184, Phase 6iii.
- 1222 One arm missing. L.33mm
RF 2687, Context 2611, Phase 5a.
- 1223 One arm incomplete. L.45, W.19mm
RF 2706, Context 2611, Phase 5a.
- 1224 One arm out-turned and clenched. L.37, W.23mm
RF 2771, Context 2611, Phase 5a.
- 1225 One arm missing. L.36, W.15mm
RF 2938, Context 2860, Phase 2i–4ii.
- 1226 Fragment.
RF 2945, Unstratified.
- 1227 Arm tips bent forwards. L.40, W.18mm
RF 3148, Context 3107, Phase 4ii.
- 1228 Fragment.
RF 3286, Context 3219, Phase 5b.
- 1229 One arm longer than other. L.39, W.24mm
RF 3501, Unstratified.
- 1230 One arm incomplete. Trace of wood with grain going across one arm, random. L.45, W.17mm
RF 4228, Context 3891, Phase 6ii.
- 1231 One arm tip out-turned. L.47, W.45mm
RF 4340, Unstratified.
- 1232 L.31, W.23mm
RF 4596, Unstratified.
- 1233 One arm incomplete. L.52, W.21mm
RF 4608, Context 3107, Phase 4ii.
- 1234 L.30, W.20mm
RF 5202, Context 5193, Phase 4ii–5a.
- 1235 L.31, W.16mm
RF 5340, Context 3891, Phase 6ii.
- 1236 L.34, W.17mm
RF 5344, Unstratified.
- 1237 Arms do not taper, tips out-turned. L.33, W.20mm
RF 5429, Context 3758, Phase 4ii.
- 1238 One arm missing, surviving arm tip out-turned. Charcoal. L.35mm
RF 5706, Context 3758, Phase 4ii.
- 1239 Charcoal and random organic material. L.33, W.13mm
RF 5713, Context 5553, Phase 5b.
- 1240 Arm tips out-turned. L.20, W.12mm
RF 5945, Context 3107, Phase 4ii.
- 1241 One arm missing. Charcoal. L.62mm
RF 6578, Context 6471, Phase 6ii.
- 1242 One arm largely missing. L.41, W.25mm
RF 6674, Context 6343, Phase 6ii–6iii.
- 1243 L.39, W.19mm
RF 7047, Context 6472, Phase 5b–6i.
- 1244 One arm missing. Trace of wood, but probably random. L.36, W.31mm
RF 7061, Context 7055, Phase 6ii–6iii.
- 1245 One arm missing, surviving arm out-turned and clenched. L.31mm
RF 7070, Context 7055, Phase 6ii–6iii.
- 1246 One arm missing. Organic traces, probably random. L.46, W.24mm
RF 7351, Context 3758, Phase 4ii.
- 1247 Arms do not taper, tips out-turned. Charcoal. L.37, W.21mm
RF 7984, Unstratified.
- 1248 One arm incomplete. L.49, W.18mm
RF 8127, Unstratified.
- 1249 One arm tip out-turned. L.24, W.21mm
RF 8244, Context 3989, Phase 6iii.
- 1250 L.30, W.25mm
RF 8252, Context 3989, Phase 6iii.
- 1251 One arm incomplete. L.26, W.18mm
RF 8304, Context 3989, Phase 6iii.
- 1252 Arms do not taper. L.45, W.21mm
RF 8338, Unstratified.
- 1253 One arm. L.24mm
RF 8362, Context 3989, Phase 6iii.
- 1254 One arm incomplete. L.15, W.12mm
RF 8366, Context 3989, Phase 6iii.
- 1255 L.18, W.14mm
RF 8441, Context 3989, Phase 6iii.
- 1256 One arm incomplete, other bent. Wood remains survive. Wood on both sides, grain across short width. Layer of wood on inside of the loop, but not enough to identify. L.36, W.22mm
RF 8457, Context 3108, Phase 5a.
- 1257 Arm tips out-turned. L.20, W.21mm
RF 8980, Context 3989, Phase 6iii.
- 1258 L.32, W.14mm
RF 9002, Unstratified.
- 1259 Arms twisted. L.c.50, W.39mm
RF 9003, Context 3107, Phase 4ii.
- 1260 Arm tips in-turned. L.38, W.28mm
RF 9064, Unstratified.
- 1261 L.36, W.21mm
RF 9083, Unstratified.
- 1262 L.27, W.12mm
RF 9087, Unstratified.

- 1263 One arm incomplete. L.22, W.15mm
RF 9095, Unstratified.
- 1264 One arm missing. L.54mm
RF 9132, Unstratified.
- 1265 One arm, tip out-turned. L.106, W.17mm
RF 9181, Context 3107, Phase 4ii.
- 1266 The arms' wider faces are in the same plane as staple. L.27, W.22mm
RF 9274, Context 3107, Phase 4ii.
- 1267 Arms incomplete. L.31, W.30mm
RF 9346, Unstratified.
- 1268 Arms incomplete. L.22, W.22mm
RF 9365, Unstratified.
- 1269 L.22, W.14mm
RF 9366., Unstratified.
- 1270 One arm incomplete. L.55, W.40mm
RF 9372, Unstratified.
- 1271 Arm tips bent forwards. L.25, W.21mm
RF 9456, Unstratified.
- 1272 Arms incomplete. L.18, W.25mm
RF 9599, Unstratified.
- 1273 Possible wood traces, nothing visible now. L.45, W.20mm
RF 9615, Unstratified.
- 1274 L.27, W.22mm
RF 9622, Unstratified.
- 1275 One arm incomplete. Flecks of non-ferrous metal adhere. L.27, W.16mm
RF 9729, Context 3107, Phase 4ii.
- 1276 One arm. L.37mm
RF 9732, Context 3107, Phase 4ii.
- 1277 Arms do not taper. L.30, W.22mm
RF 9864, Context 6300, Phase 6iii–7.
- 1278 Fragment.
RF 10982, Context 6472, Phase 5b–6i.
- 1279 One arm largely missing. Patch of lead adheres. L.35, W.18mm
RF 11155, Context 6472, Phase 5b–6i.
- 1280 One arm missing; surviving arm tip out-turned. L.50, W.20mm
RF 11163, Context 6469, Phase 6iii.
- 1281 One arm only, triangular cross-section at head. L.56mm
RF 11177, Context 6470, Phase 2–3bi.
- 1282 Arm tips bent forwards. L.23, W.17mm
RF 11222, Context 10772, Phase 2–4ii.
- 1283 Fragment.
RF 11270, Unstratified.
- 1284 L.65, W.23mm
RF 11585, Context 6235, Phase 3bv.
- 1285 Arms of unequal length. Random organic material and bone. L.67, W.25mm
RF 12177, Context 6304, Phase 3bv.
- 1286 One arm incomplete. L.46, W.18mm
RF 12306, Unstratified.
- 1287 One arm missing, surviving arm tip out-turned. L.16, W.15mm
RF 12385, Context 10772, Phase 2–4ii.
- 1288 One arm missing, surviving arm tip out-turned. Possible organic material on one end, but no clear structure. L.25, W.12mm
RF 12398, Context 10772, Phase 2–4ii.
- 1289 L.27, W.14mm
RF 12489, Unstratified.
- 1290 One arm incomplete. Possible organic traces, but no clear structure. L.34, W.22mm
RF 12685, Unstratified.
- 1291 L.26, W.15mm
RF 12769, Unstratified.
- 1292 One arm missing. L.39mm
RF 12819, Unstratified.
- 1293 Arms pinched together. L.36, W.15mm
RF 12991, Unstratified.
- 1294 One arm incomplete. L.18, W.13mm
RF 13007, Unstratified.
- 1295 One arm incomplete. L.26, W.15mm
RF 13047, Unstratified.
- 1296 Arm tips out-turned. Plated. L.35, W.15mm
RF 13090, Unstratified.
- 1297 The arms' wider faces are in the same plane as the staple. L.49, W.25mm
RF 13189, Unstratified.
- 1298 Arm tips missing. L.61, W.35mm
RF 13196, Unstratified.
- 1299 Fragment.
RF 13211, Unstratified.
- 1300 One arm missing. L.32mm
RF 13239, Unstratified.
- 1301 L.40, W.19mm
RF 13318, Unstratified.
- 1302 Fragment. Wood survives, but not enough to comment on.
RF 13356, Unstratified.
- 1303 One arm incomplete. L.40, W.29mm
RF 13358, Unstratified.
- 1304 L.19, W.14mm
RF 13403, Unstratified.
- 1305 Arms incomplete; their wider faces are in the same plane as the staple. L.22, W.20mm
RF 13463, Unstratified.
- 1306 Slight wood traces, nothing visible now. L.27, W.16mm
RF 13520, Unstratified.
- 1307 Smooth area resembling leather. L.25, W.14mm
RF 13555, Unstratified.
- 1308 One arm. L.52mm
RF 13630, Context 12243, Phase 5a–6ii.
- 1309 L.40, W.18mm
RF 13650, Unstratified.
- 1310 One arm missing. L.23mm
RF 13863, Unstratified.
- 1311 L.48, W.39mm
RF 14232, Unstratified.

Looped

- 1312 Random organic material. L.52, W.21mm
RF 557, Context 534, Phase 7.
- 1313 Possible wood traces, but no longer there. L.44, W.19mm
RF 1206, Unstratified.
- 1314 L.42, W.17mm
RF 1366, Context 1276, Phase 6iii.
- 1315 Slight organic traces, probably random. L.51, W.14mm
RF 1681, Context 1456, Phase 6iii.
- 1316 L.41, W.15mm
RF 4083, Context 3989, Phase 6iii.
- 1317 Arms largely missing. L.28, W.20mm
RF 4103, Unstratified.
- 1318 Arms largely missing. L.18, W.18mm
RF 5562, Context 3758, Phase 4ii.
- 1319 Arms largely missing. L.20, W.11mm
RF 6697, Context 5983, Phase 3biv.
- 1320 One arm missing. L.33, W.10mm
RF 8264, Context 3989, Phase 6iii.
- 1321 Arm tips out-turned. Charcoal and random fibrous organic material. L.36, W.14mm
RF 8386, Context 3989, Phase 6iii.
- 1322 Heavily encrusted, some random organic material. L.66, W.20mm
RF 8696, Unstratified.
- 1323 L.45, W.12mm
RF 9029, Context 3107, Phase 4ii.
- 1324 Trace of random organic material. L.44, W.19mm
RF 9039, Unstratified.
- 1325 L.44, W.21mm
RF 9884, Context 6300, Phase 6iii–7.
- 1326 L.53, W.23mm
RF 11415, Context 11379, Phase 5a.
- 1327 One arm incomplete. Charcoal and bone. L.45, W.22mm
RF 11615, Context 6235, Phase 3bv.
- 1328 Arm ends missing. L.37, W.21mm
RF 12666, Unstratified.
- 1329 Arm tips out-turned. L.45, W.18mm
RF 13044, Unstratified.
- U-shaped staples made from thin flat strips*
Arm ends out-turned unless stated
- 1330 One arm incomplete, other has U-shaped end. L.23mm
RF 1941, Context 636, Phase 6iii.
- 1331 Bent out of shape. L.44mm
RF 1963, Context 1728, Phase 5b.
- 1332 One arm end looped, other U-shaped. L.20, W.34mm
RF 2195, Context 2181, Phase 6iii.
- 1333 Arms twisted. L.37, W.20mm
RF 2669, Context 2668, Phase 5a–5b.
- 1334 One arm missing, other has U-shaped end. L.20, W.15mm
RF 3764, Unstratified.
- 1335 One arm missing. L.25, W.20mm
RF 4115, Context 3107, Phase 4ii.
- 1336 Arms U-shaped. L.20, W.32mm
RF 4130, Context 3989, Phase 6iii.
- 1337 One arm incomplete, surviving arm has U-shape. Charcoal. L.24, W.31mm
RF 6183, Context 5503, Phase 4ii.
- 1338 Random organic material including a possible seed? L.19, W.12mm
RF 6281, Context 3981, Phase 6ii.
- 1339 One arm missing. L.27, W.19mm
RF 6468, Context 6039, Phase 3biv.
- 1340 Arms twisted. L.50, W.39mm
RF 9003, Context 3107, Phase 4ii.
- 1341 One arm incomplete. Light traces of fibrous organic material, random. L.39, W.25mm
RF 9345, Unstratified.
- 1342 Arm ends U-shaped. Random fragments including plant stems. L.22, W.44mm
RF 9595, Unstratified.
- 1343 One arm ends in a loop. L.28, W.45mm
RF 9680, Unstratified.
- 1344 Charcoal. L.26, W.37mm
RF 10707, Context 6465, Phase 3bii.
- 1345 One arm missing. Wood traces, may be random, nothing visible now. L.18, W.18mm
RF 11289, Context 10772, Phase 2–4ii.
- 1346 One arm incomplete. Charcoal. L.19, W.12mm
RF 11323, Context 6465, Phase 3bii.
- 1347 L.23, W.14mm
RF 11613, Context 6235, Phase 3bv.
- 1348 One arm incomplete, other has U-shaped end. W.21mm
RF 12162, Context 1680, Phase 5b–6ii.
- 1349 One arm has looped end. Random organic material. L.17, W.35mm
RF 12230, Context 12057, Phase 5a–5b (?)
- 1350 Arm tips bent up. L.25mm
RF 12321, Unstratified.
- 1351 One arm has U-shaped end. L.22, W.31mm
RF 12359, Context 10772, Phase 2–4ii.
- 1352 One arm bent into rough loop. Wood, but probably random. L.21, W.48mm
RF 12577, Unstratified.
- 1353 One arm missing. L.22, W.17mm
RF 12641, Unstratified.
- 1354 One arm missing. L.14mm
RF 12945, Unstratified.
- 1355 Arms have looped ends. Charcoal and random organic material. L.14, W.22mm
RF 12949, Unstratified.
- 1356 One arm is incomplete. Random organic material. L.32, W.32mm
RF 13188, Unstratified.
- 1357 One arm incomplete. Charcoal. L.18, W.15mm
RF 13397, Unstratified.
- 1358 One arm missing. Fragment of random organic material on outside of loop. L.32, W.19mm
RF 13353, Unstratified.

- 1359 Arms have looped ends. L.16, W.28mm
RF 13438, Unstratified.

Collars

Collars resemble staples, but the arms overlap each other.

- 1360 Sub-rectangular. L.22, W.16mm
RF 2246, Context 2177, Phase 6iii.
- 1361 Sub-rectangular. Where ends meet, one twisted around the other. Piece of iron strip threaded through a single piece of wood from the tangential surface; the fitting does not appear to serve as a means of joining two pieces of wood together. Probably Pomoideae, a fruit-wood such as *Malus* sp. (apple), *Pyrus* sp. (pear), *Crataegus* sp. (hawthorn) – [SEM B797]. L.42, W.19mm
RF 5454, Context 3758, Phase 4ii.
- 1362 Sub-rectangular. Where ends meet, one twisted around the other. L.21, W.19mm
RF 6607, Context 6499, Phase 6ii–6iii.
- 1363 Oval. L.24, W.10mm
RF 6729, Context 6680, Phase 6i–6ii.
- 1364 Crushed oval, pierced for attachment with nail *in situ*. L.41, W.21mm
RF 6812, Context 6798, Phase 6i.
- 1365 Incomplete, circular. D.33, W.12mm
RF 8248, Context 3989, Phase 6iii.
- 1366 Incomplete, circular. D.49, W.23mm
RF 8415, Context 3989, Phase 6iii.
- 1367 Circular. L.19, W.16mm
RF 9007, Context 3107, Phase 4ii.
- 1368 Exists as a loop with overlapping ends, L.25, W.11mm
RF 9019, Context 3107, Phase 4ii.
- 1369 Incomplete, was oval. L.53mm
RF 13570, Unstratified.
- 1370 Incomplete circular. D.26, W.9mm
RF 13886, Unstratified.

4.2 Structural fired clay or daub

by Lisa M. Wastling

Introduction

The term daub is applied to clay with the addition of temper, smeared or daubed onto a rigid wooden framework to form structures such as walls, ovens and hearths. The framework usually consists of woven roundwood, termed wattles, with the horizontals referred to as rods, and the verticals, sails. During construction the rods are woven in between the sails. Daub is not normally preserved in the British climate, though when burning occurs, it can become fired to a high enough degree to ensure its survival. Burning may be the result of use (as in the case of ovens), part of the demolition process, or of accidental burning of structures. This form of preservation precludes the survival of the wood, except in rare cases when charcoal survives; however, the impressions of the wooden framework are often preserved well enough to be quantified.

Daub weighing 56kg was recovered from 379 contexts at Flixborough, with sample weights ranging from as small as 1 to 8626g.

In addition to the structural daub and hearth bases, some of the fired clay fragments have been identified as small pieces of unprepared or accidentally fired clay, and small fragments of fired clay objects, in the same fabric as the loom-weights (see Ch. 9).

As structural fired clay has commanded little attention in many site reports, and extant wattle panels have also rarely been recorded in detail, much of the comparanda in this report are of differing dates from the material at Flixborough. This is unfortunately a situation that can only be rectified with time, as little appears to have changed since Morgan's paper of 1988 (*op. cit.*).

Fabrics

Eleven different fabric types were identified by eye and by the use of binocular microscope at $\times 20$ magnification. The method used was based on that recommended for pottery fabric recording, outlined in Orton *et al.* (1993, 231–42).

The majority of fragments were assigned to fabrics A to I, fragments of clay objects were given the fabric code O, and small unidentifiable fragments the code U. Variations in hardness, texture and colour within a fabric can occur, and are due to the heat variations and the differing amounts of oxygen reaching different parts of the structures during the burning process, causing some pieces to be oxidised and others reduced. More detailed petrological examination of the fabric types may reveal that some of the lesser fabrics may be variants of the main types.

Fabric A

Colour: 2.5YR 6/8 to 7.5YR 7/4
very light reddish-orange to buff
When heavily burnt the colour changes to mid reddish-brown, 7.5YR 6/4 with occasional reduced grey to black patches under the vitrified areas. This fabric also contains occasional small patches of lighter firing clay.

Hardness: soft

Feel: powdery

Texture: fine

Inclusions: abundant fine quartz sand, moderate fine mica, moderate fine sand, sparse organic grass/chaff, sparse ferrous inclusions 1mm in size.

The fine sand was possibly contained within the clay prior to working. This clay has been well prepared, with all stones removed.

Usage: hearth daub

Fabric B

Colour: ranges from reddish-yellow, 5YR 7/6 through to yellowish-red, 5YR 6/6, 5YR 5/6 with occasional patches of red-brown 7.5 YR 6/2 and 7.5YR 5/2. This depends on the heat intensity and amount of oxygen reaching the fragments during burning.

Hardness: hard

Feel: slightly rough

Texture: irregular fracture

Inclusions: sparse to moderate stone inclusions 2-10mm in size (sandstone fragments and glacial erratic fragments), moderate voids, some due to organic material in the clay, others possibly due to the material being not so well worked, or not worked at all prior to use.
Usage: hearth repair and accidentally fired unprepared clay

Fabric C

Colour: reddish-yellow 5YR 6/6 to brown 7.5YR 5/2. Occasionally has a reduced core or patches of mid to dark grey.
Hardness: soft to hard
Feel: rough to harsh
Texture: irregular fracture
Inclusions: abundant organic temper, with grass/chaff impressions and voids, moderate very fine sand, sparse mica. On inspection through the binocular microscope at $\times 20$ magnification, the surfaces have a mottled appearance with small dark brown to black patches, possibly due to the addition of other organic material such as animal dung. Light in weight in relation to its mass.
Usage: wall daub, oven structures.

Fabric D

Colour: pink 7.5YR 7/4 to very pale brown 10YR 7/3 to 10YR 8/2, occasionally reduced to grey 10YR 5/1.
Hardness: soft
Feel: smooth, powdery
Texture: fine
Inclusions: abundant fine sand, moderate voids due to organic grass/chaff temper, moderate mica, sparse stone inclusions e.g. Magnesian Limestone and occasional glacial erratic fragments 5–8mm in size. Under the binocular microscope at $\times 20$ magnification this fabric also appears mottled in the same way as fabric C, though it is denser than C and has much less organic temper.
Usage: possibly used for walls and oven structures.

Fabric E

Colour: 2.5YR 6/8 to 7.5YR 7/4
very light reddish-orange to buff.
Hardness: hard
Feel: slightly rough
Inclusions: abundant fine quartz sand, abundant fine shell fragments or plate-like voids where leached out, moderate fine sand, sparse grass/chaff voids, sparse ferrous inclusions, 1mm in size. Whether the shell is fossil shell deriving from limestone, or fresh shell, has not been ascertained. This fabric is possibly an A variant, or an anomaly.
Usage: unknown

Fabric F

Colour: light yellowish-brown 10YR 6/4 to pale brown 10YR 6/3, with occasional patches reduced to light grey,
Hardness: soft to hard
Feel: smooth
Texture: fine
Inclusions: very abundant grass/chaff with well-preserved impressions, sparse small calcareous inclusions,

slightly rounded, possibly chalk <0.5 to 2mm in size.

Usage: possibly oven structures, macroscopically similar to kiln fabric.

Fabric G

Colour: red 2.5YR 5/6 to strong brown 7.5YR 5/8 (this is very ochre-like in colour)
Iron-rich clay.
Hardness: hard
Feel: powdery to smooth
Texture: fine
Inclusions: moderate very fine sand, sparse voids. As fabric A, the clay is well worked to remove inclusions.
Usage: hearth daub

Fabric H

Colour: reddish-yellow 7.5YR 7/6 to light red 2.5YR 6/8
Hardness: soft to hard
Feel: slightly rough
Texture: irregular
Inclusions: abundant fine voids and fine calcareous inclusions (chalk or fine limestone and occasional fossil shell 1–5mm), moderate grass/chaff voids, occasional fossil shell 1–5mm.
Usage: curved surfaces, possibly oven daub.

Fabric I

Colour: brown 10YR 5/3 to 7.5YR 5/2
Hardness: very hard
Feel: rough
Texture: irregular
Inclusions: abundant medium sand, moderate grass/chaff voids
This fabric is dense in mass.
Usage: structural – walls

Fabric O

Virtually inclusion free, hard, very well-worked clay of the type used for objects such as loom-weights. See reports by Walton Rogers and Vince (Ch. 9, below).

Fabric U

Consists of tiny scrap fragments – too small to be classified.

The quantities of each fabric can be seen in FIG. 4.5, and percentages in FIG. 4.6. Just 10 contexts produced 57% of the total amount of structural fired clay. The majority of these were dumps (FIG. 4.7). The clay from one hearth *in situ*, (466) was collected in its entirety, producing the largest single sample by weight at 8626g. The lack of other hearth material is due largely to the excavation method, whereby hearth material was not collected from other *in situ* hearths, except occasionally in small amounts.

The wall daub

Fabrics C, D and H may have been used to construct both walls and oven superstructures, with some fragments bearing curved surfaces. Unfortunately, no upper oven structures were found *in situ* or collapsed over hearth or oven bases, with the exception of the medieval oven 1342, in Phase 7. Buildings may also have had rounded corners. The fragmentation of the material and its re-deposition in dumping phases makes more conclusive interpretation

Fabric	Quantity	Weight (g)
A	2328	28954
B	593	5777
C	1966	15625
D	242	4340
E	25	269
F	72	352
G	1	7
H	10	237
I	4	201
O	52	307
U	284	427
TOTAL	5577	56496

FIG. 4.5. Quantities of structural fired clay or daub present.

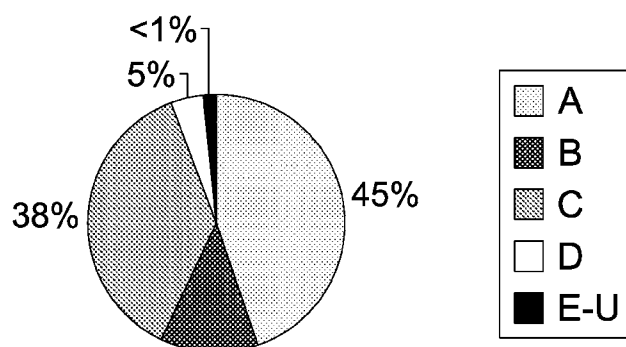


FIG. 4.6. Structural fired clay or daub. Fabric percentages by number of fragments present.

difficult. It must also be remembered that the surviving material must be a biased sample, simply due to the method of its preservation. The characteristics of this preserved building material should not be presumed to be representative of all structures.

Fabric C was the most prevalent, with only small amounts of fabrics D, F, H and I being recovered.

Various different attributes were observed in the assemblage. The external/internal surfaces were smoothed to give a finished appearance to structures. Finger grooves were present on some fragments, and a single fingerprint impression was preserved on a fragment of fabric A from dark soil 6300. Tools of metal or wood appear to have been used, in some instances, resulting in finer striation.

Of the 571 external/internal fragments, 35% were white-washed. The un-white-washed fragments may either represent internal surfaces, or show that not all buildings were white-washed.

The largest group was of fabric C, recovered from dump 6465. Of this, 264 fragments bore external/internal surfaces, 118 of which were white-washed. Ten fragments had curved surfaces, 3 convex and 7 concave, representing either curved corners of a structure, oven fragments, or internal features.

Twelve fragments bore a fine skim of like clay on the surface, 1 to 3 mm thick, and without the addition of coarse temper. This may be a result of a later batch of clay smoothed over an earlier batch, an attempt to cover a rough or cracked patch, or a technique to render the external surfaces more resistant to bad weather and/or improve the appearance of the structures. Wall daub at the Neolithic site of the Galgenberg, on the slopes of the Isar Valley in Bavaria was rendered with a fine, inclusion-free layer of daub, on the external surfaces (Wastling 1989, 25; Ottaway 1999, 217–26), although this was thicker than that at Flixborough.

The addition of a fine surface covering of daub would have had a threefold effect on the structures covered

Context	Interp.	Quantity	Weight (g)
466	Hearth	694	8626
3758	Dump	102	1108
3891	Dump	282	2246
5369	Dump	106	1499
5503	Dump	162	3494
5617	Dump	101	1431
5983	Dump	194	2239
6235	Dump	294	2343
6465	Yard	1074	5341
12925	Demolition	305	3720
TOTAL		3314	32047

FIG. 4.7. Incidence of structural fired clay by type of context.

– two functional, and one aesthetic. The two functional aspects are to protect the fabric of the building from rain, and to facilitate better white-washing – a less permeable surface needing less white-wash. The aesthetic aspect is that buildings treated in this way are likelier to appear clean, well-constructed and superior to buildings treated in a lesser fashion.

Thirteen fragments show evidence of the inside of structures being left rough and unfinished, with the clay being extruded between the wattles. The effect of gravity can be seen in these pieces, as the extruded clay has sagged downwards before drying, giving evidence of fragment orientation.

An upper wall fragment is represented in the daub from 12925, the demolition of building 13 (FIG. 4.8, fragment A). There is delineation between the smoothed and white-washed area and the top of the fragment, which is curved. Two deep finger impressions can be seen where the daub has been pushed up under the angle of the roof, and the surface becomes rougher towards the top. This fragment has a thin skim of like clay under the white-wash.

The depth of the daub at 24 to 45mm suggests that the wall thickness was narrow, with the wattle part of the wall having no load-bearing capacity. A longitudinal piece of

cleft planking attached to the wall plate could have created the angle into which the daub appears to have been pushed. Daub not filling this angle completely would have created the curved top. The external white-washed surface of this fragment is well smoothed, and also appears to have been unaffected by inclement weather. Planking may have given additional protection to the junction between daub and roof, or, conversely, the fragment was part of an internal surface belonging to a building with a white-washed interior.

Impressions

Wattle diameters were measured on fragments with two or more impressions, where rod and sail could be differentiated. Templates with 5mm increments were used. In effect each template measures a range of diameters; for example the 10mm template group will include wattle impressions of 10 to 14mm diameters, and the 15mm template 15 to 19mm, and so on.

The diameters for rods ranged from <10 to 20mm, and sails measured 15 to 35mm (FIG. 4.9).

The degree of overlap between rod and sail diameters at Flixborough compares favourably with those of Iron Age date from feature P878 at Danebury (Poole 1984a, fig. 4.74), and with modern hurdles made as an experiment

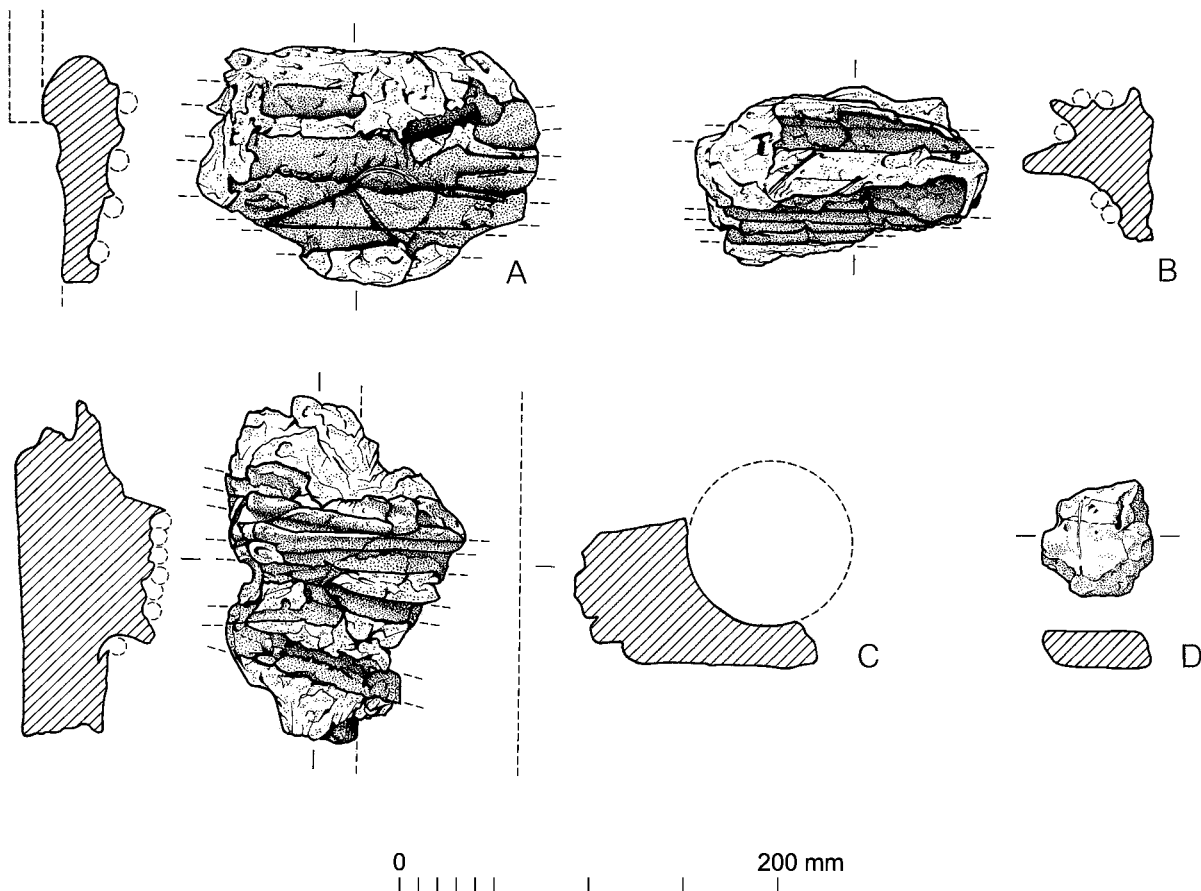


FIG. 4.8. Wall daub fragments. Scale 1:4.

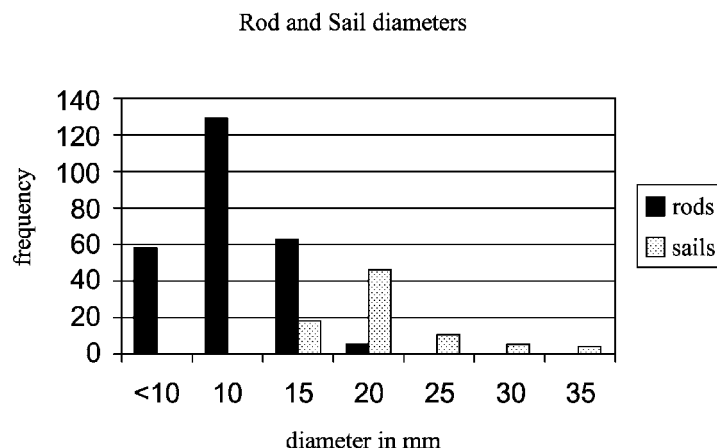


FIG. 4.9. The size range for wattle rods and sails.

during the Somerset Levels project (Coles and Darrah 1977, 32–8). Wattle impressions of mid 7th to 8th century date from Victoria Street, Hereford (Shoesmith 1985, fiche M7.F5) varied from 10 to 30mm in diameter, though rod and sails were not differentiated.

In instances where the hurdles themselves have survived, measurements should be taken from each end of the sails (as the diameters taper towards the top) and a single sample from each rod across the width of the hurdle, or every two metres for continuous wattle (Morgan 1988, 79). Unfortunately, impressions from the Flixborough daub represent only small sections of wattle, the position of the diameter measurement on the stem length remaining unknown.

All the fragments used appear to have been complete stems, with no cleft wattles.

Usually sails have been used singly; however, three instances of wattles being woven around a double sail were recorded, and were all on daub of fabric C. One came from dump 6465, with sails measuring 30mm in diameter; a second impression had too little of the diameter to measure; a third came from the demolition layer of building 13, 12925, and measured 20mm and 30mm. As these examples are of comparable diameters to the single sails, they are likely to represent either repairs to panels, needed when sails were broken during construction, or stems bent back upon themselves – as postulated at Rowland's track, Somerset (Coles and Orme 1977, 47).

A double rod was recorded on an unstratified fragment of fabric C from area C. As the diameter of each is less than 10mm, two may have been used together in this instance to avoid creating a weak spot in the panel (FIG. 4.8, fragment B).

Impressions other than those from wattles were visible on some fragments. Cleft timber impressions, possibly indicating planking, were noted on 21 fragments of fabrics C, D, E and I. Six were present on fabric C from dump 6465.

The largest impression represented is unfortunately preserved on unstratified daub of fabric C. It is an upright post of 85mm diameter, which would have lain flush with the external wall surface, if a cleft post, or would have protruded from the surface if complete. The impression of the wattle panel can be seen on the reverse of this piece (FIG. 4.8, fragment C).

Timber and underwood resources

If the daub-yielding structures, such as building 13, were fired deliberately for demolition, this precludes the reuse of structural timbers and would seem to indicate that the acquisition of timber was not problematical. The large upright posts, such as that which left its impression on the unstratified fragment of fabric C, were probably obtained from long-term coppice or standard timber trees left to grow in coppiced woodland. Standard trees would also have provided wood for cleft planking.

A prerequisite for the construction of wattle and post-built structures is the availability of a regular source of straight roundwood of suitable size and species. Coppiced woodland was probably the source of this material.

The two most likely species are hazel (*Corylus avellana*) and willow (*Salix* sp.), both of which respond well to coppicing. These species grow in different habitats. Hazel is usually associated with oak woodlands (Orme and Coles 1985, 9) and mixed woodlands of ash, maple and hazel (Rackham 1980, 203). Willow, which will tolerate flooding, usually grows in a wet environment (Orme and Coles 1985, 12); willow probably grew close to the site at the base of the Lincoln Edge in the lower Trent Valley. These trees are likely to have been managed, as are the pollarded willows of medieval and more recent date in Cambridgeshire today (Rackham 1986, 228–9).

Rackham (1994, 9) notes the quantities of woodland in upland Lincolnshire recorded by the Domesday Survey of 1086, with wood-pasture covering 1.6%, underwood

1.5%, and wood 'pasturable in places' 0.9%. Overall, Lincolnshire had 3% wood coverage in 1086, according to the Domesday survey (Rackham 1986, 78). Manley wapentake, which contains the excavation site, had 682 acres of underwood, plus underwood 2 leagues in length and 1 league in breadth, according to the Domesday survey. Of the two adjacent wapentakes, Corringham had 266 acres of underwood and underwood half a league in length and half a league in breadth, whereas Axholme had no underwood recorded (Foster and Longley 1924). The nearest recorded source of underwood to the site was Flixborough with 120 acres (*ibid.*, 148).

Nottinghamshire had greater woodland coverage of 12% (Rackham 1986, 78), and the proximity of the River Trent to the settlement at Flixborough would have enabled these resources to have been utilised, in addition to those of the immediate hinterland of the site.

The reason why Lincolnshire had so little woodland recorded at this time is that much of the county had a wetland environment (see Volume 1, Ch. 1.2; and Volume 4, Chs 3 and 4). Other areas of wetlands, such as the Isle of Ely, Cambridgeshire and East Yorkshire also feature at the bottom of the table of woodland area by percentage as attested by the Domesday record (Rackham 1986, 78). Woods recorded in Domesday were those of use for tax collection, such as the demesne woodlands of manorial holdings (Munby 1991, 380); the managed trees of boundaries and watercourses, such as willow, are under-represented, and perhaps more underwood resources were to hand than is apparent in the Domesday accounts.

The maintenance of the wetland environment and prevention of woodland cover may have occurred in order to preserve a wetland economy. The flora is likely to have been dominated by grasses, some of which would have been valuable for thatch, others as grazing.

As managed woodland is a sustainable resource, it is likely that the source of the timber and roundwood was less than 20 miles from the site. Rackham (1980, 144) states a similar case for the medieval period, and it is not unreasonable to assume that the same distance would be logical for the 7th to 11th centuries.

The hearths

The main fabric used for hearths was A. This represented 45% of the total assemblage by number of fragments (FIG. 4.6). However, this distribution is skewed by the fact that the building 3 hearth (context 466) was collected in its entirety.

The fragments of this hearth have flat smooth surfaces and vary in thickness from 15 to 30mm (FIG. 4.8, fragment D). Many are tapered in section, and pieces with vitrified upper surfaces are deeper than unvitrified fragments, suggesting that the hearth was thicker in the centre where heat was most intense. Part of the surface was constructed of re-used Roman tile, some of which showed a vitrified glassy deposit on the upper surface. This was placed on the hearth whilst the clay was still wet, as there are

narrow ridges of raised clay on some fragments between flat regular impressions of the tile. Some fragments of vitrified material have impressions underneath with right-angled corners, suggesting that they were laid on top of tiles. Possibly more than one layer of hearth material is represented.

This hearth appears to have been formed on a wooden framework: some of the vitrified pieces have possible wattle impressions, though too fragmentary to measure, and two have impressions of cleft wood, possibly part of a framework or timber base.

Saxon hearths from excavations at the Royal Opera House, London (Blackmore *et al.* 1998, 61) bear similarities of construction – some being timber-edged, and others incorporating Roman tile. The re-use of Roman tile in hearths is a common occurrence as also evidenced at sites such as Cowdery's Down (Millett and James, 1983) and West Stow (West 1985, vol. 1, 18–22).

Hearth daub was found adhering to 38% of the Roman tile and brick at Flixborough (percentage by weight), though only in the cases of hearths 466 and 7152, and ovens 7288 and 8635, was the material *in situ*. These ovens and hearths date from the 9th to 10th centuries, though re-deposited tile with hearth daub occurs from Phase 2 onwards. The one hearth context where tile without adhering clay was collected was 1964 (see the Roman tile report, Ch. 14.2.3, below). The lack of tile from other hearths is more likely to reflect the excavation method and sampling strategy for most of the hearths, rather than any suggestion that the other *in situ* hearths contained no re-used tile.

4.3 Window glass and lead comes

by Rosemary Cramp

Window Glass (FIG. 4.10 and PLS 4.1–4.2)

The window glass from the excavations at Flixborough is durable, thin, and finely grozed, and one group (Group 1) closely conforms to the type found elsewhere on Anglo-Saxon sites in Northumbria and Mercia: at Beverley (Henderson 1991), Brixworth (Hunter 1977), Dacre (Newman in prep.), Escomb (Cramp 1971), Repton (Cramp in prep.), Wearmouth and Jarrow (Cramp 1970, 1975; 2006a and 2006b), Whitby (Evison 1991, 143–4), and Whithorn (Cramp 1997). Like the glass from these other sites, it is apparently made in the soda-lime-silicate tradition (see Mortimer, Ch. 2.2, above), and is cylinder-blown, as is evidenced by the flame-rounded edges in no. 1372 (RF 5567) and the elongated bubbles which are visible in several pieces (PLS 4.1–4.2; compare Harden 1961, and Henderson 1985). The bluish tinge of the colourless metal is also typical of the ecclesiastical sites already mentioned, as is the fact that on those sites which have produced only a few fragments, such as Escomb or Brixworth, the strongly coloured pieces are mid blue and brown/amber. None of the rarer colours, such as emerald, turquoise, red or red-streaked, is present

in this sample. It should be noted, however, that finds in the past have come usually from documented sites, and this site, like Brandon in Suffolk (see Cramp forthcoming), cannot be identified in contemporary documentation, and so one cannot speculate about the likely sources of its glass. The 'uncoloured' fragments from Brandon (a site in which, like Flixborough, the excavated buildings are wooden) are in many cases different both in the base colour and in thickness (*ibid.*).

Group 2 from Flixborough is clear and colourless with dulled surfaces (PL. 4.2), and if it had not been found in stratified contexts, would have been assigned, on physical appearance alone, to a post-medieval period. The scientific analysis (see Ch. 2.2, above, and especially FIG. 2.5) has confirmed its difference from the rest of the glass, but also has demonstrated that it is not like medieval glass. As more analyses of chemical compositions are being undertaken, both in Britain and on the continent, changes in the compositions of glass in about the 9th century have been noted, and these Flixborough pieces may reflect the same trend (see Brill 1999 and 2006; Cramp 2000, 105–7).

Flixborough has produced neither complete quarries nor fragments which enable an interpretative reconstruction, and the shapes of the early lead comes do not indicate that the glass was cut into complex shapes (see below), as for example at Wearmouth-Jarrow, but this may not be a representative sample from the site.

Whether these fragments derive from the timber buildings in the excavated area or have been deposited as debris from buildings elsewhere is debatable, but since

the discovery of a substantial amount of coloured and plain window glass from Whithorn – where there are only timber or half-timbered buildings – the use of window glass cannot be assumed to have been confined to mortared stone buildings (Cramp 1997, 329). All of the contemporary references to window-glass in Anglo-Saxon England are describing ecclesiastical buildings (Dodwell 1982, 63–4), but this may be because of the bias of the written evidence, and small quantities of window glass have been excavated at secular sites such as Southampton, Thetford or Old Windsor (Harden 1961, 53–4). Nevertheless, strongly coloured window glass has so far, in Anglo-Saxon England and elsewhere, been found only on ecclesiastical sites, or in relation to ecclesiastical buildings. It is possible, however, that the window glass at Flixborough (which first appeared either at the very end of Period 3 or more likely, as with the window lead, during Period 4, when it was most common), could have derived from a church elsewhere in what was primarily a secular site. Glazed windows, however, must always have been comparatively rare in the pre-Conquest period, and the discovery of the glass at Flixborough certainly indicates a site of some status.

Lead comes (FIG. 4.11)

Lead comes for windows are not as frequent an occurrence in pre-Conquest contexts as is window glass, and they have received comparatively little research attention. If Anglo-Saxon window glass can be dated only within brackets between the 7th and 9th centuries on the one hand, and between the 9th and the 11th centuries on the other, lead

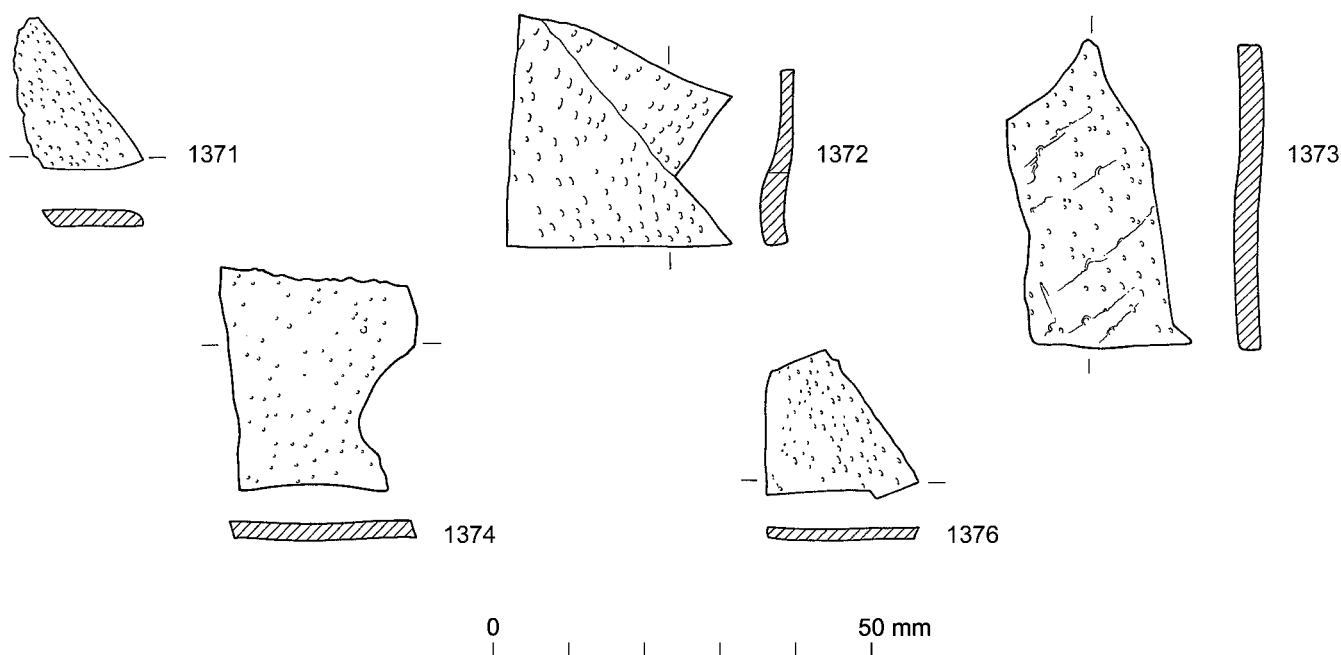


FIG. 4.10. Anglo-Saxon window glass fragments. Scale 1:1.

comes are even less susceptible to precise dating. This is probably because not enough comparative work between sites has been done, but also because – as in this collection – comes, like other lead artefacts are easily recycled, and lead was an expensive commodity. The recycling of lead is reflected on the site in the presence of numerous pieces of lead melt and also ingots (Wastling and Rogers, Ch. 11, below; Mortimer ADS research archive, analysis of lead melt).

Although the setting of glass in leads had begun in the Roman period, and is attested on the continent in the Merovingian period (Lafond 1966, 21–3, 27–8); leading only seems to have been widely used in Europe after the end of the 8th century (Whitehouse 2001, 39). Lead settings for panes were, at the time they were introduced into Anglo-Saxon England, only one method of holding glass: wood, stone, and stucco were also used. I have suggested elsewhere that glass could have been held in thin wooden strips at Whithorn (Cramp 1997), and this

collection from Flixborough is important because it could throw additional light on the problem of how leaded windows were set in timber buildings.

This particularly applies to the distinctive group with very wide grooves which are cut into short straight sections and pinched together at each end (Fig. 4.11). These pieces may be considered as objects of reuse, for example, cut from longer strips to serve as net sinkers, but there are similar pieces at Jarrow which occur in Middle Saxon contexts (Cramp 2000, 201, pl. 4; Cramp 2006c, fig. 26.6.18). The Flixborough pieces have a distinctive patina, a sandy encrustation, which may mean that they were cast in wooden moulds in sand; one piece no. 1391 (RF 4099; Fig. 4.11) retains the marks of the wooden casting moulds on its surface. These short pieces are fairly inflexible and have been shaped by filing when cold.

As well as the thick leading, there is also evidence in no. 1416 (RF 7380) of lead cut into narrow strips, which might, like some of the fragments from Wearmouth-

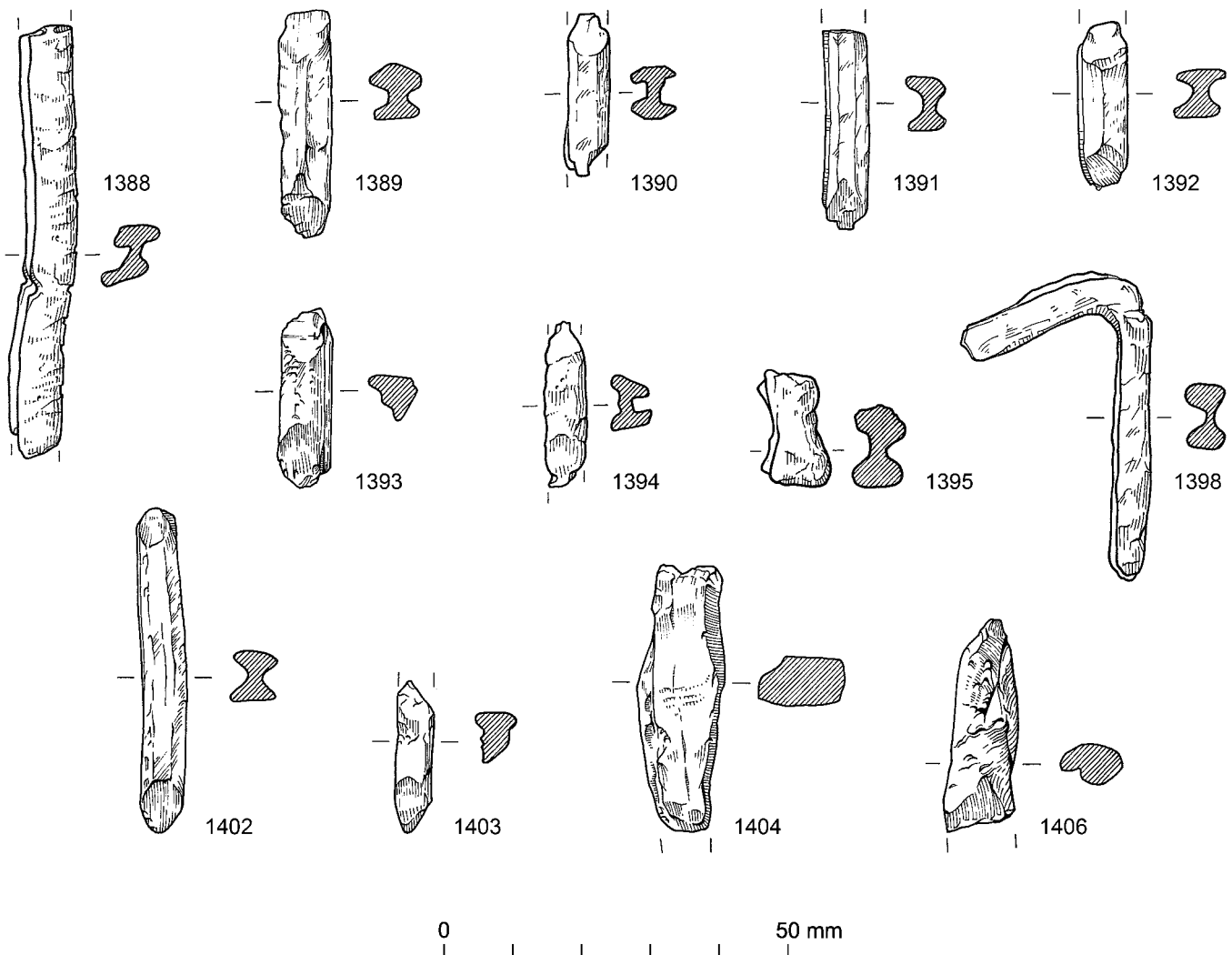


FIG. 4.11. Anglo-Saxon lead window came fragments. Scale 1:1.

Jarrow have been part of a pattern applied to the surface of the glass (Cramp 1970, 329; Cramp 2006c, fig. 26.6.17). Nevertheless, one has to assume that the grozed and very thin window glass from this site must have been set in finer and more flexible leading of H-shaped section as has been found elsewhere, although window lead is never found on early medieval sites in large quantities (Stiegemann and Wemhoff 1999, 163, 183–4, and ills 64, 92, 93, provide useful continental parallels, including a stone with grooves which has been identified as a casting block for cames).

The lead cames and window glass make an appearance, not surprisingly, in the same period of the Flixborough site development, but this could indicate dismantling or replacement of windows at that time, and all but two glass fragments come from refuse deposits dating undoubtedly from the end of that period – the middle decades of the 9th century, when major demolition and levelling is suggested, in Phase 4ii (Loveluck and Atkinson, Volume 1, Ch. 5; Loveluck, Volume 4, Ch. 2). The three pieces of glass incorporated into the surface of the latest deposits of Period 3, are equally likely to date from the same demolition phase sometime in the mid 9th century, and the lead cames are also concentrated in deposits of Phase 4ii and later, as refuse was re-organised within the site (Loveluck, Volume 4, Ch. 2). The surviving fragments may though give a distorted picture as to the appearance of the windows, if the main portion of the leading has been recycled, but this is a problem which Flixborough shares with all other Anglo-Saxon sites.

Catalogue

Window glass (FIG. 4.10 and PLS 4.1–4.2)

(Maximum measurements are given for these irregular fragments)

ANGLO-SAXON (GROUP 1)

- 1371 Fragment, many small elongated and rounded bubbles, surface striated, one grozed and two broken edges.
Colour: Mid-blue. Dimensions: 23 × 6 × 2mm (PL. 4.1, and FIG. 4.10).
RF 2684, Context 2184, Phase 6iii.
- 1372 Two joining fragments, very many elongated bubbles. One edge is thickened and may have been the end of a cylinder, but the piece is warped and the surface distorted by heat.
Colour: Dark brownish amber. Dimensions: 30 × 30 × 3.5 down to 1.5mm (PL. 4.1, and FIG. 4.10).
RF 5567, Context 3758, Phase 4ii.
- 1373 Fragment, many fine elongated bubbles, surface pitted, and dulled by re-heating.
Colour: Dark brownish amber. Dimensions: 30 × 21 × 3mm (PL. 4.1, and FIG. 4.10).
RF 10205, Context 5983, Phase 3biv.
- 1374 Fragment with one grozed edge, many small rounded bubbles, both surfaces glossy, one side heat-cracked.
Colour: Pale blue/colourless. Dimensions: 26 × 30 × 2.5mm (PL. 4.2, and FIG. 4.10).
RF 5545, Context 5503, Phase 4ii.
- 1375 Fragment, many tiny rounded bubbles, both surfaces glossy.

Colour: Pale blue/colourless. Dimensions: 15 × 12 × 1mm.

RF 4237, Context 3891, Phase 6ii.

- 1376 Fragment, possibly of the corner of a quarry. One finely grozed edge and another partly grozed, both surfaces glossy.
Colour: Pale blue/colourless. Dimensions: 26 × 18 × 1.5mm. (PL. 4.2, and FIG. 4.10).
RF 5774, Context 3107, Phase 4ii.
- 1377 Fragment with many fine elongated bubbles, possible grozing on one edge.
Colour: Pale blue/colourless. Dimensions: 26 × 5 × 1.5mm.
RF 2172, Context 2020, Phase 6iii.
- 1378 Tiny fragment, surface very abraded and stained.
Colour: Pale blue/colourless. Dimensions: 9 × 4 × 1.5mm.
RF 2759, Context 223, Phase 4ii.
- 1379 Fragment, elongated bubbles, slightly curved with abraded and dulled surfaces.
Colour: Pale green/colourless. Dimensions: 21 × 16 × 3mm.
RF 9572, Context 2562, Phase 5b.
- 1380 Sliver, many tiny elongated bubbles, surfaces dulled.
Colour: Pale blue/colourless. Dimensions: 15 × 7 × 1mm.
RF 11136, Context 783, Phase 5b–6i.
- 1381 Fragment, many tiny elongated bubbles, one edge grozed.
Colour: Pale blue/colourless. Dimensions: 15 × 13 × 3mm.
RF 3799, Context 3758, Phase 4ii.
- 1382 Fragment, two glossy surfaces, small rounded bubbles, heat-cracked.
Colour: Pale green/colourless. Dimensions: 20 × 11 × 1.5mm.
RF 11496, Context 3758, Phase 4ii.
- 1383 Fragment, surface dulled and some discolouration.
Colour: colourless. Dimensions: 14 × 9 × 1.5mm.
RF 1128, Context 968, Phase 3bv.
- 1384 Fragment, surface dulled and dirty, probably re-heated in a fire.
Colour: Mid-blue. Dimensions: 17 × 8 × 2mm.
RF 7223, Unstratified.
- ANGLO-SAXON (GROUP 2)
- 1385 Fragment, one glossy and one matt face.
Colour: Clear and colourless. Dimensions: 20 × 17 × 1mm.
RF 3431, Context 2610, Phase 5a.
- 1386 Fragment, both surfaces dulled, traces of fine grozing.
Colour: Colourless. Dimensions: 29 × 12 × 1mm.
RF 11567, Context 440, Phase 5a–5b.
- 1387 Fragment, surfaces dulled.
Colour: Colourless. Dimensions: 15 × 9 × 1mm.
RF 2335, Context 1890, Phase 6ii–6iii.
- Anglo-Saxon lead cames (FIG. 4.11)*
- 1388 Came, H-section, casting mark and pin mark.
Dimensions: 61 × 5 × 5mm. Top groove width c.4mm. (FIG. 4.11).

- RF 358, Context 1, Topsoil.
- 1389 Came, pinched to a tapering point at each end, file marks, one rounded and bevelled and one flat surface, pin mark in the centre.
Dimensions: $32 \times 6 \times 6$ mm. Wide groove *c.*5mm. (FIG. 4.11).
RF 12408, Context 10772, Phase 4ii.
- 1390 Came, pinched to a point at each end, one rounded and bevelled and one flat surface, with wide deep grooving.
Dimensions: $22 \times 5 \times 5$ mm. (FIG. 4.11).
RF 7872, Context 3107, Phase 4ii.
- 1391 Came, pinched to a point at one end, cut at the other, one bevelled and one flat surface, one wide and one narrow groove/valley. Traces from the wood of the casting mould visible on the surface.
Dimensions: $29 \times 5 \times 5$ mm. (FIG. 4.11).
RF 4099, Context 3107, Phase 4ii.
- 1392 Came, pinched to a point at each end, one rounded and bevelled and one flat surface, wide grooving.
Dimensions: $29 \times 5 \times 5$ mm. (FIG. 4.11).
RF 2809, Context 51, Phase 4ii.
- 1393 Came, triangular in section, pinched to a point at both ends, one broad shallow groove with central ridge, incision in upper surface.
Dimensions: 24×7 mm. (FIG. 4.11).
RF 196, Context 70, Phase 5a.
- 1394 Came, pinched to a point at both ends, one flat, one bevelled surface, one wide shallow groove, one narrow and deep.
Dimensions: $24 \times 6 \times 4$ mm. (FIG. 4.11).
RF 11209, Context 10772, Phase 4ii.
- 1395 Section of re-worked came, the groove is splayed and the two ends are blunted by the heating.
Dimensions: $16 \times 9 - 12 \times 9$ mm. (FIG. 4.11).
RF 174, Context 1, Topsoil.
- 1396 Distorted came, pointed at one end, cut at the other, domed top, one wide groove with casting line, one narrow groove, secondary cut.
Dimensions: $23 \times 8 \times 6$ mm.
RF 7874, Context 3107, Phase 4ii.
- 1397 Came, pinched to a point at each end, one end torn, one slightly bevelled, one flat surface, wide grooving.
Dimensions: $29 \times 4 \times 7$ mm.
RF 7876, Unstratified.
- 1398 Came, pinched to a point at both ends, bent and distorted in the middle.
Dimensions: $70 \times 5 \times 7$ mm. (FIG. 4.11).
RF 7967, Unstratified.
- 1399 Came, pinched to a point at each end, two bevelled surfaces, wide valley, pin mark.
Dimensions: $34 \times 9 \times 6.5$ mm.
RF 7875, Unstratified.
- 1400 Two comes, pinched to a point at both ends, two bevelled surfaces, wide shallow grooves.
Dimensions: $30 \times 5 \times 7$ mm.
RF 1958, Unstratified.
- 1401 Came, pinched to a point at both ends, bent and distorted.
Dimensions: $50 \times 5 \times 7$ mm.
RF 4359, Unstratified.
- 1402 Came, pinched to a point at both ends, filed to two bevelled surfaces.
Dimensions: $46 \times 5 \times 7$ mm. (FIG. 4.11).
RF 841, Unstratified.
- 1403 Fragment, triangular in section, pinched at each end, possibly a re-melted or rejected came, shallow double groove on one surface and linear incision on the other.
Dimensions: 22×6 mm. (FIG. 4.11).
RF 7873, Context 3107, Phase 4ii.
- 1404 Strip of lead with some evidence of working and possibly smelting.
Dimensions: $37 \times 11 \times 9$ mm. (FIG. 4.11).
RF 6186, Context 6136, Phase 3bv.
- 1405 Cut sliver probably from a came with part of a groove 4mm wide.
Dimensions: $30\text{mm} \times 2 - 5$ mm.
RF 6505, Context 6489, Phase 6ii–6iii.
- 1406 Partly melted lump, possibly once a came, pointed at one end and cut at the other, deep irregular groove.
Dimensions: $29 \times 9 \times 6$ mm. (FIG. 4.11).
RF 10138, Context 6235, Phase 3bv.
- 1407 Section of a came, cut at one end and pointed at the other, with one bevelled edge, one shallow wide groove, and one deeper narrower one.
Dimensions: $18 \times 7 \times 6$ mm.
RF 12479, Unstratified.
- 1408 Came, bent, and pointed at both ends, both grooves shallow and *c.*4mm wide.
Dimensions: $55 \times 6 \times 7$ mm.
RF 7885, Unstratified.
- 1409 Section of came, pinched together at both ends.
Dimensions: $23 \times 6 \times 6$ mm.
RF 158, Unstratified.
1410. Distorted section of came, pointed at each end with wide grooves.
Dimensions: $27 \times 5 \times 10$ mm.
RF 11985, Unstratified.
- 1411 Fragment of came, pinched together at both ends and at the top, to form a triangular section, casting line in the open wide groove.
Dimensions: $22 \times 8 \times 2$ mm.
RF 13304, Unstratified.
- 1412 Section of came, twisted and tapering at both ends, possibly Anglo-Saxon.
Dimensions: $6 \times 7 \times 130$ mm.
RF 50013, Unstratified.
- 1413 Fragment, possibly of a came flattened for reuse, or discarded before completion.
Dimensions: $20 \times 9 \times 3$ mm.
RF 12477, Unstratified.
- 1414 Rod off-cut distorted by heat, possibly a form of came.
Dimensions: $22 \times 6 \times 5$ mm.
RF 13237, Unstratified.
- 1415 Featureless fragment of melted lead, possibly part of a came.
RF 7887, Unstratified.

DEBATABLE AS CAMES OR AS ANGLO-SAXON

- 1416 Fragment formed from very thin lead strips (0.05mm thick) soldered together on one edge, and open like a clip at the other. Function obscure.
RF 2300, Context 4 (natural?)
- 1417 Narrow off-cut.
Dimensions: $20 \times 2 \times 2.5$ mm
RF 7380, Context 6472, Phase 5b–6i.
- 1418 Section of narrow came formed of thin lead sheets (0.05mm).
 $28 \times 5 \times 3$ mm.
RF 13230, Unstratified.
- 1419 H-section came with a straight length joined to an angled T-fragment. In appearance it is very different from those comes retrieved from the Phase 4ii and 5a deposits.
Dimensions: 7×4 mm.
RF 13377, Unstratified.

4.4 Other building materials

As will be apparent from the structural accounts presented in Volume 1 of this series (see Loveluck and Atkinson, Chs 3–7), a number of padstones were found associated with the excavated buildings. Lithological identifications of all of these, together with their description and dimensions are included in the research archive which can be accessed on the ADS website.

Similarly, a very limited amount of charred structural timber was recovered during the excavations. This was looked at during the assessment stage, but its fragmentary nature meant that no further analytical work would have been justified. Once again, details of this material can be found in the research archive on the ADS website.

Lastly, it should be emphasised that the soil conditions prevalent on this site have meant that any organic building materials which would have been in use would either be absent or drastically under-represented in the archaeological record: these would include all timber components (as used in walling, roofing, and the construction of doors, shutters, etc.), organic roof coverings (such as wooden shingles or thatch), woven hurdle or matting screens, etc., and any ropes used to hold roof coverings in place.

5 Domestic Fittings and Implements

*Patrick Ottaway, Lisa M. Wastling, Nicola Rogers,
Martin Foreman and David Starley*
*with contributions from Glynis Edwards[†], Geoff Gaunt, Jennifer Jones,
Ian Panter and Jacqui Watson*

This chapter looks at the evidence for the fixtures and fittings in use within the various buildings, and for domestic household implements and utensils; hence, whereas the previous chapter looked at the structural evidence for buildings, this concentrates more on the portable items and fittings which would have been found within those buildings. Such material would include furniture, shelves, chests, kitchen equipment and utensils, cutlery, sharpening stones, and lamps or other forms of lighting.

A very wide range of iron fittings included a miscellany of bindings, fixing strips, backing plates, hinge pivots, hasps and eyes, brackets, hooks, suspension chains, pot hooks, wall hooks, chain links, rings, discs, rivets, tubes, and rush-light holders. A smaller but complementary range of fixtures and fittings was also found in copper alloy: hence, there were copper alloy hinges, strips, bindings, decorated bands or fittings, terminals, tubes, chain, wire, sheet fragments and nails.

A variety of locks and keys was in use within the buildings, and examples were found in both iron and in copper alloy; these included both fixed locks, and more portable locks for chests etc.

A small assemblage of lead and lead alloy objects included plumb-bobs, lead plugs or tacks, rings, rods, offcuts, a stem, and a mount.

The household implements and utensils included 250 knives, some flesh-hooks and a skewer. These were supplemented by a range of bone and antler spoons and spatulae; other bone and antler items included a decorated antler container lid, a mount, a perforated tooth, and some possible bone implements.

Lastly, a range of household stone implements and objects included 19 hones, six stone lamps, and a possible carved chalk vessel.

The surviving examples of domestic fixtures and fittings represented about 9.4% of the recorded finds from the excavations. However, to put this into context, it should also be remembered that the preservation conditions on the site have heavily influenced the range of material which chanced to survive: hence, a notable absence from the archaeological record is any evidence for organic fixtures and fittings. Not only are we missing any surviving fragments of furniture, shelving, chests, wall hangings, floor coverings, etc., but we also have no indication of what proportion of the household items (such as plates, dishes, cups, and containers) would have been made of wood or leather. Horn survives only partially in the archaeological record (mostly as traces of horn handles on iron-ranged implements), but is likely to have been used much more extensively (e.g. for cups or other drinking vessels, and perhaps also as a material covering in composite items). Textile, furs and pelts have not survived at all, but are likely to have been used as covering and backing material for the arms, backs and seats of items of furniture, linings of chests and other containers, and probably also in their own right as decorative coverings for the surfaces of walls, floors and pieces of furniture. Lastly, given the proximity of the site to areas of wetland, we can expect that extensive use would also have been made of osiers, wicker, reed and rush for making baskets and containers of all shapes and sizes, and a range of woven mats etc., and that ropes and twine made from vegetable fibres, moss, etc., would also have been a regular component within most of these buildings.

5.1 Iron domestic fixtures, fittings and implements

by Patrick Ottaway, with contributions by Glynis Edwards†, Jacqui Watson and Ian Panter

Fittings (Fig. 5.1)

There is a heterogeneous group of c.157 objects (46 unstratified) which may be described as fittings in that they are, or clearly were, all pierced at least once for attachment to wood. They vary in terms of both size and form, but for discussion purposes most of them may be divided into plates (97 examples) or strips (60 examples). A plate is defined as a thin, flat piece of iron with a width to thickness ratio greater than c.4:1, while a strip is defined as having a width to thickness ratio of c.4:1 or less. Most of these fittings are incomplete and many are fragmentary, so that their original form and function is usually indeterminate, although they presumably served as bindings, brackets, strengtheners and the like. Those which have non-ferrous plating and grooves cut into the surface may have been as much decorative as practical in function.

Plates (Fig. 5.1)

Few of the plates require individual comment, but a few unusual examples which presumably had some specific function may be noted. No. 1429 (RF 1419; Phase 6iii) is a substantial D-shaped plate, 65 × 62mm, which is pierced three times (Fig. 5.1). One end of no. 1446 (RF 4354; Phase 4ii), 71mm long, is looped over, and it has three holes in a line, the central one being larger than the other two (Fig. 5.1). No. 1451 (RF 5265; Phase 4ii–5a), 65mm long, is widest in the centre where it is pierced by a large hole, and it is also pierced at one end. No. 1463 (RF 6973; Phase 6iii) is a small plate with an unusual oval shape which is pierced twice and has two dome-headed rivets *in situ*. No. 1471 (RF 8600; unstratified) is lozenge-shaped, and also has two dome-headed rivets *in situ* which are tin-plated. Four plates are copper-plated (nos 1445, 1476, 1506 and 1512: RFs 4145, 9322, 13019, and 13374 – respectively from Phases 6ii, 4ii, and unstratified) and may be fragments of bell or lock cases.

Multiple incidences of pierced plates found in the same context are as follows:

Context	No. of plates
3758	5
3107	4
3891	4
3989	3
5139	3
636	2
2177	2
6300	2
6472	2
10772	2

As with other types of structural ironwork, there are concentrations both in general levelling layers, and in the ditch fills, which suggest that redundant items of structural woodwork may have been discarded in these contexts.

Strips

The majority of the strips are probably casket fittings. Four (nos 1523–4, 1541, and 1554: RF 1792, Phase 5b; RF 1940, Phase 6iii; RF 8547, Phase 6iii; and RF 9842, unstratified) are unremarkable, apart from being tin-plated. No. 1571 (RF 13635, unstratified) also has plating, which has not been analysed. No. 1520 (RF 1434; Phase 6iii) and no. 1546 (RF 9045; Phase 4ii), both tin-plated, have one undulating side, being at their widest where there are rivet-holes. No. 1520 (RF 1434) also has punched dots running along the undulating side (Fig. 5.1). A very similar strip fitting comes from *Hamwic* (SOU169.1683, unpublished, excavated by Southampton City Council). No. 1528 (RF 2873, unstratified) is a strip of which one face has bevelled edges, and there are three groups of incised grooves cut into it.

A group of nine strips (nos 1517, 1533, 1539, 1543, 1548, 1551, 1557–8 and 1565: RF 399, Phase 4ii; RF 5767, Phase 4ii; RF 8443, Phase 6iii; RF 8847, Phase 6iii; RF 9048, Phase 4ii; RF 9256, Phase 4ii; RF 10620, Phase 5b–6i; RF 10981, Phase 5b–6i; and RF 12576, unstratified) have or had rounded terminals at one or both ends. No. 1517 (RF 399) is copper-plated; no. 1548 (RF 9048) is tin-plated, and has bevelled edges and fine diagonal grooves cut into one face (Fig. 5.1); no. 1551 (RF 9256) has a tin-plated rivet *in situ* in the surviving terminal. No. 1565 (RF 12576) is plated and has an incomplete terminal, pierced twice, above which the strip has incised grooves on one face. Nos 1534 and 1553 (RF 6443, Phase 3bv; and RF 9734, unstratified) are terminals from similar fittings to those just described. No. 1535 (RF 6670, Phase 6ii–iii) is a strip with a triangular terminal. No. 1542 (RF 8562, unstratified) is a spirally-twisted strip with a rounded terminal, and may be the incomplete arm of a small corner bracket. Four strips have D-shaped cross-sections: no. 1550 (RF 9124, unstratified) is pierced once, nos 1538 and 1540 (RF 8058, Phase 6ii–iii; and RF 8543, Phase 6iii) are both pierced twice and tin-plated, and no. 1561 (RF 11236, unstratified) is pierced three times, tin-plated, and has grooves incised on the convex surface.

No. 1562 (RF 11666, Phase 3biii) is an unusual L-shaped strip, in which one of the arms is itself crank-shaped; both arms widen in the centre where one is pierced. No. 1569 (RF 13339, unstratified) is broken at each end where, in both cases, it starts to widen. In the centre it widens to form an oval area which is pierced in the centre. No. 1568 (RF 13203, unstratified) exists as a small piece of strip, broken at one end, part of which was originally divided in two to grip a thin piece of horn which was also held by two rivets. At the unbroken end the strip tapers to a point.

Similar strip fittings to those described above, with features such as rounded terminals, bevelled edges or

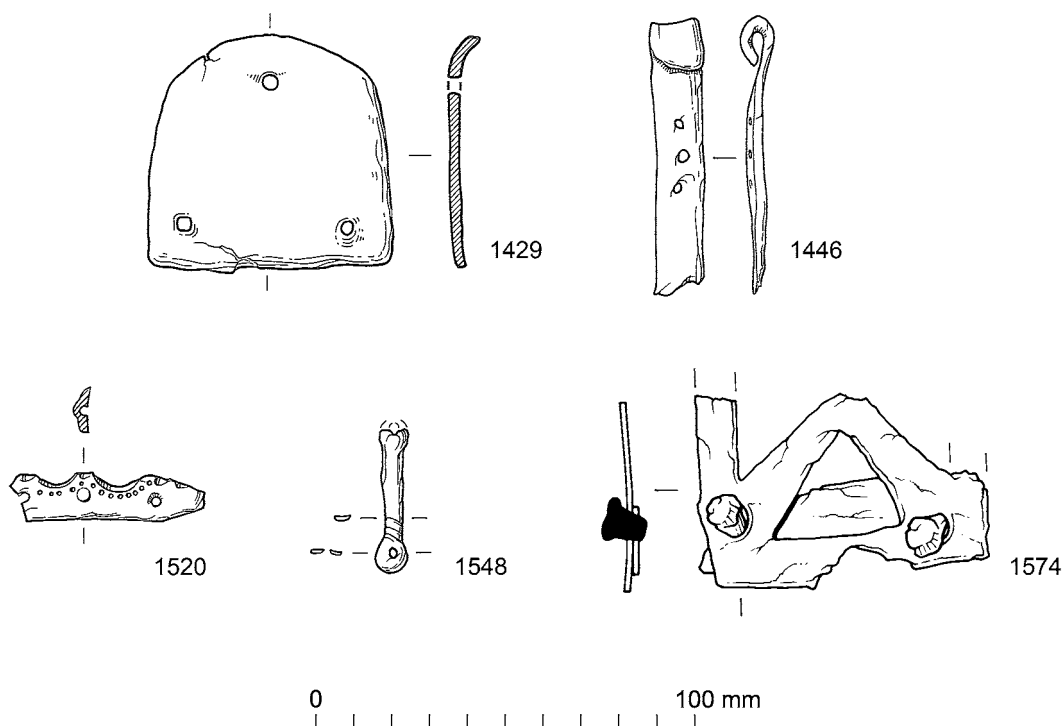


FIG. 5.1. Iron pierced plates and strips. Scale 1:2.

D-shaped cross-sections, and decorated with plating and incised grooves, are well-known in mid-late Anglo-Saxon contexts. There are for example a number from York (Ottaway 1992, 628–33). The presence of these objects at Flixborough must imply that the decorated casket was a common household item. This is also suggested by other types of objects such as the small plated keys nos 1919 and 1936 (RFs 3834 and 11994), and stapled hasps nos 1722–3 (RFs 7145 and 13178).

Multiple instances of pierced strips from the same context are as follows:

Context	No. of strips
3107	9
3989	4
51	2
6300	2
6472	2
10772	2
11669	2

From this, it can be seen that there is a noticeable concentration in the ditch fills, which may suggest that structural woodwork was being discarded into the ditch in Phase 4ii; there are smaller quantities from general levelling layers.

Finally under the heading of fittings, no. 1574 (RF 2384, Phase 5b), a most unusual small object (35 × 26mm) of unknown function may be noted. It is tin-plated, now incomplete, and made of thin strips (Fig. 5.1). It has one complete surviving side, from each end of which project at 90° an incomplete side-piece, and at 45° the arms of a triangle which lay within the frame made by the sides. The latter has grooves incised into its surface. The object is pierced at the corners, and an additional strip is riveted to the complete side.

Crescent-shaped fittings (Fig. 5.2)

There is a large group of c.84 distinctive objects (27 unstratified) which are apparently unique to Flixborough. On the basis of their form they may be described as crescent-shaped fittings. They are usually slightly curved in cross-section and slightly thicker on the inner, concave side than the outer convex side. The arms of the crescent usually taper to a rounded tip or to a looped terminal, although no. 1594 (RF 3618, Phase 6iii) is anomalous in having arms with straight-cut ends (Fig. 5.2). For the most part, the complete or near-complete examples are, or clearly were, pierced three times. Five examples (nos 1602, 1621, 1624, and 1629–30: RF 4176, Phase 6ii; RF 8055, Phase 6ii–iii; RF 8411, Unstratified; RF 8987, Phase 6iii; RF 8998, Phase 6iii) have nails *in situ*, and the heads project from the concave face of the fittings, while the shanks project from the convex face where they are

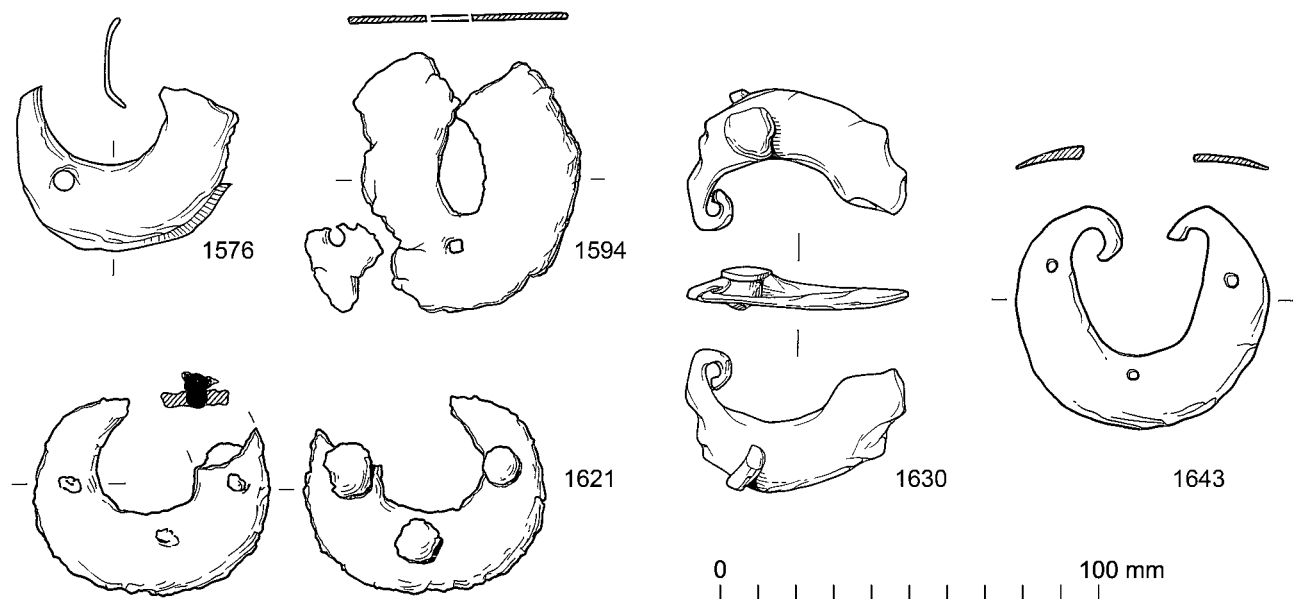


FIG. 5.2. Iron crescent-shaped fittings. Scale 1:2.

bent over. In terms of size, the complete or near-complete examples do not vary a great deal, their lengths being 50–70mm, and widths 40–55mm.

The exact function of these distinctive fittings remains uncertain. Although neatly finished off, they appear to be utilitarian, rather than decorative, given that the nail shanks project in a rather untidy manner from the convex face. All one can say on the basis of their form is that these fittings may have been attached to the rounded tip of some thin and narrow wooden object. Alternatively, their form may not have been directly related to function, and these fittings were simply nailed onto a number of different types of wooden objects for strengthening purposes.

While most of the stratified crescent-shaped fittings come from Period 6 contexts, the earliest (no. 1576; RF 14350; FIG. 5.2) is from Phase 2–3a.

It may also be noted that there are two large discs, nos 1855 and 1857 (RF 7028, Phase 6iii–7; and RF 12179, Phase 3bv) which have a large hole off-centre, and are pierced three times for attachment (pp.175–6). They may represent a development from the crescent-shaped fitting, in which the arms have been joined together.

Multiple instances of these fittings from the same context are as follows:

Context	No. of crescent-shaped fittings
3107	6
3989	5
6499	3
1833	2
2177	2
6498	2

These show a similar distribution to that of the other classes of fittings; given their specialised function, this tends to suggest that pieces of unwanted structural woodwork were being discarded into the ditch and other general levelling layers.

U-shaped fitting

Similar in size to the crescent-shaped fittings is a U-shaped fitting (no. 1658; RF 5427, Phase 4ii) which is also pierced three times, but is flat, rather than slightly curved in section. It seems likely that no. 1658 (RF 5427) had a similar function to the crescent-shaped fittings, and it may be noted that others have been found in middle Anglo-Saxon contexts at Barking Abbey (e.g. sfs 426, 1442, 1683, 2020; unpublished, excavated by the Passmore Edwards Museum) and *Hamwic* (SOU169.1992; unpublished, excavated by Southampton City Council).

Hinges

This broad heading includes 58 examples of hinge straps, hinge pivots, U-eyed hinges and fittings. There are comparatively few incidences of multiple examples of the same type of object from the same context, as would have been expected had complete doors or shutters been discarded: this suggests that redundant pieces of structural woodwork were being stripped of any hinge fittings which could be reused, before the wood was discarded. This is in contrast to some other categories of structural ironwork (e.g. staples, pierced strips, etc.), which may have been seen as less valuable. The incidence of multiple occurrences of all kinds of hinges and hinge fittings is as follows:

Context	Nos of hinge fittings
3107	3
3989	3
3891	2
10772	2

Most of the hinges and staples seem to belong to large chests or boxes, and several still retained traces of wood; in all the examples where this could be identified, the wood was found to be of oak. The wood grain was closely examined for carpentry evidence, but none was found, other than that some of the structures may have been made from radial split timber, as the main surface preserved is a radial section (RLS).

Hinge straps (Fig. 5.3)

There are 34 straps of varying degrees of completeness which come from the simple linked hinges used almost universally on chests and caskets in the Anglo-Saxon period. There were two pairs on the chest re-used in a burial from the 1988 excavations (see Volume 1, Ch. 8.3), and two other pairs from that site. Each pair of straps included one which was fitted to the chest lid and had a link at the head; this was set in the eye at the head of the strap attached to the chest back. The eye was usually formed by drawing out the head of the strap, looping it round, and welding it back onto the side of the strap, rather than by piercing. Both straps are usually pierced twice for attachment – once near the head, and once near the base.

Hinge straps of the type described above are common in Anglo-Saxon contexts, but exhibit considerable variation in form. Unfortunately, apart from those from the cemetery, the Flixborough examples are in general fragmentary. As far as the lid straps are concerned, no. 1670 (RF 14237, unstratified) is somewhat similar to the straps in the burial, in narrowing to the base where there is the suggestion of a rounded terminal. No. 1664 (RF 6688, Phase 6ii) has parallel sides, and this is also a relatively common form. The back straps include no. 10 (RF 10847, unstratified: see Volume 1, Ch. 8.3) which narrows to a rounded, pierced terminal, while no. 1675 (RF 5336, Phase 6ii) and no. 1678 (RF 7921, Phase 6ii) have parallel sides. No. 1678 (RF 7921) is unusual in being pierced three times for attachment, with the holes arranged as a triangle (Fig. 5.3).

Pinned hinge strap (Fig. 5.3)

No. 1692 (RF 6014, Phase 6ii) is a small strap from a pinned hinge fitting. It is pierced three times and linked to the pin; the second strap is missing.

Hinge pivots

There are only two hinge pivots: nos 1690–1 (RF 7378, Phase 5b–6i; and RF 13757, unstratified). A hinge pivot is a L-shaped object with a shank for setting in a door frame, and a guide arm on which the U-shaped or looped eye of a hinge strap pivoted. The scarcity of hinge pivots

at Flixborough is of interest, as they appear generally very scarce in Anglo-Saxon contexts earlier than the late 9th century. At 16–22 Coppergate, York only seven out of 37 hinge pivots from Anglo-Scandinavian contexts could be dated before *c.*925 (Ottaway 1992, 635–7). There is also a scarcity of U-eyed hinges suitable for use with a hinge pivot in contexts datable to before the 10th century (see below). MacGregor, considering the evidence from Anglo-Scandinavian finds from Pavement and other sites in York, suggested that the use of hinge pivots might imply a more sophisticated form of architecture than that represented by post-and-wattle buildings, but they would be appropriate for a plank-built structure in which they could be used to hold window shutters, if the buildings possessed them (MacGregor 1982, 83).

U-eyed hinges and fittings (Fig. 5.3)

There are 11 hinges or similar fittings with U-shaped eyes (four unstratified). U-eyed hinges are common objects in late Anglo-Saxon and medieval contexts, and there are three principal forms. The first has a strap, pierced at least twice, each side of the eye; the second has a strap on one side, and a terminal, pierced once, on the other; and the third has a terminal on each side of the eye. The Flixborough examples are mostly incomplete, but there are four examples which had at least one strap: nos 1705 and 1693–5 (RF 6677, Phase 6ii–iii; RF 7945, Phase 6ii–iii; RF 8372, Phase 6iii; and RF 10437, Phase 6ii–iii). These objects could have been hinges, while the remainder of those considered under this heading were probably not, as they are too small and insufficiently robust.

Two examples of small U-eyed fittings have a terminal each side of the eye: nos 1701–2 (RF 2575, Phase 5b; RF 2941, Phase 2i–4ii). The terminals of the latter are, unusually, rectangular rather than rounded (Fig. 5.3).

There are four objects: nos 1696–1700 (RFs 4339, 11987, 12469 and 12720), all unstratified, which, rather than having straps in the accepted sense, have thin arms pierced for attachment either side of the eye. It is possible that they are a form of binding. The arms of no. 1697 (RF 4339) lie very close together, and it must have been used on very thin wood, or perhaps on a leather object such as a book cover or item of horse equipment. No. 1699 (RF 12469) is tin-plated; the arms have bevelled edges, and are expanded in the centre to allow piercing, and have roughly rounded terminals (Fig. 5.3). This was probably a casket fitting.

No. 1696 (RF 3755) is another small tin-plated fitting, which has a U-shaped eye between two thin arms which are L-shaped; each has a rounded, pierced terminal.

The fact that all the stratified examples of objects from Flixborough which may be interpreted as U-eyed hinges, as opposed to fittings used for other purposes, come from Phase 6ii–iii contexts is important support for the idea that the wide use of this object type is probably an innovation of the later Anglo-Saxon period. At Coppergate, York, only one out of 14 U-eyed hinges from Anglo-Scandinavian

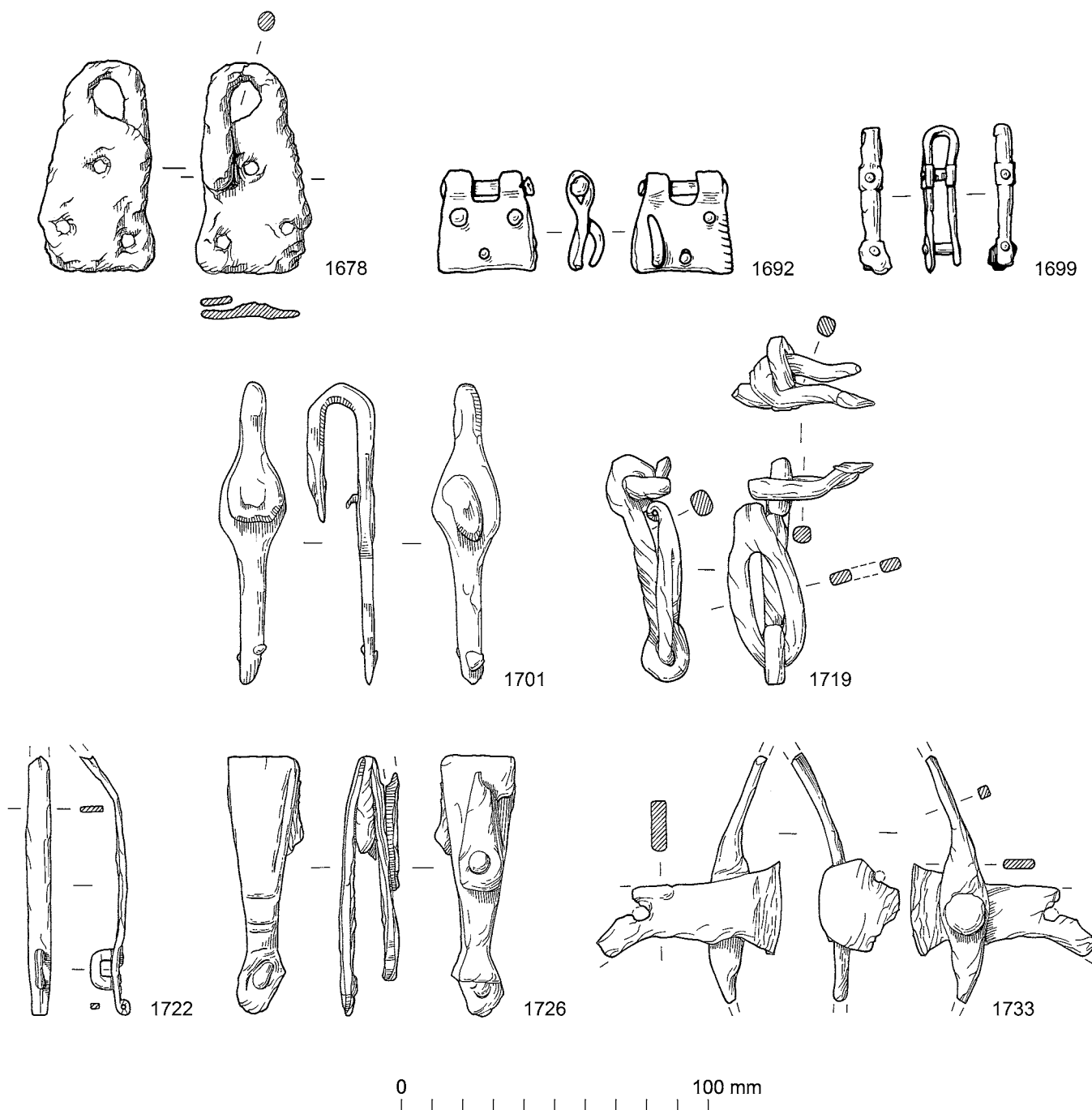


FIG. 5.3. Hinge straps, U-eyed hinges and fittings, hasps, and corner brackets. Scale 1:2.

contexts came from a context dated earlier than c.925 (Ottaway 1992, 637–9). It may also be noted that the probable hinges from Flixborough are small compared to many from Anglo-Scandinavian contexts at York, suggesting that the Flixborough group were not used on large doors.

LOOPED-EYE FITTINGS

There are 12 small fittings (six unstratified) which are similar to U-eyed hinges and fittings, but have a looped eye at the head, which is flanked by either straps or, in the cases of nos 1707–8 (RF 8627, Phase 6ii; and RF 9507, Phase 4ii), terminals. One function of this type of object was to link the body of a vessel to its handle, but they were also used for linking bridle straps to a horse's bit.

U-SHAPED LOOPS WITH LOOPED TERMINALS

There are two small objects with a U-shaped loop between two small looped terminals (RF 184, Phase 5a; no. 1717, RF 2486, Phase 6iii). The function of these objects is uncertain, although a similar object was found in a 12th-century context at Lund (Sweden), attached to the looped terminal at the base of a stapled hasp, where it had clearly served to give the user a better grip (Mårtensson 1976, fig. 365); there is also another unattached example found in an 11th-century context (*ibid.*, fig. 366). Three Anglo-Scandinavian examples come from 16–22 Coppergate, York, and were interpreted, probably wrongly, as part of dress fasteners which operated on the hook-and-eye principle (Ottaway 1992, 698, fig. 303, 3823–5). An 8th–11th century object, again of similar form and size from Lough Gur Crannog (Ireland), was interpreted as part of horse harness (O’Riordáin 1949, fig. 10, 23). It may also be noted that a small Middle Anglo-Saxon copper alloy brooch in the form of a U-shaped loop with looped terminals comes from Whitby (Peers and Radford 1943, fig. 12, 17).

Hasps (FIG. 5.3)

There are four examples, all stratified, of a distinctive form of hasp suitable for a chest or casket. All the components can be seen on no. 1719 (RF 733, Phase 6iii); there is a sub-oval link, which would have fitted over a staple projecting from the front of a container, where it would have been held in place by a pin or padlock (FIG. 5.3). The link is joined to a spirally-twisted strip with a looped eye at each end. This strip is also joined to a staple, which would have been set in the chest lid. Nos 1718 and 1720 (RFs 586 and 1799, respectively Phases 6iii and 5b) were similar objects, but are now incomplete, and no. 1721 (RF 6866, Phase 6iii–7) is a detached link.

There are no exact parallels for these objects, but a very similar hasp comes from an Anglo-Scandinavian context at 16–22 Coppergate, York (Ottaway 1992, 643–5, fig. 270, 3493). It has a link coupled to a spirally-twisted component formed rather like a figure 8-shaped chain link, with an eye at each end, which is also linked to a staple. Three other hasps from Coppergate (*ibid.*, fig. 270, 3490–2) were made on the same principle as this and the Flixborough objects, but the components are of a rather different form.

Stapled hasps (FIG. 5.3)

No. 1722 (RF 7145, Phase 6ii–iii) was originally L-shaped. The head of the upper arm is now missing, but the lower arm is complete; it is parallel-sided, before narrowing slightly at the base, where there is a small looped terminal (FIG. 5.3). The attached staple would have fitted into a slot in the face of the chest, where it would have been held in place by a sliding lock bolt (see below). The object is tin-plated, as is no. 1723 (RF 13178, unstratified), which is now incomplete. Both these objects were probably casket fittings. Stapled hasps appear to be an innovation of the late 7th–early 8th century, and no. 1723 (RF 7145) is similar in

form to a number of examples from mid–late Anglo-Saxon sites, including 16–22 Coppergate, York (Ottaway 1992, 655–6, fig. 271, 3495) and Ailcy Hill, Ripon (Ottaway 1996, 103–6, fig. 23, 575), although these are not plated.

*Brackets**Corner brackets (FIG. 5.3)*

There are nine examples (one unstratified) of L-shaped brackets or parts of brackets, which were used as corner strengtheners on chests or caskets. In most cases (e.g. nos 1725 and 1727–30: RF 612, Phase 6iii; RF 2072, Phase 6iii; RF 2811, Phase 4ii; RF 4613, Phase 6iii; and RF 8996, Phase 6iii), the arms have some form of rounded or oval terminal. The arms themselves can be just a narrow strip (no. 1725; RF 612), they may narrow towards the terminal (nos 1726 and 1730; RFs 725, 8996; FIG. 5.3), or be spirally twisted (no. 1728; RF 2811). These variations are all well-known in Anglo-Saxon contexts.

Two other objects also appear to be corner brackets, but have unusual features. No. 1726 (RF 725, Phase 6iii), which is plated, has riveted to one arm a pierced, oval terminal (FIG. 5.3). It is difficult to see what this terminal was once part of, unless it was an additional strengthening strip.

No. 1733 (RF 6065, Phase 5a) is a probable corner bracket, of which both arms are incomplete, and nailed to the inner face of one arm is an elongated strip which tapers to each end; both arms curve away slightly from the bracket, as if they once gripped another object.

The only multiple instance of corner brackets found in the same context is from 3989.

L-shaped brackets

Nos 1734–5 (RFs 4064 and 8318, respectively from Phases 6ii and 6iii) are small L-shaped objects, both arms of which taper to a wedge-shaped tip. These are probably corner strengtheners, the arms of which, rather than being nailed, were hammered into place.

Vessels (FIG. 5.4)

These are represented by 22 handles and one plate fragment. The only multiple incidences of vessel fragments from the same context are as follows:

Context	No. of vessel frags.
6343	2
6499	2
10772	2

Vessel handles (FIG. 5.4)

There are 22 vessel handles (6 unstratified) which are mostly incomplete, but were all clearly semi-circular with looped terminals at each end. At least five (nos 1737, 1741, 1751, 1753 and 1755: RF 1854, Phase 6ii–iii; RF 5732, Phase 5b; RF 11272, unstratified; RF 12094, Phase 5a;

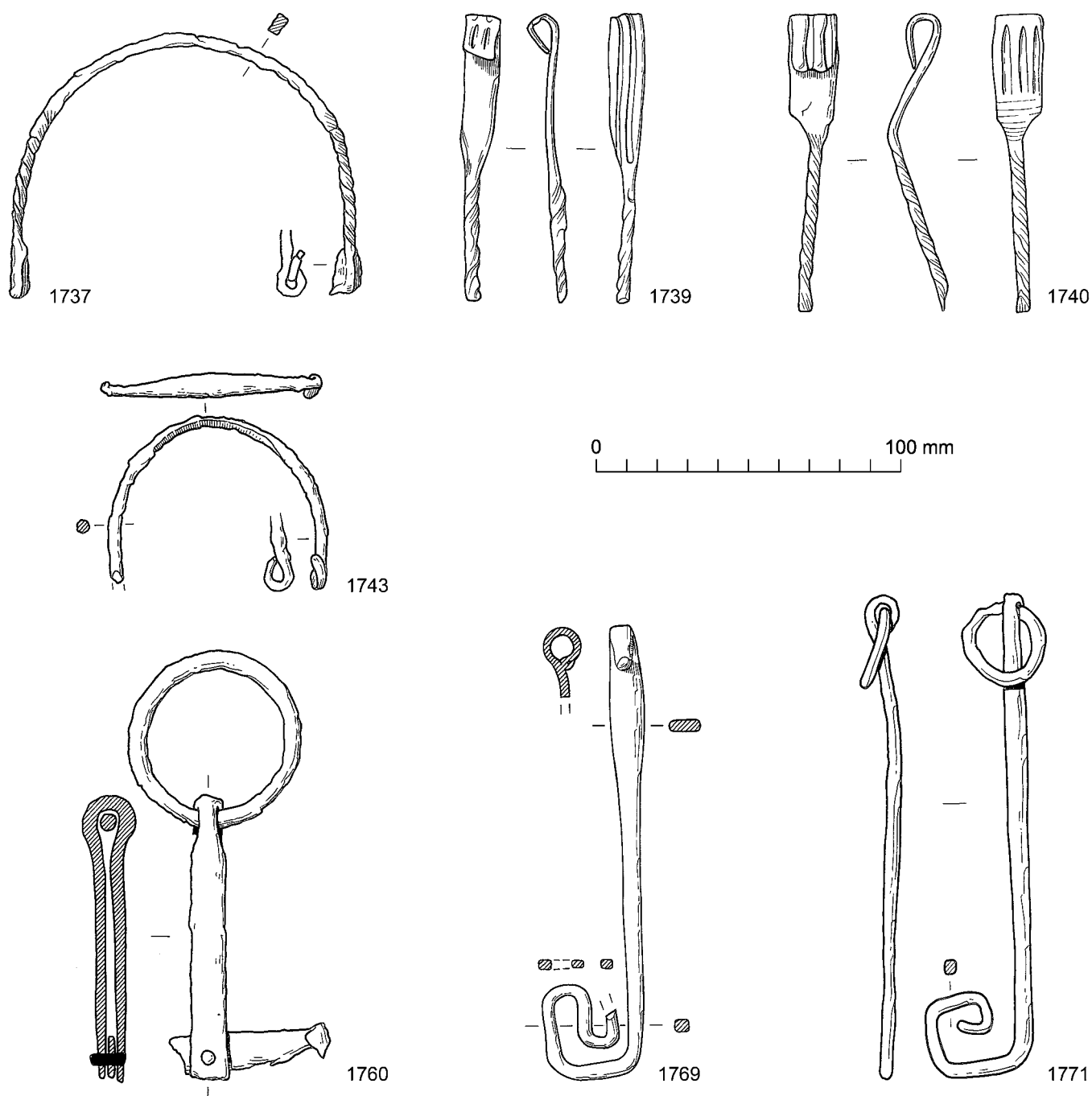


FIG. 5.4. Iron vessel handles, suspension fittings and pot hooks. Scale 1:2.

and RF 12315, unstratified) are in part spirally-twisted, but were flattened out in the centre for ease of handling. Flattening in the centre is also visible on the plain handles, including nos 1750 and 1756–7 (RF 11261, Phase 2–5a; RF 12934, Phase 4ii; and RF 13437, unstratified).

Nos 1739–40 (RF 3663, Phase 6ii; RF 5709, Phase 5a) are both probable handle fragments (now incomplete),

which are similar in form, in consisting of a spirally-twisted piece of iron which develops into a flat plate, with two channels running down the centre; the tips are looped over (FIG. 5.4).

Some of the handles were clearly substantial, and have or had a span of 200mm or more. They would probably have come from small buckets or cauldrons.

Vessel fragment

No. 1762 (RF 8112) may have been part of an iron vessel; it is a curved plate broken on all sides, except one, along which it is curved over slightly, as if to make a rim.

Vessel suspension fittings (Fig. 5.4)

There are three fittings (nos 1758–9 and 1761: RF 3935, Phase 6ii; RF 6072, Phase 5b; RF 13303, unstratified) which were originally similar, in consisting of a U-shaped loop which expanded at each end into a pierced terminal, by which they were probably nailed to a wooden vessel rim.

No. 1760 (RF 8627, Phase 6ii) is rather different in form (Fig. 5.4); it consists of a fitting with a looped eye and two straps lying close to each other at the base grip, and are nailed to an incomplete strip (on which there are wood remains). Originally this strip was attached to a vessel rim. Linked to the eye is a ring, to which a handle (see pp.171–2) was presumably coupled.

Pot hooks (Fig. 5.4)

There are 13 probable pot hooks (five unstratified), which would have been used to suspend cooking vessels over a fire, and may originally have hung at the end of suspension chains, although of much less substantial dimensions than no. 1777 (RF 7107: see below). They have or had an elongated shank, which in some cases (e.g. nos 1767 and 1769: RF 5461, Phase 4ii; RF 7431, Phase 5b–6i) is widened from just above the hook into a plate with slightly convex sides (Fig. 5.4). In the case of no. 1766 (RF 4110, unstratified) the shank widens gradually over its whole length. The shank of no. 1765 (RF 4060, Phase 6ii) is spirally-twisted. The surviving shank heads have a looped terminal. A small ring, perhaps part of a chain, is linked to the terminal of no. 1771 (RF 10608, Phase 6ii–iii; Fig. 5.4).

The hooks have various forms. The hooks on nos 1765, 1767–8, 1770 and 1775 (RFs 4060, 5461, 6829, Phase 6iii–7; and RFs 9704 and 12336, both unstratified) are a simple U-shape with the tips turned over. No. 1763 (RF 3129, Phase 4ii) has a tip which is curved outwards. Nos 1772, 1774 and 1776 (RF 11223, unstratified; RF 12143, Phase 5a; RF 12998, unstratified) have U-shaped hooks with a pointed tip. The hook of no. 1764 (RF 3309, Phase 4ii) is curved into a C-shape, and so the object resembles a pot hook (not identified as such) from a middle Anglo-Saxon context at Ramsbury, Wilts. (Evison 1980, 39, fig. 23, 29). No. 1766 (RF 4110) has an unusual hook in the form of a short spiral with a tip curved back on itself. The hook of no. 1773 (RF 11303, Phase 2–5a) is looped inwards, and again has a tip curved back on itself. Rather than being U-shaped, the hook of no. 1771 (RF 10608) has 90° angles, appearing L-shaped, and the tip is bent back on itself. It might be argued that this object is a slide key (see pp.188–90), but it is difficult to see with what sort of lock the hook as a bit would have been used. No. 1769 (RF 7431; Phase 5b–6i) also has a hook with 90° angles, and

the tip is looped back on itself into a curious C-shape.

The length of these pot hooks varies between 85mm (no. 1772; RF 11223) and 172mm (no. 1767; RF 5461).

No. 1808 (RF 3756, unstratified) is probably a pot hook or suspension chain link which exists as a spirally-twisted strip with a hook at each end. It is similar to, if smaller than, the hooks on the suspension chain no. 1777 (RF 7107: see below).

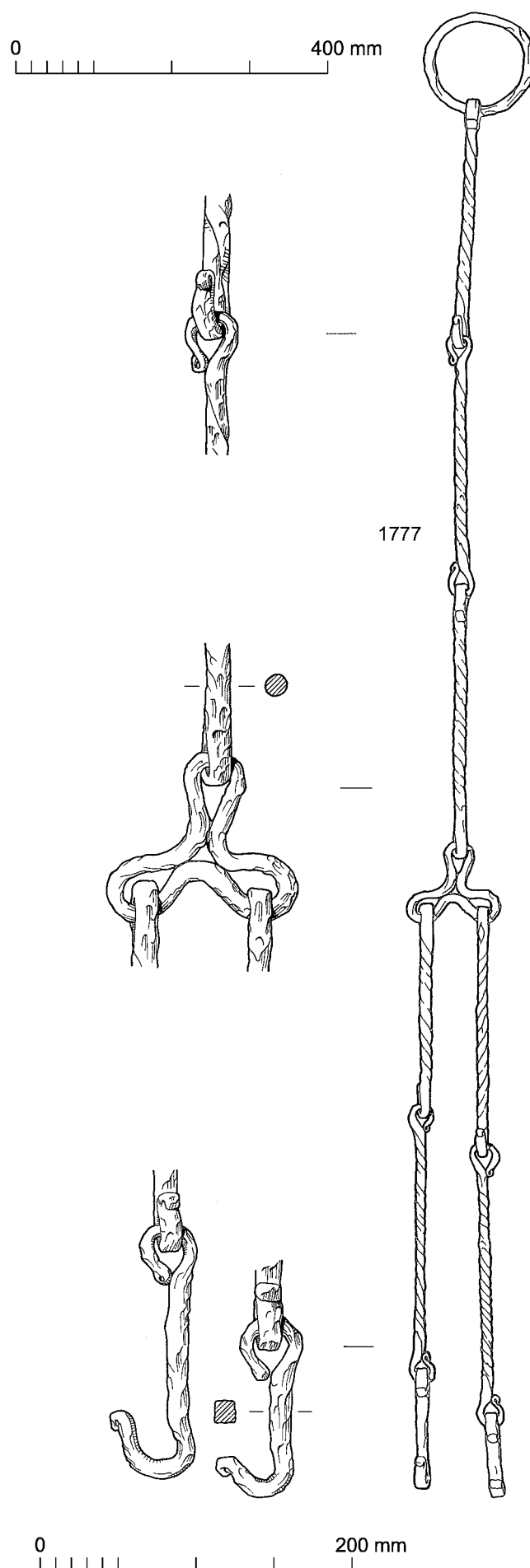
The only context to yield more than one pot-hook was layer 3107 in the ditch.

Cauldron suspension chain (Fig. 5.5; Pl. 5.1)

The cauldron suspension chain, no. 1777 (RF 7107) is a most remarkable object, consisting of a large trilobate link to which are joined three lengths (A–C) of linked components (Fig. 5.5). The chain was found carefully buried, along with plough share no. 2360 (RF 7110), in a small pit or post-hole which cannot be closely phased – being either as early as Phase 3biv, or as late as Phase 5b. The two objects were probably deliberately buried together as a hoard (see Ch. 6.1, below).

Each of the three lengths of the chain (A–C) is made up of three (A) or two (B–C) very substantial links, 280–370mm long, which have a spirally-twisted shank and a loop at each end. In length A the third link is attached to a large ring, and in lengths B and C the second link is attached to a third, which has a loop at the head, and hook at the base of the shank. When in use, the chain would have been suspended from a pole or beam by means of the ring at the head of length A. Lengths B and C would then have hung down from the trilobate link, and the hooks at the ends would have held the looped or ring handles of a cauldron. This could have had a diameter at the lip of up to c.0.80m, in other words it could have been the size of the bronze cauldron from the Sutton Hoo ship burial which had a diameter of c.0.70m (Bruce-Mitford 1983), or of the iron cauldron with a maximum diameter of c.0.67m found in an Anglo-Scandinavian context in St Saviourgate, York (unpublished, excavated by MAP in 1995). When fully extended in the manner described, the chain measures c.2m. If the cauldron were to be suspended above a ground level hearth, one might conjecture that its lip was c.1m above the ground. In this case, the ring at the head of A would probably have been suspended at a height of c.3m from the ground, and it could have hung from a roof beam in the building in which the hearth was situated.

The Flixborough suspension chain can be considered alongside only two other complete Anglo-Saxon examples, which come from Sutton Hoo (Fenwick 1983) and Butley (Fenwick 1984, 42–4), both in Suffolk. All three are of a type known as Y-chains because they consist of a length of chain from which depend two shorter lengths with hooks for holding the cauldron. The Flixborough, Sutton Hoo and Butley chains all have a large ring at the head, and incorporate substantial links or hooks with spirally-twisted shanks at some point, but this is where the similarity ends. The Sutton Hoo chain, of the early 7th century, incorporates



a much larger number of different types of element than the Flixborough chain, some of which are extremely complex. It also, unlike Flixborough, incorporates a number of small chain links of various forms. The Sutton Hoo chain measures 3.45m, and is therefore much longer than the Flixborough chain; it is reckoned that it would have needed a suspension height of at least 5m. The Butley chain, probably late 7th–early 9th century in date, has a simple ring as the junction point of the Y, but again incorporates a greater diversity of components than the Flixborough chain and employs a number of small chain links. The Butley chain is thought to have measured c.1.9m and would have been suspended from a height of c.3m; these figures are comparable to Flixborough. When chains of similar date from elsewhere in northern Europe are taken into consideration, there is, again, none directly comparable to that from Flixborough, although the distinctive trilobate junction link can also be seen on a 9th-century chain from the Norwegian Gokstad ship (Nicolaysen 1882/1971, pl. 10.5).

Other suspension fittings

There are three unusual objects which, if not pot hooks as such, were probably fittings incorporated in suspension chains. Unfortunately all are unstratified, but they are presumably Anglo-Saxon. Nos 1779 and 1781 (RFs 2051 and 12335) both have shanks which have a looped terminal at the head and narrow towards the base. At the base they bifurcate to form two spirals which may have served as hooks. On no. 1779 (RF 2051) both roll the same way, and on no. 1781 (RF 12335) they roll in opposite ways. No. 1780 (RF 9771) was probably a similar object, but the base is largely missing. No. 1778 (RF 571) consists of a stub of shank which bifurcates to form two inturned loops. All these objects bear some resemblance to an unidentified object from Hedeby, North Germany, which has a shank with a looped terminal at the head, and at the base bifurcates to form two spirals (Müller-Wille 1973, 34, Abb. 8, 14).

S-hooks

There are three S-hooks: two are small (nos 1783–4: RF 4085, Phase 6iii; RF 12392, unstratified) and one is large (no. 1782: RF 3839, Phase 6iii), and they may have been used as pot-hooks, or for other purposes. Context 3989 contained two such hooks.

Tanged hook

No. 1807 (RF 12324, unstratified) is a small U-shaped hook, with a straight tapering tang, which probably functioned like a coat- or cup-hook.

FIG. 5.5. Iron cauldron suspension chain, no. 1777. Scale 1:8; details, scale 1:4.

Wall hooks (Fig. 5.6)

There are 23 wall hooks (11 unstratified and one, no. 3408 (RF 25), from a modern context: see Ch. 14, below). All but three are of very similar form, with a tapering shank and a slightly curved hook arm. There is a slight step at the base of the hook to allow the object to be hammered into place without damaging the hook. Nos 1792–3 (RFs 6827 and 7033, both Phase 6iii–7) are different from the rest, in that the hook arm projects an unusually long way from the head of the shank. No. 1806 (RF 12957, unstratified) is a simple L shape. There is some variation in size, with the length of shanks ranging from 32–90mm.

Hooks of the principal form have a long history, which, as no. 3408 (RF 25 – made of cast iron: see Chapter 14) shows, continues into modern times; other Anglo-Saxon examples are scarce, although there is one from an Anglo-Scandinavian context at York (Ottaway 1992, 651, fig. 276, 3556). There are no obvious parallels for nos 1792–3 (RFs 6827 and 7033).

These hooks are likely to have remained *in situ* within buildings until they were demolished, and hence, when found within the bounds of a structure, are unlikely to have been redeposited. Those wall hooks with a curved arm may have been attached to ceiling beams, serving a number of functions, including hanging of lamps, meat and other objects. The only contexts to contain more than one wall hook were 6300 and 10772 (two each).

Chain links

There are 13 single oval chain links and a linked pair (no. 1809: RF 2591, unstratified). There are also four figure 8-shaped links, while no. 1826 (RF 4191, Phase 5b–6i) is a pair of small S-shaped links.

Rings

There are 26 rings or parts of rings, mostly of quite small size. They may be chain links, but could also be ring handles for boxes, caskets etc. No. 1829 (RF 3754, unstratified) is tin-plated, which strongly implies identification as a casket handle similar to an example on a Viking Age casket from Denmark, published by Roesdahl (1976, fig. 11c). Nos 1835 and 1846 (RF 6547, Phase 3bv; RF 13017, unstratified) are unusually large rings of diameters 76mm and 61mm respectively; they may have been chest handles or horse-bit cheek-pieces.

The only contexts to yield more than one ring were 3758 and 6300 (two each).

Discs (Fig. 5.6)

There is a heterogeneous group of seven objects, of diameter 30–87mm, which may be described as discs; no specific function suggests itself for any of them.

Nos 1855 and 1857 (RF 7028, Phase 6iii–7; and RF 12179, Phase 3bv) are very similar in form and size (diameter 80 and 87mm). They have a large hole off-centre, and are pierced three times for attachment (Fig. 5.6).

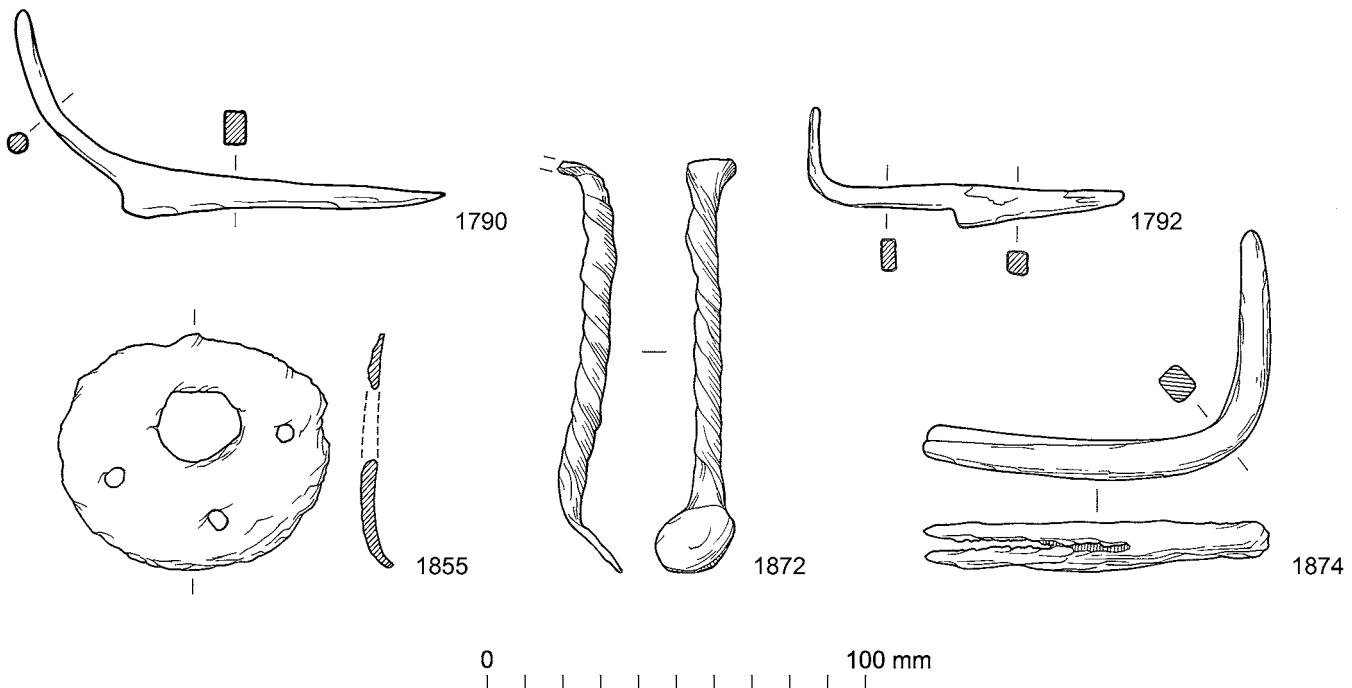


FIG. 5.6. Iron wall hook, disc, foot and rush-light holder. Scale 1:2.

These two objects could represent a development from the crescent-shaped fitting, in which the arms have been joined together, although, unlike the crescent-shaped fittings, they lack the slightly curved cross-section.

Nos 1853 and 1859 (RF 2006, Phase 5b; and RF 13491, unstratified) are similar, although no. 1853 (RF 2006: diameter 59mm) is larger. They are both pierced in the centre, and no. 1859 (RF 13491) is pierced three times around the edge, while no. 1853 (RF 2006) was originally pierced four times around the edge and has copper alloy rivets *in situ*.

Nos 1854 and 1858 (RF 6505, Phase 6ii–iii; and RF 12926, unstratified) are pierced in the centre; No. 1858 (RF 12926) is plated.

Plate rivets

There are 10 plate rivets used to mend holes in vessels (Egan 1998, 176). They began life as lozenge-shaped plates, of which two opposing corners were folded into the centre, leaving a V-shaped ‘mouth’ at each end. Once in place, the two folded flaps were sometimes folded back on themselves, leaving a narrow slot between them. Plate rivets also occur in copper alloy at Flixborough (e.g. no. 968; RF 11939).

Tubes

There are two tubes, nos 1870–1 (RF 1058, unstratified; and RF 11424, Phase 4ii) of no apparent function, although no. 1870 (RF 1058) is plated and may have been a key stem.

Foot (FIG. 5.6)

No. 1872 (RF 5964, Phase 4ii) is probably the foot for a tripod or similar object. It exists as a spirally-twisted strip, 93mm long, which is curved over at one end and broken; at the other, it is curved in the opposite direction, and formed into a flat rounded terminal which could have rested on the ground (FIG. 5.6).

Rush-light holders (FIG. 5.6)

Nos 1873–4 (RF 3616, Phase 6iii; and RF 5462, Phase 4ii) are L-shaped objects which have no ready parallels, but were probably used for holding rush lights or tapers. They consist of a tang for a handle, or for setting in a wooden beam, and a second arm which is split into two (FIG. 5.6). No. 1875 (RF 9053, unstratified) may have had a similar function. It is also L-shaped, and one arm bifurcates towards the end.

Catalogue

Fittings (Fig. 5.1)

Fittings are divided into pierced plates and pierced strips, a plate being defined as a thin, flat piece of iron with a width to thickness ratio greater than c.4:1, while a strip is defined as a relatively narrow piece of iron with a width to thickness ratio of c.4:1 or less (except at any terminal). All objects listed are pierced once, unless stated.

PIERCED PLATES (FIG. 5.1)

- 1420 L.44, W.29mm
RF 126, Context 1, Topsoil.
- 1421 Narrows from one end to the other, large hole at wider end. L.44, W.19mm
RF 565, Context 534, Period 7.
- 1422 One end rounded, other broken. L.48, W.14mm
RF 630, Context 615, Phase 3bi–3bv.
- 1423 Curved. Triangular cross-section. L.47, W.26mm
RF 739, Context 617, Phase 6iii.
- 1424 Fragment.
RF 786, Context 636, Phase 6iii.
- 1425 Pierced twice. L.52, W.21mm
RF 818, Context 636, Phase 6iii.
- 1426 Quarter disc-shaped. L.31mm
RF 1054, Unstratified.
- 1427 Irregular shape. L.42, W.30mm
RF 1095, Unstratified.
- 1428 Convex sides. L.63, W.15mm
RF 1102, Context 779, Phase 6iii.
- 1429 D-shaped, edges turned over. Pierced three times. L.65, W.62mm (FIG. 5.1)
RF 1419, Context 1289, Phase 6iii.
- 1430 Irregular shape. L.38, W.24mm
RF 1818, Context 1453, Phase 6iii.
- 1431 Fragment
RF 1855, Context 1836, Phase 6ii–6iii.
- 1432 Two pieces of folded plate nailed together over a piece of wood 9mm thick. Larger piece: L.c.58, W.58mm
RF 2036, Context 2002, Phase 5b.
- 1433 Fragment
RF 2077, Context 2130, Phase 5a.
- 1434 Pierced at each end. L.84, W.20mm
RF 2426, Context 2438, Phase 5b.
- 1435 One end rounded, other broken. Widest in centre. Pierced at each end. L.82, W.23mm
RF 2432, Context 2176, Phase 6iii.
- 1436 Tapers from one end to the other. L.25, W.15mm
RF 2468, Context 2177, Phase 6iii.
- 1437 Fragment
RF 2791, Context 2177, Phase 6iii.
- 1438 Broken at each end. Pierced twice. L.52, W.15mm
RF 3014, Unstratified.
- 1439 One end rounded, other broken. Pierced twice. L.63, W.29mm
RF 3644, Context 3610, Phase 6ii.
- 1440 One end rounded, other broken. Pierced twice. L.63, W.29mm
RF 3789, Unstratified.
- 1441 One end rounded. L.66, W.20mm
RF 3790, Unstratified.
- 1442 Originally semicircular, now broken. Pierced three times. L.55, W.45mm
RF 3792, Unstratified.
- 1443 Fragment
RF 3913, Context 3689, Phase 2–3a (?)

- 1444 Irregular shape. L.41, W.41mm
RF 3995, Context 3891, Phase 6ii.
- 1445 One end broken. Plated. L.35, W.14mm
RF 4145, Context 3891, Phase 6ii.
- 1446 One end is looped over, the other broken. Pierced three times, central hole larger than other two. L.71, W.13mm (Fig. 5.1)
RF 4354, Context 3107, Phase 4ii.
- 1447 Fragment.
RF 4402, Context 3891, Phase 6ii.
- 1448 Five pieces of plate, two pierced. Largest: L.37, W.22mm
RF 4476, Context 4474, Phase 1b.
- 1449 Fragment. L.28, W.27mm
RF 4539, Context 2024, Phase 6iii.
- 1450 One end originally rounded. Pierced at each end. L.86, W.28mm
RF 5129, Unstratified.
- 1451 Widest in centre where pierced by large hole, also pierced near one end. L.65, W.20mm
RF 5265, Context 5252, Phase 4ii–5a.
- 1452 Pierced twice, nails *in situ*. L.47, W.22mm
RF 5347, Context 3891, Phase 6ii.
- 1453 L.37, W.20mm
RF 5428, Context 3758, Phase 4ii.
- 1454 Irregular. L.42, W.39mm
RF 5518, Context 3758, Phase 4ii.
- 1455 Curved over in centre (was collar?). L.22, W.15mm
RF 5550, Context 5139, Phase 5a.
- 1456 Fragment. L.32, W.26mm
RF 5757, Context 5139, Phase 5a.
- 1457 Irregular. L.62, W.34mm
RF 5867, Context 3758, Phase 4ii.
- 1458 L.45, W.27mm
RF 5904, Context 3891, Phase 6ii.
- 1459 One side convex, others irregular. L.32, W.30mm
RF 5924, Context 5139, Phase 5a.
- 1460 L.48, W.30mm
RF 6110, Context 3758, Phase 4ii.
- 1461 Triangular. L.37, W.25mm
RF 6447, Context 6446, Phase 3biv–3bv.
- 1462 L.39, W.15mm
RF 6756, Context 6680, Phase 6i–6ii.
- 1463 Irregular oval shape, pierced twice, dome-headed rivets *in situ*. L.32, W.20mm
RF 6973, Context 1145, Phase 6iii.
- 1464 Incomplete, curved. L.64, W.27mm
RF 7425, Context 6472, Phase 5b–6i.
- 1465 Broken at each end. L.45, W.19mm
RF 7486, Context 7078, Phase 6i.
- 1466 Irregular, curved in cross-section. L.61, W.29mm
RF 7917, Context 6343, Phase 6ii–6iii.
- 1467 Two pieces of plate of irregular shape joined by a split rivet with a round head. L.59, W.40mm
RF 8045, Context 1889, Phase 6ii–6iii.
- 1468 Folded-over. L.50, W.34mm
RF 8134, Unstratified.
- 1469 Irregular shape. L.42, W.24mm
RF 8270, Context 3989, Phase 6iii.
- 1470 Originally L-shaped? One arm now missing, surviving arm narrows towards one end. L.66, W.30mm
RF 8331, Context 8237, Phase 5b.
- 1471 Lozenge-shaped. Pierced twice, dome-headed nails *in situ*. Plated (tin-lead). L.39, W.28mm
RF 8600, Unstratified.
- 1472 Fragment. Pierced twice. L.15, W.14mm
RF 8848, Context 3989, Phase 6iii.
- 1473 One end rounded, pierced nearby, nail *in situ*; other end broken. L.35, W.20mm
RF 8896, Context 3107, Phase 4ii.
- 1474 Fragment. L.24, W.16mm
RF 8901, Unstratified.
- 1475 One side concave, others irregular. L.42, W.20mm
RF 8994, Context 3107, Phase 4ii.
- 1476 Fragment.
RF 9253, Unstratified.
- 1477 End fragment, rivet *in situ*. Plated (copper-tin). L.18, W.13mm
RF 9322, Context 3107, Phase 4ii.
- 1478 L.39, W.20mm
RF 9354, Context 3758, Phase 4ii.
- 1479 Pierced twice, remains of second plate attached. L.24, W.24mm
RF 9358, Unstratified.
- 1480 L.41, W.18mm
RF 9417, Unstratified.
- 1481 Irregular shape, pierced three times. L.60, W.23mm
RF 9431, Unstratified.
- 1482 Fragment. L.29, W.24mm
RF 9567, Unstratified.
- 1483 Folded in two. L.23, W.18mm
RF 9593, Unstratified.
- 1484 One end rounded, other broken. L.30, W.20mm
RF 9712, Unstratified.
- 1485 Irregular shape. L.45, W.30mm
RF 9762, Context 3989, Phase 6iii.
- 1486 One end has rounded corners, other end broken. L.41, W.26mm
RF 9776, Unstratified.
- 1487 L.23, W.17mm
RF 9818, Context 3107, Phase 4ii.
- 1488 One end rounded, other broken. L.35, W.20mm
RF 9840, Unstratified.
- 1489 Folded in centre. L.26mm
RF 9870, Context 6300, Phase 6iii–7.
- 1490 Fragment. L.30, W.21mm
RF 9883, Context 6300, Phase 6iii–7.
- 1491 Broken over holes at each end. L.56, W.20mm
RF 10197, Context 4963, Phase 2–3a.
- 1492 Both ends rounded. Pierced twice, nails *in situ*. L.71, W.19mm
RF 10230, Context 5983, Phase 3biv.

- 1493 Irregular shape. L.57, W.32mm
RF 11001, Context 6472, Phase 5b–6i.
- 1494 One end broken. L.32, W.10mm
RF 11311, Context 10772, Phase 2–4ii.
- 1495 Roughly circular. L.55, W.50mm
RF 11371, Context 11039, Phase 5a.
- 1496 L.28, W.23mm
RF 11373, Context 1888, Phase 6ii–6iii.
- 1497 Fragment. L.35, W.20mm
RF 11844, Context 1169, Phase 3bii.
- 1498 Rectangular with rounded corners. Edges curved over.
Pierced three times. L.67, W.66mm
RF 12375, Unstratified.
- 1499 Bent at one end. Pierced twice. L.43, W.17mm
RF 12400, Context 10772, Phase 2–4ii.
- 1500 One end broken. Nail *in situ* with neatly rounded head.
L.24, W.17mm
RF 12513, Unstratified.
- 1501 One end rounded, other end broken. L.28, W.16mm
RF 12574, Unstratified.
- 1502 L.48, W.25mm
RF 12578, Unstratified.
- 1503 Curved over at one end. Broken at the other. L.53,
W.16mm
RF 12614, Unstratified.
- 1504 Curved in cross-section. L.53, W.22mm
RF 12699, Unstratified.
- 1505 Fragment. L.33, W.28mm
RF 12831, Unstratified.
- 1506 L.35, W.35mm
RF 12976, Unstratified.
- 1507 Irregular shape. Plated (copper). From bell? L.44,
W.30mm
RF 13019, Unstratified.
- 1508 Curved over at one end, broken at the other. L.29,
W.10mm
RF 13084, Unstratified.
- 1509 Fragment. L.30, W.18mm
RF 13112, Unstratified.
- 1510 Fragment. L.26, W.18mm
RF 13269, Context 5503, Phase 4ii.
- 1511 Two plates nailed together. L.26, W.26mm
RF 13365, Unstratified.
- 1512 Irregular shape. Plated (copper, tin, lead). L.26, W.23mm
RF 13374, Unstratified.
- 1513 Irregular shape. L.39, W.30mm
RF 13587, Unstratified.
- 1514 Fragment. L.22, W.21mm
RF 14013, Context 86, Period 7.
1515. Two plate fragments nailed together. L.25, W.23mm
RF 14057, Context 1706, Phase 3bi–4i.
- PIERCED STRIPS (FIG. 5.1)
- 1516 Rounded at one end, broken at the other. Lead detected on
rivet head. L.41, W.5mm
RF 181, Context 80, Phase 5a.
- 1517 Incomplete with pierced, rounded terminal. Plated (Copper,
zinc, trace tin). L.28, W.12mm
RF 399, Context 51, Phase 4ii.
- 1518 Broken at both ends. Curved in cross-section. Charcoal in
soil; also copper alloy rivet-head? L.57, W.13mm
RF 938, Context 850, Phase 5b–6i.
- 1519 Strip terminal. L.30, W.14mm
RF 1374, Context 1283, Phase 6iii.
- 1520 Broken at one end. One side undulates being widest around
three surviving rivet-holes. On one face punched dots run
along the undulating side. Plated (tin-lead). L.52, W.12mm
(FIG. 5.1)
RF 1434, Context 1464, Phase 6iii.
- 1521 Rounded, pierced terminal fragment. D.28mm
RF 1742, Context 1439, Phase 6iii.
- 1522 Curves slightly and narrows. L.52, W.14mm
RF 1744, Context 1660, Phase 6i–6ii.
- 1523 Pierced twice. Plated (tin). L.48, W.8mm
RF 1792, Context 1728, Phase 5b.
- 1524 Fragment. Curved. Plated (tin?). L.17, W.7mm
RF 1940, Context 1018, Phase 6iii.
- 1525 Tapers from one end to the other. L.33, W.12mm
RF 2402, Context 1993, Phase 5a.
- 1526 Stub and rounded terminal. L.23, W.14mm
RF 2633, Context 2184, Phase 6iii.
- 1527 Narrows from one end to the other and is curved over at
the narrower end. Pierced twice. L.66, W.17mm
RF 2854, Context 51, Phase 4ii.
- 1528 In two pieces and broken at each end over holes. One face
has bevelled edges and has three groups of three grooves
cut into it. Plated. L.42, W.5mm
RF 2873, Unstratified.
- 1529 Curved over at each end. L.68, W.14mm
RF 3151, Context 3107, Phase 4ii.
- 1530 Curved over at each end. Pierced twice. L.51, W.15mm
RF 3193, Context 2719, Phase 5a–6ii.
- 1531 One end rounded, other broken over piercing. L.44,
W.9mm
RF 3998, Context 3891, Phase 6ii.
- 1532 One end broken; narrows towards the other end which is
rounded, pierced nearby. L.58, W.8mm
RF 4341, Context 3107, Phase 4ii.
- 1533 Consists of a pierced oval area and stub of strip with four
grooves cut into it. L.30, W.9mm
RF 5767, Context 3107, Phase 4ii.
- 1534 Rounded, pierced terminal fragment. L.22, W.14mm
RF 6443, Context 5617, Phase 3bv.
- 1535 Broken over piercing at one end, at the other a pierced,
triangular terminal. L.64, W.18mm
RF 6670, Context 6343, Phase 6ii–6iii.
- 1536 Broken over piercing at each end. L.48, W.8mm
RF 6787, Context 6300, Phase 6iii–7.
- 1537 Pierced at one end. L.50, W.9mm
RF 7159, Context 7123, Phase 6iii.
- 1538 Pierced twice, broken over piercing at one end. D-shaped
cross-section. Plated (tin-lead). L.32, W.5mm
RF 8058, Context 1832, Phase 6ii–6iii.

- 1539 Roughly rounded terminal at one end, broken at the other. L.41, W.16mm
RF 8443, Context 3989, Phase 6iii.
- 1540 Broken over holes at each end. D-shaped cross-section. Plated (tin-lead). L.34, W.6mm
RF 8543, Context 3989, Phase 6iii.
- 1541 Broken at both ends. Plated (tin-lead). Wood remains detected, with the grain across the short side; no longer present. L.26, W.6mm
RF 8547, Context 3989, Phase 6iii.
- 1542 Spirally-twisted; at one end an incomplete rounded, pierced terminal. L.40, W.7mm
RF 8562, Unstratified.
- 1543 Incomplete with oval terminal. L.29, W.11mm
RF 8847, Context 3989, Phase 6iii.
- 1544 Incomplete, pierced twice. L.51, W.7mm
RF 8878, Context 3107, Phase 4ii.
- 1545 Broken at both ends. Pierced twice, one rivet *in situ*. L.57, W.8mm
RF 8969, Context 3107, Phase 4ii.
- 1546 Narrows at one end, broken at other. L.33, W.8mm
RF 8993, Context 3107, Phase 4ii.
- 1547 Broken both ends. One side undulates being at its widest around two rivet-holes. Plated (tin-lead). L.34, W.10mm
RF 9045, Context 3107, Phase 4ii.
- 1548 Strip with a rounded, pierced terminal – one incomplete – at each end. One face has bevelled edges and diagonal grooves cut into it. Plated (tin-lead). L.37, W.9m (Fig. 5.1)
RF 9048, Context 3107, Phase 4ii.
- 1549 Narrows from one end to the other, broken at wider end. L.67, W.18mm
RF 9102, Unstratified.
- 1550 Broken over piercing at one end. D-shaped cross-section. L.39, W.7mm
RF 9124, Unstratified.
- 1551 One end broken, flattened at other to form rounded, pierced terminal, rivet *in situ*. Rivet-head plated (tin-lead). L.50, W.9mm
RF 9256, Context 3107, Phase 4ii.
- 1552 Fragment. Curved. L.37, W.10mm
RF 9437, Unstratified.
- 1553 Strip terminal. L.29, W.22mm
RF 9734, Unstratified.
- 1554 One end broken. Pierced twice. Plated (tin-lead). L.34, W.5mm
RF 9842, Unstratified.
- 1555 Curved slightly and narrows from one end to the other. Rivet *in situ* at wider end. L.54, W.10mm
RF 9866, Context 6300, Phase 6iii–7.
- 1556 L.45, W.5mm
RF 10552, Context 7056, Phase 6ii–6iii.
- 1557 At one end broken over piercing, at other has rounded, pierced terminal. L.45, W.12mm
RF 10620, Context 3421, Phase 5b–6.
- 1558 A roughly rounded, pierced terminal at each end. L.89, W.27mm
RF 10981, Context 6472, Phase 5b–6i.
- 1559 One end rounded, other broken. One side undulates slightly. L.26, W.16mm
RF 10989, Context 6472, Phase 5b–6i.
- 1560 Broken at one end. Pierced twice. L.47, W.14mm
RF 11218, Context 10772, Phase 2–4ii.
- 1561 One end rounded, other broken. D-shaped cross-section. Grooves incised in convex face at intervals. Pierced three times. Plated (tin-lead). L.65, W.6mm
RF 11236, Unstratified.
- 1562 L-shaped (?corner bracket). One arm is crank-shaped, both arms widen in the centre, and one arm is pierced, rivet *in situ*. Arms: L.52 and 28mm
RF 11666, Context 11663, Phase 3biii.
- 1563 One end rounded, other broken. Pierced three times. L.37, W.12mm
RF 11843, Context 11669, Phase 3bii.
- 1564 Rounded at one end, broken at the other. L.40, W.8mm
RF 12075, Context 6312, Phase 5a.
- 1565 Broken at each end and bent at c.45° near centre. At one end is what may have been an incomplete, rounded terminal which is pierced twice. There are 2–3 grooves incised into the strip immediately below the terminal. Plated. L.73, W.25mm
RF 12576, Unstratified.
- 1566 Broken over hole at each end. L.32, W.7mm
RF 12879, Unstratified.
- 1567 One end rounded, other broken. Pierced three times. Plated (tin-lead). L.40, W.5mm
RF 12979, Unstratified.
- 1568 Exists as a strip, broken at one end which originally was divided in two to grip a thin piece of horn which was also held by two rivets. At the unbroken end the strip narrows by means of two rounded shoulders and tapers to a point. L.42, W.10, Th.6mm
RF 13203, Unstratified.
- 1569 Broken at each end where, in both cases, it starts to widen. In the centre it widens to form an oval area which is pierced in the centre. L.88, W.15mm
RF 13339, Unstratified.
- 1570 Fragment. L.14, W.7mm
RF 13619, Context 10772, Phase 2–4ii.
- 1571 Narrows towards one end which is broken. Plated. L.20, W.9mm
RF 13635, Unstratified.
- 1572 U-shaped. One arm broken, other widens to the end where it is pierced twice. L.34, W.28mm
RF 13652, Unstratified.
- 1573 Broken at both ends. L.41, W.6mm
RF 13974, Context 11699, Phase 3bii.
- OTHER FITTING
- 1574 Incomplete rectangular object made of thin strip, it has one complete side from each end of which project at 90° an incomplete side piece and at 45° the arms of a triangle which was within the frame made by the sides. The latter has grooves on its surface. Object is pierced at the corners. An additional strip is riveted to the complete side. Plated (tin?). L.35, W.26mm (Fig. 5.1).
RF 2384, Context 2388, Phase 5b.

Crescent-shaped fittings (Fig. 5.2)

All these objects are crescent-shaped and slightly thicker on the inner edge than on the outer. In cross-section they are slightly curved creating a convex outer face and concave inner face. The arm tips either narrow to a rounded tip or an inwardly-looped terminal. They are or were pierced three times unless stated.

- 1575 Fragment. L.35mm
RF 603, Context 535, Phase 6iii.
- 1576 One arm tip missing, other rounded; was pierced twice?
L.59, W.40mm (Fig. 5.2)
RF 14350, Context 956, Phase 2–3a.
- 1577 Incomplete. Surviving arm tip rounded. L.60mm
RF 1037, Unstratified.
- 1578 Arm tips missing. L.58, W.42mm
RF 1038, Unstratified.
- 1579 Arm tips rounded. L.41, W.42mm
RF 1057, Unstratified.
- 1580 Fragment. L.23mm
RF 1319, Context 1285, Phase 6iii.
- 1581 Fragment with looped terminal. L.18mm
RF 1495, Context 1455, Phase 6iii.
- 1582 Incomplete. One looped terminal survives. L.57mm
RF 1615, Context 1461, Phase 6iii.
- 1583 Fragment. L.48mm
RF 1714, Context 1458, Phase 6iii.
- 1584 Fragment with looped terminal. L.23mm
RF 1850, Context 1833, Phase 6ii–6iii.
- 1585 Fragment. L.50mm
RF 2281, Context 2177, Phase 6iii.
- 1586 Surviving arm tip rounded. L.54mm
RF 2290, Context 1889, Phase 6ii–6iii.
- 1587 Fragment with looped terminal. L.20mm
RF 2458, Context 2177, Phase 6iii.
- 1588 Incomplete. L.63, W.43mm
RF 2626, Context 2024, Phase 6iii.
- 1589 Incomplete. L.45, W.24mm
RF 2790, Context 2562, Phase 5b.
- 1590 Surviving arm tip rounded. Pierced twice. L.49, W.51mm
RF 2914, Context 2915, Phase 2i–4ii.
- 1591 Incomplete. L.41, W.23mm
RF 2979, Unstratified.
- 1592 Incomplete with surviving arm tip rounded. L.35mm
RF 3104, Context 2860, Phase 2i–4ii.
- 1593 Fragment. L.38mm
RF 3471, Context 3417, Phase 5b–6i.
- 1594 Arm tips cut straight, pierced once. Another pierced plate fragment was found with the object which may be a part of it. L.68, W.57mm (Fig. 5.2)
RF 3618, Context 3451, Phase 6iii.
- 1595 Incomplete. L.46mm
RF 3629, Context 3597, Phase 5b.
- 1596 Looped terminals. L.61, W.45mm
RF 3752, Unstratified.
- 1597 Incomplete. L.52mm
RF 3784, Unstratified.
- 1598 Surviving arm tip rounded. L.63, W.45mm
RF 3840, Context 3989, Phase 6iii.
- 1599 Incomplete. L.53mm
RF 3867, Context 3730, Phase 6ii.
- 1600 Incomplete, nail *in situ*. L.54mm
RF 3997, Context 3891, Phase 6ii.
- 1601 Fragment with looped terminal. L.23mm
RF 4105, Context 3107, Phase 4ii.
- 1602 Looped terminals. Pierced twice, one nail *in situ*. L.49, W.39mm
RF 4176, Context 3891, Phase 6ii.
- 1603 Fragment. L.26mm
RF 4611, Context 3107, Phase 4ii.
- 1604 Arm tip only. L.21mm
RF 5150, Context 5193, Phase 4ii–5a.
- 1605 Incomplete. L.53, W.21mm
RF 5226, Context 3730, Phase 6ii.
- 1606 Incomplete. L.46mm
RF 5404, Context 3758, Phase 4ii.
- 1607 Arm tips missing. L.53, W.39mm
RF 5671, Context 5139, Phase 5a.
- 1608 Fragment. L.35mm
RF 6604, Context 6499, Phase 6ii–6iii.
- 1609 Incomplete. L.60mm
RF 6648, Context 6499, Phase 6ii–6iii.
- 1610 Incomplete. L.67mm
RF 6655, Context 6499, Phase 6ii–6iii.
- 1611 Looped terminal only. L.16mm
RF 6900, Context 6300, Phase 6iii–7.
- 1612 Incomplete. L.58mm
RF 6990, Context 5988, Phase 6i.
- 1613 Incomplete. L.46mm
RF 6992, Context 5988, Phase 6i.
- 1614 Fragment. L.20mm
RF 7138, Context 7123, Phase 6iii.
- 1615 Incomplete with looped terminal. L.30mm
RF 7825, Context 7817, Phase 6iii.
- 1616 Incomplete with looped terminal. L.51mm
RF 7918, Context 6343, Phase 6ii–6iii.
- 1617 Fragment with rounded arm tip. L.35mm
RF 7969, Unstratified.
- 1618 Fragment with rounded arm tip. L.51mm
RF 7981, Unstratified.
- 1619 Fragment with looped terminal. L.49mm
RF 7982, Unstratified.
- 1620 Incomplete. L.51mm
RF 8050, Context 1836, Phase 6ii–6iii.
- 1621 Surviving arm tip rounded, three nails *in situ*, heads on convex face. L.64, W.49mm (Fig. 5.2)
RF 8055, Context 1833, Phase 6ii–6iii.
- 1622 Arm tips missing. L.55mm
RF 8144, Context 3107, Phase 4ii.
- 1623 Fragment. L.24mm
RF 8392, Context 3989, Phase 6iii.
- 1624 One looped terminal survives, nail *in situ*. L.57, W.43mm

- RF 8411, Unstratified.
- 1625 Fragment
RF 8512, Context 8091, Phase 5b.
- 1626 Incomplete. L.40mm
RF 8555, Unstratified.
- 1627 Incomplete. L.38mm
RF 8567, Unstratified.
- 1628 Incomplete with rounded arm tip. L.50mm
RF 8808, Context 3989, Phase 6iii.
- 1629 One looped terminal survives. Nail *in situ*. L.57, W.43mm
RF 8987, Context 3989, Phase 6iii.
- 1630 One looped terminal survives. Nail *in situ*. L.59, W.17mm (Fig. 5.2)
RF 8998, Context 3989, Phase 6iii.
- 1631 Incomplete. L.50mm
RF 9046, Context 3107, Phase 4ii.
- 1632 Fragment. L.30mm
RF 9138, Unstratified.
- 1633 Terminal fragment.
RF 9207, Unstratified.
- 1634 Fragment. L.30, W.16mm
RF 9224, Context 3107, Phase 4ii.
- 1635 Fragment, broken over holes at each end. L.34, W.17mm
RF 9225, Context 3107, Phase 4ii.
- 1636 Incomplete. One looped terminal survives. L.50mm
RF 9394, Unstratified.
- 1637 Fragment. L.35mm
RF 9703, Context 3989, Phase 6iii.
- 1638 Arm tip fragment. L.29mm
RF 10425, Context 7056, Phase 6ii–6iii.
- 1639 One arm tip missing, other rounded. L.70, W.51mm
RF 10557, Context 7055, Phase 6ii–6iii.
- 1640 Fragment with rounded arm tip. L.32mm
RF 11233, Unstratified.
- 1641 Incomplete, one looped terminal survives. L.55mm
RF 11271, Unstratified.
- 1642 Fragment. L.40mm
RF 11368, Context 11039, Phase 5a.
- 1643 Looped terminals. L.67, W.55mm (Fig. 5.2)
RF 12078, Context 6498, Phase 6ii–6iii.
- 1644 One arm tip missing, other rounded. L.62, W.56mm
RF 12092, Context 6498, Phase 6ii–6iii.
- 1645 Fragment with rounded arm end. L.49mm
RF 12109, Context 3711, Phase 5a.
- 1646 Arm tip fragment. L.27mm
RF 12430, Unstratified.
- 1647 Fragment with rounded arm tip. L.51mm
RF 12493, Unstratified.
- 1648 Fragment. L.43mm
RF 12651, Unstratified.
- 1649 Incomplete. L.42mm
RF 12660, Unstratified.
- 1650 Incomplete. L.44mm
RF 12788, Unstratified.

- 1651 Arms tips missing. L.58mm
RF 12799, Unstratified.
- 1652 Fragment. L.40mm
RF 12836, Unstratified.
- 1653 Fragment.
RF 13012, Unstratified.
- 1654 Unusually narrow. Surviving arm tip rounded. L.51mm
RF 13016, Unstratified.
- 1655 Incomplete with looped terminal. L.53mm
RF 13290, Unstratified.
- 1656 Fragment
RF 13440, Unstratified.
- 1657 Surviving terminal looped. L.40, W.33mm
RF 13445, Context 10772, Phase 2–4ii.

U-SHAPED FITTING

- 1658 One arm incomplete. Pierced at base and near tip of surviving arm where nail *in situ*. L.61, W.45mm
RF 5427, Context 3758, Phase 4ii.

*Hinges (Fig. 5.3)**Hinge straps*

These straps are from chests or similar containers and exist as either the strap which was fitted to the lid or the back. The lid strap has a link at the head made by curving it over. The back strap has an eye at the head usually made by drawing it out and welding the tip back onto the strap side. All examples pierced once unless stated.

LID STRAPS

- 1659 Incomplete, pierced near head. L.54, W.30mm
RF 640, Unstratified.
- 1660 Incomplete. L.32, W.16mm
RF 2558, Unstratified.
- 1661 Head only. L.27, W.18mm
RF 2703, Context 2611, Phase 5a.
- 1662 Incomplete. L.45, W.18mm
RF 2792, Context 2562, Phase 5b.
- 1663 Incomplete, bent, pierced twice, holes rectangular. L.57, W.16mm
RF 4356, Unstratified.
- 1664 Complete, but bent up at base. Pierced in centre and near base. L.c.175, W.30mm
RF 6688, Context 6471, Phase 6ii.
- 1665 Head only. L.36mm
RF 9665, Unstratified.
- 1666 Head only. Slight fibrous traces on one side – very degraded textile. L.27mm
RF 11227, Unstratified.
- 1667 Head only. Random organic material. L.23mm
RF 11362, Context 3610, Phase 6ii.
- 1668 Lower part of strap damaged, pierced once. L.56, W.13mm
RF 12606, Unstratified.
- 1669 Head only. Wood traces, probably random, charcoal. L.42, W.34mm
RF 13482, Unstratified.
- 1670 Narrows slightly to base where it widens and is rounded

and pierced; also pierced near head. Wood remains survive.
L.153, W.22mm
RF 14237, Unstratified.

BACK STRAPS (FIG. 5.3)

- 1671 Head only. L.30, W.13mm
RF 1179, Context 1170, Phase 6iii.
- 1672 Head only. L.26mm
RF 3153, Context 3107, Phase 4ii.
- 1673 Head only, bent in two. L.22, W.18mm
RF 4935, Context 4769, Phase 2–3a.
- 1674 Lower part missing. Upper part has convex sides. Possible organic, no clear structure, may be random. L.52, W.27mm
RF 5142, Context 5193, Phase 4ii–5a.
- 1675 Base has rounded corners. Pierced in centre and at base. L.88, W.21mm
RF 5336, Context 3891, Phase 6ii.
- 1676 Head only. Slight wood traces, but nothing identifiable remains. L.27mm
RF 6424, Context 5617, Phase 3bv.
- 1677 Incomplete. L.54, W.14mm
RF 6790, Context 5369, Phase 2–3a.
- 1678 Pierced three times, holes arranged as triangle. L.69, W.40mm (FIG. 5.3)
RF 7921, Context 7280, Phase 6ii.
- 1679 Eye only. Charcoal and possibly random organic material. L.21mm
RF 8308, Context 3989, Phase 6iii.
- 1680 Incomplete. Upper part of strap only, area of eye wider than strap. Random fragments of plant material. L.28, W.19mm
RF 8313, Context 3989, Phase 6iii.
- 1681 Incomplete, pierced once, hole rectangular. Random organic material. L.34, W.12mm
RF 9023, Context 3107, Phase 4ii.
- 1682 Incomplete, head only. L.18mm
RF 9833, Unstratified.
- 1683 Head only. L.25, W.21mm
RF 10558, Context 7055, Phase 6ii–6iii.
- 1684 Base missing. Pierced in centre. Charcoal. L.78, W.16mm
RF 12178, Context 6304, Phase 3bv.
- 1685 Head only. L.30mm
RF 12597, Unstratified.
- 1686 Head only. L.24mm
RF 12933, Unstratified.
- 1687 Incomplete. L.35, W.11mm
RF 13058, Context 3417, Phase 5b–6i.
- 1688 Head only. L.40mm
RF 13767, Unstratified.
- 1689 Head fragment. L.15, W.18mm
RF 13856, Unstratified.

Hinge pivots

- 1690 Shank. Heavy soil, charcoal, no other apparent organic. L.47; guide arm: L.35mm
RF 7378, Context 6472, Phase 5b–6i.
- 1691 Shank: L.65; guide arm: L.35mm

RF 13757, Unstratified.

Pinned hinge strap (FIG. 5.3)

- 1692 One strap from pinned hinge fitting, pierced three times and linked to pin. Random organic material. L.18, W.16mm (FIG. 5.3)
RF 6014, Context 3891, Phase 6ii.

U-eyed hinges and fittings (FIG. 5.3)

They exist or existed as a U-shaped eye with on either side straps, arms or terminals pierced for attachment.

EYE AND STRAPS

- 1693 Stubs of straps survive. L.38mm
RF 7945, Context 6343, Phase 6ii–6iii.
- 1694 One half missing, surviving strap incomplete. L.48mm
RF 8372, Context 3989, Phase 6iii.
- 1695 Straps largely missing. L.49mm
RF 10437, Context 1892, Phase 6ii–6iii.

EYE AND ARMS (FIG. 5.3)

- 1696 Arms L-shaped, each has a rounded, pierced terminal. Plated (lead-tin). Arms: L.38 and 27mm
RF 3755, Unstratified.
- 1697 Arms lie very close together and have roughly rectangular terminals. L.65mm
RF 4339, Unstratified.
- 1698 Both arms incomplete, the longer is pierced twice. L.52, W.15mm
RF 11987, Unstratified.
- 1699 Each arm has bevelled edges, a pierced square expansion in the centre and a pierced and roughly rounded terminal. Plated (tin). L.47, W.11mm (FIG. 5.3)
RF 12469, Unstratified.
- 1700 Arms have rounded ends where they are pierced, rivets *in situ*. L.28, W.8mm
RF 12720, Unstratified.

EYE AND TERMINALS (FIG. 5.3)

- 1701 Terminals rounded; one has an elongated tapering projection. L.97mm (FIG. 5.3)
RF 2575, Context 2562, Phase 5b.
- 1702 Both terminals rounded, one incomplete. L.35mm
RF 2941, Context 2860, Phase 2i–4ii.

FRAGMENT

- 1703 Fragment of eye and strap. L.21mm
RF 10602, Context 1833, Phase 6ii–6iii.

Looped-eye fittings

They exist as a looped eye which on each side has or had a strap pierced for attachment.

- 1704 One strap missing, other incomplete. L.37, W.20mm
RF 2942, Unstratified.
- 1705 One half missing, surviving strap incomplete. L.45mm
RF 6677, Context 6343, Phase 6ii–6iii.
- 1706 One strap missing, other incomplete. L.35, W.13mm
RF 7166, Context 7123, Phase 6iii.
- 1707 Straps have oval terminals. A fragment of strip is fused to the eye. L.35, W.14mm
RF 8627, Context 8149, Phase 6ii.

- 1708 Straps have incomplete oval terminals, rivets *in situ*. L.29, W.10mm
RF 9507, Context 3107, Phase 4ii.
- 1709 Incomplete eye and incomplete strap. L.41mm
RF 9653, Unstratified.
- 1710 Incomplete eye and fragment of strap. L.33mm
RF 9684, Unstratified.
- 1711 Incomplete eye and strap. L.36mm
RF 9853, Context 6300, Phase 6iii–7.
- 1712 One strap missing. L.33, W.17mm
RF 11335, Unstratified.
- 1713 Incomplete eye and incomplete strap. L.25mm
RF 12426, Context 10772, Phase 2–4ii.
- 1714 Incomplete eye and strap. L.25mm
RF 12680, Unstratified.
- 1715 Incomplete eye and strap. L.66mm
RF 12952, Context 10772, Phase 2–4ii.
- 1716 Incomplete eye and incomplete strap. L.29mm
RF 13360, Unstratified.

Fitting with U-shaped loop

- 1717 U-shaped loop with two looped terminals. Plated (?tin).
L.17, W.13mm
RF 2486, Context 2178, Phase 6iii.

Hasps (Fig. 5.3)

- 1718 As no. 1719 (RF 733), but staple and link both fragmentary.
RF 586, Context 535, Phase 6iii.
- 1719 Consists of a spirally-twisted strip with a loop at each end; one was coupled to an oval link with a tip curved back on itself at one end, and the other was coupled to a U-shaped staple. L.74; staple: L.52, W.23; staple: L.43, W.17mm (Fig. 5.3)
RF 733, Context 617, Phase 6iii.
- 1720 As no. 1719 (RF 733), but without the staple. Strip: L.78; link: L.54mm
RF 1799, Context 1728, Phase 5b.
- 1721 Link only. L.52mm
RF 6866, Context 6300, Phase 6iii–7.

Stapled hasps (Fig. 5.3)

- 1722 Originally L-shaped, head now missing. Narrows at the base which has a small looped terminal. Plated (tin-lead). L.84, W.8mm (Fig. 5.3)
RF 7145, Context 7054, Phase 6ii–6iii.
- 1723 Incomplete. Base has tip curved back on itself. Staple has one arm thicker than the other and only the thicker arm is set in the hasp. Plated. L.73, W.15mm
RF 13178, Unstratified.

Corner brackets (Fig. 5.3)

- 1724 One arm. Pierced at the end. L.58, W.28mm
RF 578, Context 535, Phase 6iii.
- 1725 In two pieces. Thin arms with rounded, pierced terminals. L.31, W.11mm
RF 612, Context 618, Phase 6iii.
- 1726 Both arms narrow to a rounded, pierced terminal, one largely missing. On one arm there are two incised grooves

immediately below the terminal. Riveted to the other is a pierced oval terminal of another object. Plated. Arms: L.41mm (Fig. 5.3)
RF 725, Context 617, Phase 6iii.

- 1727 One arm incomplete. Surviving arm has an oval, pierced terminal. Arms: L.42 and 24mm
RF 2072, Context 2021, Phase 6iii.
- 1728 One arm. Spirally twisted with oval, pierced terminal. L.34, W.9mm
RF 2811, Context 51, Phase 4ii.
- 1729 One arm largely missing. Surviving arm has suggestion of rounded, pierced terminal. L.46, W.9mm
RF 4613, Context 3989, Phase 6iii.
- 1730 One arm incomplete. Complete arm narrows to a rounded, pierced terminal. L.50, W.6mm
RF 8996, Context 3989, Phase 6iii.
- 1731 One arm, Convex sides, pierced twice. Plant material present. L.53, W.23mm
RF 11242, Context 6490, Phase 5b–6i.
- 1732 One arm. Rounded end. L.31, W.10mm
RF 13336, Unstratified.

CORNER BRACKET WITH STRIP ATTACHED (Fig. 5.3)

- 1733 Consists of a probable corner bracket of which both arms are incomplete, one widens towards the break where it is pierced. Nailed to the second arm, nail head on the inner face is an elongated strip which tapers to each end. It curves away from the bracket as if to grip something to which it was attached. Bracket arms: L.61 and 23, W.30; strip: L.82, W.16mm (Fig. 5.3)
RF 6065, Context 5885, Phase 5a.

L-shaped brackets

- 1734 The arms taper to wedge-shaped tips.
Arms: L.60 and 34mm
RF 4064, Context 3891, Phase 6ii.
- 1735 Arms: L.32 and 26mm
RF 8318, Context 3989, Phase 6iii.

Vessels and vessel fittings (Figs 5.4–5.5)

VESSEL HANDLES (Fig. 5.4)

All the handles catalogued below exist as semicircular strips with terminals which loop outwards unless stated, and they have rectangular cross-sections unless stated. The 'top' is the part usually gripped when in use.

- 1736 Thickened at the top, one terminal missing. L.62, W.37mm
RF 777, Context 636, Phase 6iii.
- 1737 Spirally twisted except at top where flattened out. One terminal has part of a link attached. L.110, W.90mm (Fig. 5.4)
RF 1854, Context 1836, Phase 6ii–6iii.
- 1738 Surviving terminal looped inwards. L.120, W.75mm
RF 2940, Context 2861, Phase 2i–4ii.
- 1739 Fragment consisting of an incomplete spirally-twisted stretch which develops into a flat plate looped over at the tip with two channels running down the centre. L.95mm (Fig. 5.4)
RF 3663, Context 3610, Phase 6ii.

- 1740 As no. 1739 (RF 3663), but now bent in the centre. L.98mm (Fig. 5.4)
RF 5709, Context 5139, Phase 5a.
- 1741 One terminal missing. Spirally twisted except at top where flattened out. L.90, W.105mm
RF 5732, Context 5553, Phase 5b.
- 1742 One terminal missing. L.107, W.35mm
RF 6608, Context 6499, Phase 6ii–6iii.
- 1743 One terminal incomplete. Top flattened and widened. L.71, W.53mm (Fig. 5.4)
RF 6774, Context 6469, Phase 6iii.
- 1744 One terminal bent out of shape; an incomplete looped strip is linked to the other. L 178; L of strip 83mm
RF 6799, Context 6300, Phase 6iii–7.
- 1745 Incomplete, one loop survives. Two scarf joints detected. L.175mm
RF 7855, Context 6343, Phase 6ii–6iii.
- 1746 Incomplete, one terminal missing. L.175 mm
RF 7856, Context 6344, Phase 5b–6i.
- 1747 Incomplete, widest at the top. Charcoal and random organic material present. L.175mm
RF 7857, Unstratified.
- 1748 Incomplete, one terminal survives. Rounded cross-section. L.270mm
RF 8701, Unstratified.
- 1749 Fragment with terminal looped inwards.
RF 10848, Unstratified.
1750. In two pieces. Sub-rounded cross-section, flattened at the top. L.140, W.90mm
RF 11261/3, Context 10772, Phase 2–4ii.
- 1751 Incomplete, one terminal survives. Spirally-twisted. L.121mm
RF 11272, Unstratified.
- 1752 In two pieces, terminals missing. An area of charcoal that resembles leather (?) present. L.200, W.115mm
RF 12077, Context 6498, Phase 6ii–6iii.
1753. Three pieces which do not fit together: a) part spirally-twisted. L.124mm b) fragment with terminal L.88mm c) fragment L.58mm
RF 12094, Context 6497, Phase 5a.
- 1754 Two pieces which do not fit together, no terminals survive. a) L.148mm b) L.86mm
RF 12148, Context 6499, Phase 6ii–6iii.
- 1755 Incomplete. Spirally-twisted, but was flattened at the top. L.76mm
RF 12315, Unstratified.
- 1756 Half survives, rounded cross-section and was flattened at the top. L.114mm
RF 12934, Context 10772, Phase 2–4ii.
- 1757 One terminal missing, surviving terminal looped inwards. Flattened at the top. L.103, W.55mm
RF 13437, Unstratified.

Vessel suspension fittings (Fig. 5.4)

- 1758 As no. 1759 (RF 6072), but both terminals largely missing. L.25, W.27mm
RF 3935, Context 3891, Phase 6ii.
- 1759 A U-shaped loop, the ends of which originally expanded

into pierced terminals, one now largely missing and the other incomplete. Wood remains on the terminals, but probably random, as these have different grain directions. L.40, W.44mm
RF 6072, Context 6036, Phase 5b.

- 1760 Consists of a fitting with a looped eye and two straps lying against each other which at the base grip and are nailed at 90° to an incomplete strip (on which wood remains survive) which was originally attached to a vessel rim. Linked to the eye is a ring. Fitting: L.94; ring: D.57mm (Fig. 5.4)
RF 8627, Context 8149, Phase 6ii.
- 1761 As no. 1759 (RF 6072), both oval terminals incomplete. L.46, W.43mm
RF 13303, Unstratified.

Vessel fragment

- 1762 Curved plate broken on all sides, except one along which it is curved over slightly as if to make a rim. L.104, W.77, Th.3mm
RF 8112, Context 6343, Phase 6ii–6iii.

Pot hooks (Fig. 5.4)

Pot hooks consist of an elongated shank which at the head has or had a looped terminal. The hook itself is U-shaped, unless stated, with tips of various forms. Shank and hook have a rectangular cross-section unless stated.

- 1763 Incomplete shank, hook tip curves outwards. Rounded cross-section. L.70, W.39mm
RF 3129, Context 3107, Phase 4ii.
- 1764 Hook curved into a C-shape. Shank widens upwards from the hook into a plate with convex sides; the terminal tip is curved back on itself, L.151, W.38mm
RF 3309, Context 3107, Phase 4ii.
- 1765 Hook tip turned outwards. Spirally-twisted shank; terminal tip curved back on itself. L.88, W.13mm
RF 4060, Context 3891, Phase 6ii.
- 1766 Hook in form of a roll with tip curved back on itself. Shank widens upwards from the hook before narrowing at the head. L.156, W.30mm
RF 4110, Unstratified.
- 1767 Terminal and hook tip missing. Shank develops into a plate with convex sides which is at its widest in the centre. L.172, W.33mm
RF 5461, Context 3758, Phase 4ii.
- 1768 Hook tip turned outwards. Shank tapers upwards to the terminal which is a relatively large loop. L.88, W.34mm
RF 6829, Context 6300, Phase 6iii–7.
- 1769 Hook has 90° corners and its tip is curved back on itself into a C-shape. Upper two-thirds of the shank is widened into a plate with convex sides. Random organic material. L.147, W.33mm (Fig. 5.4).
RF 7431, Context 6803, Phase 5b–6i.
- 1770 Hook tip turned outwards. Shank incomplete. L.34, W.21mm
RF 9704, Unstratified.
- 1771 Hook has 90° corners and the tip is curved inwards. Shank is widened into a plate with convex sides; a small ring is linked to terminal. L.156, W.35mm (Fig. 5.4).
RF 10608, Context 1831, Phase 6ii–6iii.
- 1772 Complete. L.85mm

- RF 11223, Unstratified.
- 1773 Hook only; tip looped inwards and curved back on itself. L.20, W.20mm
RF 11303, Context 10772, Phase 2–4ii.
- 1774 Hook tip pointed. Shank incomplete. L.61, W.32mm
RF 12143, Context 6491, Phase 5a.
- 1775 Hook tip turned outwards. Shank bent over at 90° in the centre; terminal missing. L.67, W.39mm
RF 12336, Unstratified.
- 1776 Hook has pointed tip. Shank widened slightly in the centre; terminal tip curved back on itself. L.143, W.20mm
RF 12998, Unstratified.

Cauldron suspension chain (Fig. 5.5; Pl. 5.1)

- 1777 A Y-shaped chain which at the junction point has a trilobate link (L.110, W.75mm) to which three lengths of chain (A–C) are attached as follows:
A. consists of three similar links existing as a spirally-twisted shank with at each end a loop with tip curved back on itself. L.365, 350 and 330mm. Th.15mm. The last link is coupled to a ring. D. 140mm.
B. consists of two links as in A. L.330 and 370mm, T. 14mm. The second is coupled to a component which has a loop at the head and hook at the base of the shank. L.115mm
C. consists of two links as in A. L.280 and 365mm. The second is coupled to a component similar to that at the base of B. L.160mm. [Fig. 5.5; Pl. 5.1]
RF 7107, Context 7613, Phase 3biv–5b.

Other suspension fittings

- 1778 Stub of shank which bifurcates and has two inwardly looped terminals. L.34, W.43mm
RF 571, Context 534, Period 7.
- 1779 At the head a looped terminal, below this the shank widens before narrowing gradually to the base where it bifurcates and there are two rolled terminals (rolls in same direction). L.187, W.17mm
RF 2051, Unstratified.
- 1780 At the head a looped terminal, below this the shank narrows to the base where it expands into a terminal which is now incomplete, original form uncertain. L.125, W.11mm
RF 9771, Unstratified.
- 1781 At head a looped terminal. Shank (bent in centre) narrows towards the base where it bifurcates and there are two rolled terminals (rolls in opposite directions). L.c.150, W.10mm
RF 12335, Unstratified.

S-hooks

- 1782 Rounded cross-section. L.105, Th.15mm
RF 3839, Context 3989, Phase 6iii.
- 1783 L.43mm
RF 4085, Context 3989, Phase 6iii.
- 1784 L.37, W.15mm
RF 12392, Unstratified.

Wall hooks (Fig. 5.6)

Wall hooks consist of tapering shank and slightly curved hook arm usually of rounded cross-section. There is a step at the base of the hook arm to allow the shank to be struck without damaging the hook arm. Length given is of shank.

- 1785 Incomplete. L.40mm
RF 1211, Unstratified.
- 1786 L.71mm
RF 3751, Unstratified.
- 1787 L.69mm
RF 4081, Context 3989, Phase 6iii.
- 1788 L.52mm
RF 4121, Unstratified.
- 1789 L.54mm
RF 4122, Unstratified.
- 1790 L.86mm (Fig. 5.6)
RF 6103, Context 5503, Phase 4ii.
- 1791 L.71mm
RF 6566, Context 6498, Phase 6ii–6iii.
- 1792 Hook arm projects an unusual distance from head of shank before curving up. L.82mm (Fig. 5.6)
RF 6827, Context 6300, Phase 6iii–7.
- 1793 As no. 1792 (RF 6827). L.57mm
RF 7033, Context 6300, Phase 6iii–7.
- 1794 L. 43mm
RF 7499, Unstratified.
- 1795 Shank incomplete, hook straightened out. L.79mm
RF 8049, Context 1835, Phase 6ii–6iii.
- 1796 L. 72mm
RF 9145, Unstratified.
- 1797 Hook arm largely missing, shank distorted. L.43mm
RF 9610, Unstratified.
- 1798 Hook arm largely missing. L.90mm
RF 9685, Unstratified.
- 1799 Hook arm largely missing. L.64mm
RF 9837, Unstratified.
- 1800 L.42mm
RF 10471, Context 10394, Phase 6ii–6iii.
- 1801 L.47mm
RF 11205, Context 10772, Phase 2–4ii.
- 1802 L.51mm
RF 11224, Context 10772, Phase 2–4ii.
- 1803 Hook arm largely missing. L.48mm
RF 12406, Context 10772, Phase 2–4ii.
- 1804 L. 39mm
RF 13373, Unstratified.
- 1805 L. 32mm
RF 13538, Unstratified.

L-shaped hook

- 1806 Arms have rectangular cross-section. L.87mm
RF 12957, Unstratified.

Other hook

- 1807 Shank tapers to a wedge-shaped tip. Hook U-shaped with a tip curved back on itself. L.65, W.31mm
RF 12324, Unstratified.

Suspension chain hook

- 1808 Exists as a spirally-twisted strip with a hook at each end, both facing the same way. Each has a tip curved back on itself. L.105; hooks: W.28mm
RF 3756, Unstratified.

*Chain links**OVAL*

- 1809 Two links coupled together. L.47mm
RF 2591, Unstratified.
- 1810 Incomplete. L.55mm
RF 3266, Context 3216, Phase 5b.
- 1811 Half. L.49, W.29mm
RF 3583, Context 3541, Phase 3bv.
- 1812 Two, one is incomplete. L.28, W.13mm
RF 4112, Unstratified.
- 1813 Incomplete. L.48, W.25mm
RF 8279, Context 3989, Phase 6iii.
- 1814 Fragment.
RF 8977, Context 3107, Phase 4ii.
- 1815 L.56, W.31mm
RF 9612, Unstratified.
- 1816 Fragment.
RF 9741, Context 3107, Phase 4ii.
- 1817 L.25, W.16mm
RF 9922, Unstratified.
- 1818 Incomplete. L.40, W.23mm
RF 11174, Context 7550, Phase 5a–5b.
- 1819 Incomplete. L.36, Th.5mm
RF 11668, Context 11663, Phase 3biii.
- 1820 Incomplete. L.50, W.24mm
RF 12727, Unstratified.
- 1821 Fragment. L.28mm
RF 12798, Unstratified.

FIGURE 8-SHAPED

- 1822 Two squashed links. L.38mm
RF 2810, Context 51, Phase 4ii.
- 1823 L.69, W.29mm
RF 7377, Context 6472, Phase 5b–6i.
- 1824 One half. L.19, W.13mm
RF 9107, Unstratified.
- 1825 L.75, W.23mm
RF 12322, Unstratified.

S-SHAPED

- 1826 Two links coupled together. L.57, W.13mm
RF 4191, Context 4195, Phase 5b–6i.

Rings

- 1827 D.44mm
RF 785, Context 767, Phase 1b–2.
- 1828 D.17mm
RF 1197, Context 1182, Phase 6iii.
- 1829 Plated (lead-tin). D.43mm
RF 3754, Unstratified.
- 1830 D.26mm
RF 4835, Unstratified.
- 1831 D.30mm
RF 5333, Context 3597, Phase 5b.
- 1832 D.26mm
RF 5491, Context 3758, Phase 4ii.

- 1833 D.110mm
RF 5677, Context 3758, Phase 4ii.
- 1834 Incomplete. D.26mm
RF 5769, Context 2024, Phase 6iii.
- 1835 D.76mm
RF 6547, Context 6235, Phase 3bv.
- 1836 D.27mm
RF 6773, Context 6300, Phase 6iii–7.
- 1837 Half. D.22mm
RF 6853, Context 6300, Phase 6iii–7.
- 1838 Half. D.21mm
RF 7102, Context 7054, Phase 6ii–6iii.
- 1839 Half. D.22mm
RF 7670, Context 7687, Phase 3bi–3bv.
- 1840 Fragment.
RF 7828, Context 7817, Phase 6iii.
- 1841 Half. D.5mm
RF 9254, Unstratified.
- 1842 D.46mm
RF 10946, Context 10772, Phase 2–4ii.
- 1843 Half. D.30mm
RF 11252, Unstratified.
- 1844 D.24mm
RF 12537, Unstratified.
- 1845 Fragment.
RF 12864, Unstratified.
- 1846 D.61mm
RF 13017, Unstratified.
- 1847 D.28mm
RF 13502, Unstratified.
- 1848 Half. D.30mm
RF 13536, Unstratified.
- 1849 Half. D.20mm
RF 13661, Unstratified.
- 1850 Half. D.26mm
RF 13676, Unstratified.
- 1851 In two pieces. D.46mm
RF 13793, Unstratified.
- 1852 D.51mm
RF 13904, Unstratified.

Discs (FIG. 5.6)

- 1853 Incomplete. Pierced in the centre and three – originally four? – times around the edge. Copper alloy detected around the rivets. D.59, Th.2mm.
RF 2006, Context 2002, Phase 5b.
- 1854 Pierced in the centre. D.52, Th.15mm
RF 6505, Context 6489, Phase 6ii–6iii.
- 1855 Large hole off-centre, also pierced three times. D.80mm (FIG. 5.6)
RF 7028, Context 6300, Phase 6iii–7.
- 1856 D.30mm
RF 8984, Context 3989, Phase 6iii.
- 1857 Large hole off-centre, also pierced three times. D.87mm
RF 12179, Context 6235, Phase 3bv.
- 1858 Pierced in the centre. Plated. D.37mm
RF 12926, Unstratified.

- 1859 Pierced in the centre and three times around the edge.
D.39mm
RF 13491, Unstratified.

Plate rivets

In complete form they exist as lozenge-shaped plates of which opposing corners have been folded into the centre leaving a V-shaped 'mouth' at each end. The two flaps are or were sometimes folded back on themselves leaving a narrow slot between them.

- 1860 Damaged at wider end. L.43, W.28mm
RF 4731, Context 2772, Phase 3bv.
- 1861 Narrow end missing. L.33, W.27mm
RF 5946, Context 3107, Phase 4ii.
- 1862 Narrow end missing. L.60, W.37mm
RF 6777, Context 5369, Phase 2–3a.
- 1863 Fragment. L.17, W.15mm
RF 7432, Context 6803, Phase 5b–6i.
- 1864 L.61, W.29mm
RF 9674, Unstratified.
- 1865 Incomplete. L.34, W.28mm
RF 9815, Unstratified.
- 1866 Incomplete. L.38, W.23mm
RF 10545, Context 10934, Phase 6ii–6iii.
- 1867 L.38, W.24mm
RF 11727, Context 5617, Phase 3bv.
- 1868 L.24, W.18mm
RF 11840, Context 11837, Phase 2–3a.
- 1869 L.28, W.24mm
RF 13604, Unstratified.

Tubes

- 1870 Open along the seam. Plated (tin?). L.71, D.12mm
RF 1058, Unstratified.
- 1871 Open along the seam. L.102, D.26mm
RF 11424, Context 3758, Phase 4ii.

Foot (for a tripod or similar object) (Fig. 5.6)

- 1872 A spirally-twisted strip which is curved over at one end and broken; at the other it is curved in the opposite direction and formed into a flat rounded terminal. L.93mm (Fig. 5.6)
RF 5964, Context 3758, Phase 4ii.

Rush-light holders (Fig. 5.6)

- 1873 Has a short tang at 90° to an arm which is split into two.
Tang: L.42; arm: L.96mm
RF 3616, Context 3451, Phase 6iii.
- 1874 L-shaped object. One arm is probably a tang (wood remains survive on it) and the other is split into two. Arms: L.57 and 84mm (Fig. 5.6)
RF 5462, Context 3758, Phase 4ii.
- 1875 L-shaped object, one arm bifurcates towards the end. Arms: L.36 and 28mm
RF 9053, Unstratified.

5.2 Iron locks and keys

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Padlocks

Bolts (Fig. 5.7)

There are 17 U-shaped barrel padlock bolts (five unstratified) which are all very similar in form. They have a pair of springs welded to the lower part of one arm, usually known as the spine. Above the spine the arm in the majority of cases has an expansion, which served to close off the hole in the end of the padlock case when it was locked. On six of the bolts, however, there is a separately-made closing plate instead. This is usually rounded, but on no. 1882 (RF 6844), unusually, it is rectangular (Fig. 5.7). Five bolts are plated, the metal being copper alloy where it has been analysed. On no. 1888 (RF 11419, Phase 5a) a white metal solder has been used to attach the springs.

No. 1885 (RF 8943, Phase 4iii) is a fragmentary object which is probably part of a padlock bolt, but it is unusual in that it is not only plated, but below the head of the bolt, on one side, it has an expansion on which there are three encircling grooves.

Cases

As far as padlock cases are concerned, there are, surprisingly, only four fragments (nos 1893–6: RF 6802, Phase 6iii–7; RF 9281, Phase 4ii; RF 9385, Phase 6ii; RF 13976, Phase 6iii). All are plated, and the metal of the three analysed is, as would be expected, a copper alloy.

Anglo-Saxon barrel padlocks had a removable U-shaped bolt, which was secured by springs resting against the inside of the case. It was released, on compression of the springs against the spine, by the key, which entered through a key-hole at the opposite end of the case to the bolt-hole. Padlocks of this form are known in early Anglo-Saxon graves (Faussett 1856), and are found in contexts dated up to and beyond the Norman Conquest (Ottaway 1992, 665–7). The stratified bolts from Flixborough occur throughout the sequence, although those with closing plates above the spine are all from Phase 5b or later. This feature appears to be standard on late Anglo-Saxon and medieval padlock bolts. The thickening of the bolt above the spine seen on most Flixborough bolts is a distinctive feature which does not appear to have been recorded elsewhere.

Bolts for fixed locks (Fig. 5.7)

In addition to cat. no. 12 (FX 88, R15; see Volume 1, Ch. 8.3), which came from a chest re-used as a coffin, there are two other lock bolts (nos 1897–8: RF 2540, Phase 5b–6ii, and RF 13167, unstratified) from fixed locks (Fig. 5.7). They exist or existed as a plate, pierced in the centre by a rectangular slot and at one end of the slot by a hole on each side of it. An arm projects or projected from each

end of the plate. When in use, the arms would have been held in place on the inner face of a chest by small staples. The surviving arm of no. 1897 (RF 2540) has a rounded terminal, and that of no. 12 (FX 88 R15) a rolled tip which would have prevented them slipping out of position.

The way in which the bolts worked is well-known. When locked, a leaf spring, the base of which was fixed to the chest, pressed against a ridge at the head of the central plate, and one arm projecting from the plate engaged in a staple fitted to a hasp holding the lid closed (see stapled hasps, p.171). To unlock, a key, sometimes known as a 'slide key' (see below), was inserted through the chest key-hole and twisted through 90 degrees, so that the teeth engaged in the holes at the head of the central plate. Once engaged, the key was pulled back slightly towards the user to release the springs, and the bolt could then be slid back to free the hasp. The bolt required either a key with a L-shaped bit (see below), or, in the case of the bolt from Flixborough which has a central slot, a key with a T-shaped bit. This passed through the lock bolt itself before being twisted.

Locks with the type of bolt described above may originate in the Roman period, the date of a probable bolt from Lakenheath, Suffolk (Manning 1985, 95, pl. 42, *O66*). Early post-Roman examples of bolts, both with and without the central slot, have been found associated with caskets in 6th–7th century Anglo-Saxon burials at, for example, Gilton, Kent (Faussett 1856, 19), Chamberlain's Barn, Leighton Buzzard, Beds. (Hyslop 1963, 196, fig. 7, 7) and Buckland, Dover (Evison 1987, 100–1, figs 17, 21, 30, 33–4, 39, 51, 124). A brass version was found in a grave at Sibertswold Down, Kent (Faussett 1856, 133).

The largest assemblage of bolts of 8th–9th century date from Britain came from Thwing, East Yorks. (Ottaway unpublished a) where 20 were found. In addition, five bolts of the same date were found at Dacre, Cumbria, of which one came from a chest burial (Ottaway unpublished c). Bolts also occurred on 8th–9th century burial chests from Ailcy Hill, Ripon (Ottaway 1996, 106–9, figs 18, 20) and York Minster (Kjølbye-Biddle 1995, 491, fig. 173, M438; 511, fig. 177, M1667d). Although two bolts came from 10th century contexts at 16–22 Coppergate, York (Ottaway 1992, 660, fig. 281, 3606–7), they usually occur in 6th–9th century contexts in England, and the lock type which employed them had probably become obsolete by about 900.

Padlock keys (Fig. 5.7)

There are 13 padlock keys (four unstratified), and they have bits of two basic forms. In the first, of which there are probably nine examples, the bit, set at $c.45^\circ$ to the stem, is roughly rectangular or rounded, and has a central cut (e.g. nos 1941 and 1943: RF 4098, Phase 4ii, and RF 7470, Phase 5b–6i; Fig. 6.7). In the second form, of which there are four examples (e.g. no. 1935: RF 5199, Phase 4ii–5a), the bit consists of two prongs which would have released the springs with a levering rather than a sliding

action. The upper part of the stems of both forms of key is usually widened, and at the head there is usually a looped terminal. On nos 1940 and 1943 (RF 3807, Phase 6ii; and RF 7470) the terminals were clearly linked to rings by which they were suspended from a belt (Fig. 5.7). No. 1936 (RF 11994) is an exception, as the head of the stem is pierced; in addition, it is the only example of a plated padlock key.

Anglo-Saxon padlock keys, like the locks themselves, are rare, but keys of the first form come from early Anglo-Saxon contexts at Shakenoak Farm (P. D. C. Brown 1972, 90, fig. 40, 179 and 186), and from Anglo-Scandinavian contexts at 16–22 Coppergate, York (Ottaway 1992, 675–6, fig. 290, 3662, 3664–5). This form is also well known in medieval times, whereas the pronged bit is not. The Flixborough examples may, however, be compared with an early Anglo-Saxon example from Shakenoak Farm (P. D. C. Brown 1972, 90, fig. 40, 181) and 10th century examples from 16–22 Coppergate, York (Ottaway 1992, 676, fig. 290, 3663) and Århus, Denmark (Andersen *et al.* 1971, 185–6, *EXT*).

Keys for fixed locks

1. 'Slide keys' (Fig. 5.7)

There are 32 keys (14 unstratified) which would have been suitable for locks with sliding bolts of the type discussed above. They may be described as 'slide keys' on account of their motion when in use, but they are not the same as the Roman slide keys described, for example, by Manning (1985, 93). It should also be noted that the keys with L-shaped bits could be used with other types of lock, known in Roman and post-Roman contexts. These locks did not have a sliding bolt independent of the springs, but rather a catch to which springs were attached (Ottaway 1992, 662–4, fig. 283).

The keys under discussion may be divided into two groups according to the form of bit: L-shaped and T-shaped. As noted above, if used with sliding lock-bolts, the former were used with a bolt without the central slot, and the latter with a lock-bolt with the slot.

L-shaped keys usually have bits with two prongs, although no. 1901 (RF 3853, Phase 6iii) has only a single prong. In order to aid the user's grip, the upper part of the stem is usually widened, most commonly into a plate with convex sides (e.g. nos 1900 and 1912: RF 3739, unstratified, and RF 12425, Phase 2–5a). At the head of the stem, there is, or was, in most cases, a looped terminal, which would have been linked to a ring for suspension from the user's belt. A ring survives on no. 1912 (RF 12425). Variants include no. 1911 (RF 12329, unstratified), on which the stem is stepped out slightly a short way above the bit, and then narrows gradually up the terminal. The stem of no. 1902 (RF 5468, Phase 4ii) is widened in the centre, and then exists as a narrow parallel-sided plate, which is pierced at the head (Fig. 5.7).

Size varies quite markedly, with the longest key being no. 1901 (RF 3853; 154mm); the rest are over 110mm in

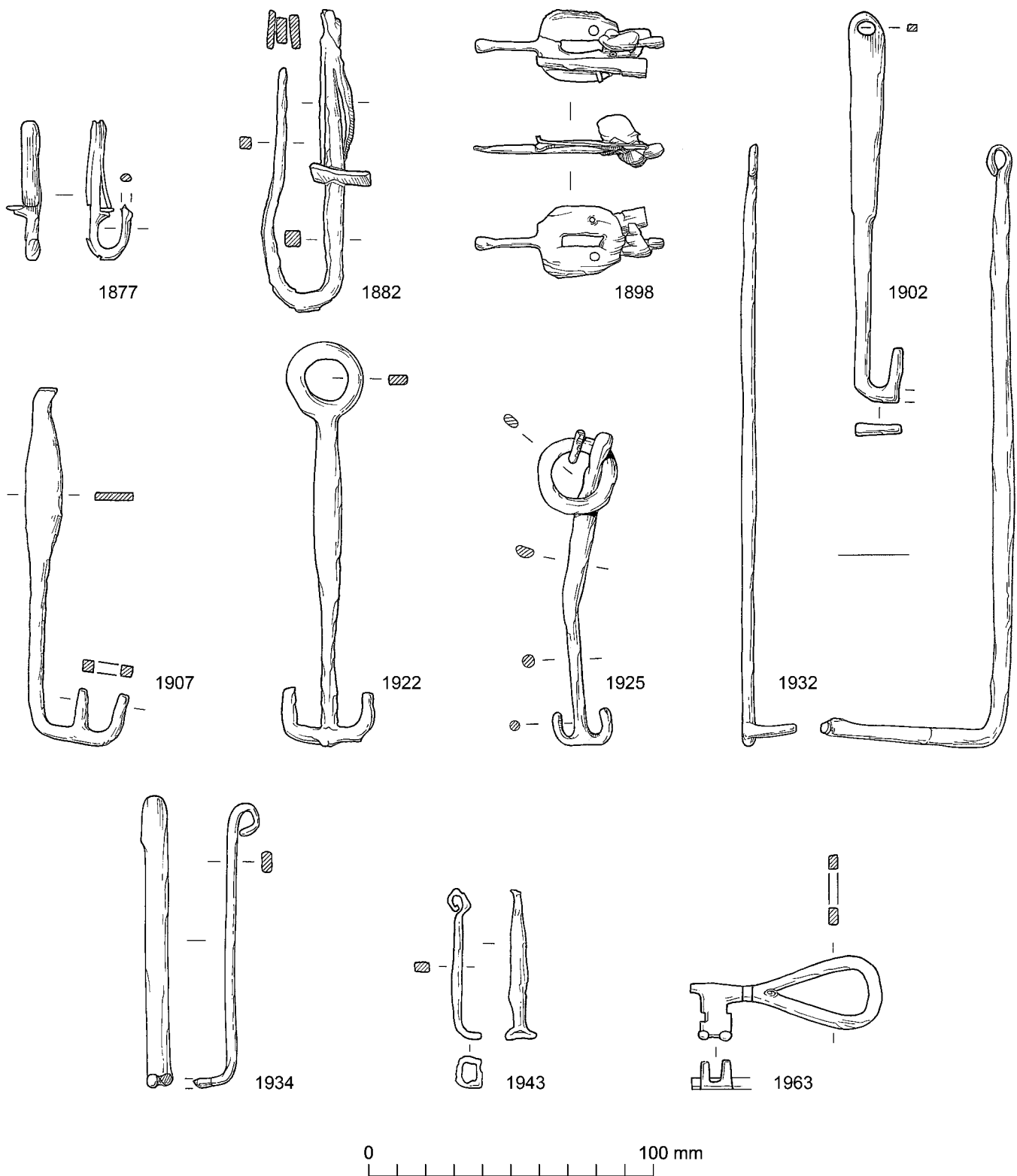


FIG. 5.7. Iron padlock bolts, sliding bolts and keys. Scale 1:2.

length, except for no. 1912 (RF 12425) which is only 56mm long and was probably for the lock of a small container, like a box or casket, rather than a large chest.

Keys with T-shaped bits usually have a prong on each side, but no. 1923 (RF 8985, unstratified) has an extra prong on one side. The 'arms' of the bits are usually L-shaped, but those of nos 1916 and 1926 (RF 1344, Phase 6iii, and RF 12320, unstratified) are more of a U-shape. This is a feature which appears more commonly on keys from early Anglo-Saxon contexts than on those from later contexts. The 'U-shape' can, for example, be seen on keys from West Stow, Suffolk (West 1985, 61, fig. 240, *I*) and the cemetery at Morning Thorpe, Norfolk (Green *et al.* 1987, fig. 377, *M*; fig. 435, *G*). The stems of nos 1916 and 1919 (RFs 1344 and 3834, both Phase 6iii) are simple, straight strips, but more commonly the upper parts are, like those of the L-shaped keys, widened in some way. The terminal is usually a loop, and on no. 1925 (RF 9770, unstratified) it is linked to a ring, which is also linked to an incomplete pierced strap. Nothing like this arrangement has been found elsewhere, but the strap must have been attached to the belt on which, it is assumed, the key was carried around. Nos 1919, 1922 and 1930 (RFs 3834, 5725, Phase 5a; and RF 13896, unstratified) are unusual in having terminals in the form of a ring forged at the head of the stem. No. 1919 (RF 3834) is also plated, which is very unusual for keys of this type, and it is remarkably small, with a length of only 48mm; it must have been used as a casket key, as must no. 1930 (RF 13896) which is even shorter at 35mm. The other keys in this group are over 110mm in length, with the longest being no. 1922 (RF 5725) at 141mm (Fig. 5.7).

Similar keys to those from Flixborough, both L- and T-shaped, are common finds in both Roman and post-Roman contexts dated up until the beginning of the 10th century, after which, as noted above, the locks probably became obsolete. Anglo-Scandinavian contexts at 16–22 Coppergate, York produced six examples – five L-shaped and one T-shaped (Ottaway 1992, 673–5, fig. 289, 3655–60) – two of which were from late 9th-century contexts, and the others from 10th-century contexts; but they form a very small group, compared to the number of keys for locks with bolts regulated by a tumbler (see below).

2. 'Latch lifters' (Fig. 5.7)

Nos 1931–2 (RF 5829, Phase 4i; and RF 6400, Phase 3biv) are L-shaped objects which are similar to the slide keys described above. Their stems have looped terminals at the head, and the shorter arms are themselves L-shaped, but in a plane at 90° to the object as a whole (Fig. 5.7). Presumably these objects were intended to operate some form of latch or lock-bolt, but it is not clear in what manner.

No. 1933 (RF 10902, Phase 2–5a) was probably similar in function to the objects just described, but it has a C-shaped 'bit' at the end of the stem. A similar object was found in an early Anglo-Saxon context at Sutton Courtenay (Leeds 1923, pl. 27, fig. 1 P), and a second example as

part of a chatelaine of Anglian (8th–9th century) date from 46–54 Fishergate, York (Rogers 1993a, 1425–8, fig. 698, 5243).

Objects which come under the general heading of 'latch lifter' do not usually occur in contexts of late Anglo-Saxon date, and it may be noted that all three examples from Flixborough probably come from contexts dated before the mid 9th century.

3. 'Twist' keys (Fig. 5.7)

There are five examples of keys which were used with a twisting or rotating action (one of these is probably medieval, and so is discussed in Chapter 14, below). Nos 1963–4 (RF 1432, Phase 6iii, and RF 6084, Phase 4ii) are similar in having bits which have two short prongs at 90° to the tip. The two keys otherwise differ, in that no. 1963 (RF 1432) is smaller, plated with tin, and has a distinctly pear-shaped bow and a short solid stem which projects beyond the bit (Fig. 5.7). No. 1964 (RF 6084) is plated with copper alloy, and has a bow with a relatively flat and wide cross-section, and a hollow stem which would have engaged with a spindle projecting from the back of the lock. The form of the bit seen on both keys implies use in one of two types of lock. The first is a fixed lock, from a chest or similar item of furniture, in which the bolt was held in place by leaf springs when in the locked position. The bolt would, however, have had the plate between the arms set horizontally, rather than vertically as in the form described above. The key releases the bolt by means of the prongs which pass through holes in the central plate (see Almgren 1955, figs 86–7 and Ottaway 1992, fig. 288). Keys with the type of bit under discussion can also be used in padlocks, as illustrated by Arrhenius (1961, fig. 25). As a relatively small key, no. 1963 (RF 1432) is quite likely to have been a padlock key (Fig. 5.7).

Bolts for locks of the type described above are scarce in Britain, although a complete fixed lock was found on a chest re-used as a coffin dated to the late 9th century in the Winchester Cathedral Green cemetery (I. H. Goodall 1990, 1003–5, 1016–7, figs 317–8, 3686). A padlock of suitable form was found in an Anglo-Scandinavian context at Skeldergate, York (MacGregor 1978, 44–5, fig. 27, 2). The keys are also scarce in stratified contexts in England, although no. 1963 (RF 1432) corresponds to Type 1A recognised in the London Museum Medieval Catalogue (Ward-Perkins 1940, 134, fig. 42). Other stratified examples from England similar to no. 1963 (RF 1432) include three from 10th–11th century contexts at Cheddar (I. H. Goodall 1979, 263, fig. 90, 4, 15 and 96), and one from a probable late Anglo-Saxon context at Northampton (Goodall *et al.* 1979, 268, fig. 116, 9). A key from a middle Anglo-Saxon context at Wicken Bonhunt, Essex, is similar to no. 1963 (RF 1432) in most respects, including plating (copper alloy), but has a hollow stem (sf216; Ottaway unpublished d). Elsewhere in northern Europe, keys similar to no. 1963 (RF 1432) are numerous in 8th–11th century contexts, occurring in both iron and

copper alloy. A key similar to no. 1964 (RF 6084), but not plated, came from a middle Anglo-Saxon context at Thwing (I314; Ottaway unpublished a), but for other stratified examples one must look elsewhere in northern Europe, including the Viking-Age graves at Birka, Sweden (Arbman 1940, Taf. 270) and a 10th-century context at Århus (Andersen *et al.* 1971, XE).

No. 1966 (RF 7863, unstratified) is a large key forged from a single piece of iron, with a bow which is a pear-shaped loop, flat and wide in cross-section, with its tip tucked into the head of a hollow stem. The bit is a simple rectangle. Keys like no. 1966 (RF 7863) were usually used in locks with sliding bolts governed by a tumbler (Ottaway 1992, 657–69). These locks are known in contexts dated from the late 7th–early 8th century onwards, but the evidence of both bolts and keys suggests that the lock type became more commonly used after the mid. 9th century. The keys are almost always of the form described above, although the bits may be more complex, as can be seen in a large assemblage of 39 from 16–22 Coppergate, York (*ibid.*). The lack of a single stratified example from Flixborough, especially when compared to the number of ‘slide keys’, is one of the most striking pieces of evidence for the middle Anglo-Saxon character of the ironwork assemblage from the site (see p.190). This pattern is also replicated in the middle Anglo-Saxon ironwork assemblage at Thwing, in which there are eight slide keys and no tumbler lock keys (Ottaway unpublished a).

No. 1965 (RF 6523, Phase 6ii) was probably similar to either nos 1964 or 1966 (RFs 6084, 7863), but is now incomplete.

Incomplete keys

There are 16 objects which are probably the stems of padlock keys or ‘slide keys’ that have lost their bits.

Catalogue

Barrel padlock bolts (Fig. 5.7)

All are or were U-shaped, and have, or had, a pair of springs welded to the end of one arm, the spine. There is either an expansion, or, if stated, a closing plate above the spine. The second arm is known as the free arm.

- 1876 Barrel padlock bolt. L.71, W.19mm
RF 3311, Context 3107, Phase 4ii.
- 1877 Free arm incomplete. Closing plate above the spine. Plated (copper-tin). L.48, W.15mm (Fig. 5.7)
RF 3720, Context 3610, Phase 6ii.
- 1878 Free arm incomplete. L.64, W.15mm
RF 3794, Unstratified.
- 1879 Free arm incomplete. L.56, W.15mm
RF 3856, Context 3989, Phase 6iii.
- 1880 Complete barrel padlock bolt. L.90, W.25mm
RF 4159, Context 3891, Phase 6ii.
- 1881 Barrel padlock bolt. Springs missing. L.56, W.20mm
RF 6427, Context 5617, Phase 3bv.
- 1882 Complete barrel padlock bolt. Rectangular closing plate above the spine. L.105, W.28mm (Fig. 5.7)

RF 6844, Context 6300, Phase 6iii–7.

- 1883 Barrel padlock bolt fragment: closing plate and spine. Plated. L.59mm
RF 6859, Context 6798, Phase 6i.
- 1884 Barrel padlock bolt fragment: closing plate and head of spine. Plated (copper, zinc, trace lead). L.35mm
RF 8257, Unstratified.
- 1885 Barrel padlock bolt. Consists of the head of a bolt below which, on one side, there is an expansion on which there are three encircling grooves. Plated (copper-tin). L.24, W.19mm
RF 8943, Context 3107, Phase 4ii.
- 1886 Barrel padlock bolt. Springs missing. L.58, W.23mm
RF 9834, Context 6300, Phase 6iii–7.
- 1887 Free arm incomplete. L.66, W.23mm
RF 10340, Context 5983, Phase 3biv.
- 1888 Incomplete barrel padlock bolt. White metal solder used to attach springs to spine. L.60mm
RF 11419, Context 11411, Phase 5a.
- 1889 Barrel padlock bolt. Spine and springs only. L.38mm
RF 12420, Unstratified.
- 1890 Incomplete barrel padlock bolt; includes incomplete closing plate and spine. Plated (copper). L.56mm
RF 12709, Unstratified.
- 1891 Complete barrel padlock bolt. L.71, W.16mm
RF 12847, Unstratified.
- 1892 Incomplete barrel padlock bolt; includes closing plate and head of spine. Plated (lead copper). L.37, W.23mm
RF 13879, Unstratified.

Barrel padlock case fragments

- 1893. Fragment from end of case. Plated (copper, tin, lead). L.60, W.31mm
RF 6802, Context 6300, Phase 6iii–7.
- 1894 Fragment from end of case. Plated (copper). D.21mm
RF 9281, Context 3107, Phase 4ii.
- 1895 Barrel padlock case fragment. Plated (not analysed). L.44, W.43mm
RF 9385, Context 6046, Phase 6ii.
- 1896 Barrel padlock case fragment. Plated (copper, lead and tin) L.43, W.20mm
RF 13976, Context 535, Phase 6iii.

Sliding bolts for fixed locks (Fig. 5.7)

They both consist or consisted of a central plate pierced by a rectangular slot and a hole each side at one end. An arm projects or projected from each end.

- 1897 Incomplete. Part of the plate and one arm survives. The arm has a rounded, pierced terminal. L.45, W.20mm
RF 2540, Context 2488, Phase 5b–6ii.
- 1898 Plate has rounded corners. A spring is fused on to the plate. L.66, W.25mm (Fig. 5.7)
RF 13167, Unstratified.

Slide keys (Fig. 5.7)

These keys are for locks with sliding bolts as described above. They are either L-shaped, or T-shaped, and the bits have two prongs, unless otherwise stated. The stems have various forms,

but unless stated there is a looped terminal at the head. W = width of bit.

L-SHAPED (FIG. 5.7)

- 1899 Upper part of the stem is widened slightly before tapering to the terminal. L.30, W.33mm
RF 3128, Context 3107, Phase 4ii.
- 1900 Upper part of stems widened into a plate with convex sides. L.110, W.34mm
RF 3739, Unstratified.
- 1901 Bit has single prong. L.154, W.40mm
RF 3853, Context 3989, Phase 6iii.
- 1902 Bit incomplete. In the centre the stem is widened out into a plate with parallel sides and rounded head, pierced at the top. L.136, W.13mm (FIG. 5.7)
RF 5468, Context 3758, Phase 4ii.
- 1903 Upper part of stem widened into a plate with convex sides; terminal missing. L.122, W.31mm
RF 5638, Context 5555, Phase 5b–6i.
- 1904 Stem widens a short distance above bit into parallel-sided plate, looped over at the head. L.116, W.30mm
RF 6877, Context 5988, Phase 6i.
- 1905 Bit only. L.19, W.31mm
RF 7709, Context 7220, Phase 3biii.
- 1906 Upper part of the stem is widened slightly before it tapers to the terminal. L.110, W.25mm
RF 10726, Context 10750, Phase 2–5a.
- 1907 Upper part of stem widens into a plate with convex sides; terminal incomplete. L.122, W.35mm (FIG. 5.7)
RF 10901, Context 10772, Phase 2–4ii.
- 1908 Stem incomplete, but starts to widen before the break. L.55, W.20mm
RF 10986, Context 6472, Phase 5b–6i.
- 1909 Bit only. L.20, W.40mm
RF 11995, Unstratified.
- 1910 Stem widens gradually towards the head where it narrows in to the terminal. L.118, W.36mm
RF 12301, Unstratified.
- 1911 Bit incomplete. Stem widened out slightly a little above bit and then narrows to the terminal. L.137, W.22mm
RF 12329, Unstratified.
- 1912 The upper half of the stem is widened into a plate with convex sides; a small ring is linked to terminal. L.56, W.7mm
RF 12425, Context 10772, Phase 2–4ii.
- 1913 Stem incomplete. L.45, W.39mm
RF 13680, Unstratified.
- #### T-SHAPED FIG. 5.7)
- 1914 Bit and stem incomplete; stem widens upwards to the break. L.83, W.33mm
RF 964, Unstratified.
- 1915 Stem incomplete. L.30mm
RF 1309, Context 1288, Phase 6iii.
- 1916 Bit arms slightly curved, terminal tip curved back on itself. L.50mm
RF 1344, Context 1347, Phase 6iii.
- 1917 Stem is at its widest in the centre. L.113, W.31mm

RF 1809, Context 1479, Phase 6iii.

- 1918 Upper part of stem widens into a plate with convex sides. L.128, W.21mm
RF 3743, Unstratified.
- 1919 Stem has a ring-shaped terminal. Plated (tin-lead). L.48, W.14mm
RF 3834, Context 3989, Phase 6iii.
- 1920 Stem widens upwards from the bit and then narrows again a little below the head. L.83, W.15mm
RF 4070, Context 3891, Phase 6ii.
- 1921 Bit only. L.12, W.23mm
RF 4101, Context 3107, Phase 4ii.
- 1922 Stem widens in the centre into a plate with convex sides; ring-shaped terminal. L.141, W.32mm (FIG. 5.7)
RF 5725, Context 5139, Phase 5a.
- 1923 Two prongs on one side of bit, one on the other. Stem incomplete, but starts to widen before the break. L.80, W.34mm
RF 8985, Unstratified.
- 1924 Bit only. L.43, W.49mm
RF 9609, Unstratified.
- 1925 Stem widens a short way above the bit and then is parallel-sided before stepping in to the terminal which is linked to a ring also linked to the looped eye of an incomplete pierced strap. L.112, W.21mm (FIG. 5.7)
RF 9770, Unstratified.
- 1926 Bit arms slightly curved. Stem widens a short way above the bit in centre and remains parallel-sided as far as the terminal. L.110, W.27mm
RF 12320, Unstratified.
- 1927 Stem incomplete, but starts to widen before the break. L.78, W.24mm
RF 12340, Unstratified.
- 1928 Incomplete bit only. L.14, W.36mm
RF 12770, Unstratified.
- 1929 Stem head missing. L.102, W.26mm
RF 13686, Unstratified.
- 1930 Stems widens into a plate with markedly convex sides. Incomplete ring-shaped terminal. L.35, W.14mm
RF 13896, Unstratified.

'Latch-lifters' (FIG. 5.7)

L-SHAPED

- 1931 The tip of the shorter arm curves outwards at 90°. The longer arm has looped terminal at the head. Arms: L.185 and 105mm
RF 5829, Context 5827, Phase 4i–4ii.
- 1932 Latch-lifter. As no. 1931 (RF 5829). Arms: L.212 and 63mm (FIG. 5.7)
RF 6400, Context 5653, Phase 3biv.

C-SHAPED BIT

- 1933 Latch-lifter. L.142mm
RF 10902, Context 10772, Phase 2–4ii.

Padlock keys (FIG. 5.7)

A looped terminal at the head, unless stated.

Bit in the form of two short prongs at the base of the stem
(Fig. 5.7)

- 1934 Padlock key. L.99mm (Fig. 5.7)
RF 3639, Context 3451, Phase 6iii.
- 1935 Padlock key. Stem incomplete. L.32mm
RF 5199, Context 5193, Phase 4ii–5a.
- 1936 Padlock key. Rounded, pierced terminal with radial grooves cut into the face opposite to that from which the bit projects. Plated (tin-lead). L.83mm
RF 11994, Unstratified.
- 193 Padlock key. Stem widened into an oval shape at the head. L.118mm
RF 13426, Unstratified.

Bit with a central cut (Fig. 5.7)

The bits of these keys are all at angle of c.45° to the stem.

- 1938 Incomplete rectangular bit. Stem widens slightly towards the head. L.95mm
RF 2638, Context 2183, Phase 6iii.
- 1939 Bit rectangular. Stem widens in the centre, terminal missing. L.104mm
RF 3740, Unstratified.
- 1940 Bit incomplete. Stem widens in centre and is then parallel-sided to head where it is looped over to form the terminal which is linked to a fragmentary ring. L.110mm
RF 3807, Context 3730, Phase 6ii.
- 1941 Bit rectangular. Stem widens from the centre upwards, bit is incomplete. L.61mm
RF 4098, Context 3107, Phase 4ii.
- 1942 Bit largely missing. L.104mm
RF 5636, Context 5553, Phase 5b.
- 1943 Bit rectangular. Stem widened near the head, looped terminal with fragment of ring. L.52mm (Fig. 5.7)
RF 7470, Context 6472, Phase 5b–6i.
- 1944 Bit and stem incomplete. L.57mm
RF 7858, Unstratified.
- 1945 Bit rounded. Upper part of stem widened into elongated triangular shape. L.62mm
RF 9675, Unstratified.
- 1946 Fragment.
RF 11094, Context 3107, Phase 4ii.

Stems for keys of uncertain type

These objects are probably the stems of padlock keys or slide keys which have lost their bits.

- 1947 Head only in form of an oval. Looped terminal. L.32mm
RF 379, Context 467, Phase 4i–4ii.
- 1948 Incomplete stem with looped terminal. L.99mm
RF 1757, Context 1672, Phase 5b–6i.
- 1949 Slightly curved and widened in the centre. Looped terminal. L.107mm
RF 2887, Context 2861, Phase 2i–4ii.
- 1950 One half is a strip of rounded cross-section, which then widens into flat plate. L.92mm
RF 3141, Context 3107, Phase 4ii.
- 1951 Curved at 90° in centre. Rounded cross-section. Incomplete looped terminal. L.c.46mm

RF 3423, Context 3421, Phase 5b–6.

- 1952 Upper part of stem only. Steps out near centre before tapering to the head. L.55, W.12mm
RF 3573, Context 3281, Period 2.
- 1953 Incomplete stem with looped terminal. L.42mm
RF 3645, Context 3610, Phase 6ii.
- 1954 Bent twice. Oval area at the head. Looped terminal. L. (originally) 116mm
RF 3843, Context 3989, Phase 6iii.
- 1955 Incomplete stem with looped terminal holding a ring. L.83mm
RF 5212, Context 5193, Phase 4ii–5a.
- 1956 Bent near where the bit has broken off. L.130mm
RF 5762, Context 3989, Phase 6iii.
- 1957 Incomplete stem, expands slightly in the centre, looped terminal. L.57mm
RF 8256, Context 3989, Phase 6iii.
- 1958 Bent in centre. Terminal incomplete. L.181mm
RF 8699, Context 6343, Phase 6ii–6iii.
- 1959 Stem formed into an oval at the head below which it is curved. Looped terminal. L.51mm
RF 8988, Context 3107, Phase 4ii.
- 1960 Incomplete stem with looped terminal holding a fragment of a small ring. L.60mm
RF 10498, Context 1831, Phase 6ii–6iii.
- 1961 Narrows towards the base. Looped terminal. L.85mm
RF 11225, Context 10772, Phase 2–4ii.
- 1962 Incomplete stem with looped terminal. L.97mm
RF 11683, Context 11682, Phase 2–3a.

Twist keys (Fig. 5.7)

- 1963 Pear-shaped bow, short solid stem projects beyond bit, which has two prongs at base which project at 90°. Moulding on stem between bow and bit. Plated (tin-lead). L.66, W.25mm (Fig. 5.7)
RF 1432, Context 1288, Phase 6iii.
- 1964 Pear-shaped bow, hollow stem. Bit exists as two prongs each of which is curved over at 90° at the tip. Plated (copper). L.80, W.20mm
RF 6084, Context 3758, Phase 4ii.
- 1965 Roughly oval bow, hollow stem, bit missing. L.106, W.33mm
RF 6523, Context 6471, Phase 6ii.
- 1966 Pear-shaped bow, hollow stem, simple rectangular bit. L.127, W.43mm
RF 7863, Unstratified.

5.3 Copper alloy keys

*by Nicola Rogers, with contributions
by Glynis Edwards[†], Jacqui Watson and
Ian Panter*

Keys (Fig. 5.8)

Iron keys are far more common than those of copper alloy in Saxon assemblages; nevertheless, Flixborough produced

five copper alloy keys, comprising three slide keys (nos 1967–9; RFs 2573, 5200, 11020) and two ?latch-lifters (nos 1970–1; RFs 3776, 3820).

Slide keys (Fig. 5.8)

The three slide keys differ slightly in form, but would all have been used in the same fashion. No. 1968 (RF 2573) has a circular bow, a solid stem of circular section, and a bit at 90° to the stem, with narrow projecting prongs aligned vertically (Fig. 5.8); no. 1967 (RF 5200) is of similar form, but is hollow-ended (Fig. 5.8). No. 1969 (RF 11020) is also hollow at the tip, but has a spatulate upper stem; this is looped around a twisted wire ring at the top, and has a bit with two broad prongs aligned horizontally, and formed as the result of a semi-circular cut-out on one edge (Fig. 5.8). All would have been used on mounted locks – although of two slightly different forms; once inserted through the key-hole, the projecting tip of no. 1968 (RF 2573) beyond the bit located in a hole in the expanded part of the lock-bolt, while on nos 1967 and 1969 (RFs 5200, 11020) the hollow tip fitted over a pin on the bolt. As they were turned, the projecting teeth entered holes in the lock-bolt, thus releasing the spring which pressed against the stop on the bolt; the key and bolt were then drawn along, and when the key was withdrawn, the lock was open (I. H. Goodall 1990, 1016–7, figs 317–8, nos 3686, 3738). This type of mechanism is essentially pre-Conquest, with keys appropriate for this lock type, such as the two from Flixborough, being found in northern Europe from the late 8th /early 9th to the 11th century (Ottaway 1992, 673). In England, similar iron keys have been recovered at Winchester, where Type 1 represented solid-stemmed keys (I.H. Goodall 1990, 1007, fig. 325, nos 3732–8), and Type 2 hollow-stemmed (*ibid.*), and also at Cheddar (I. H. Goodall 1979, 263, fig. 90, nos 4, 15, 96); on both sites, the keys were found in early 10th- to mid 12th-century deposits. Copper alloy solid-stemmed examples have also been found in London (Ward-Perkins 1940, 134–6, pl. XXIX, nos 1–4, 7–10), and a parallel to no. 1969 (RF11020) comes from Whitby (Peers and Radford 1943, 66, fig. 17, no. 2). No.1967 (RF 5200) was found in a Phase 5a (mid–late 9th) dump, while nos 1968–9 (RFs 2573, 11020) were recovered from Phase 6iii (mid to late 10th- to early 11th-century) deposits.

?Latch lifters (Fig. 5.8)

Nos 1970–1 (RFs 3776, 3820) were both recovered from unstratified deposits. Both are suspended on twisted wire rings, and both have short prongs bent away from the stem at 90° – no. 1970 (RF 3776) having two, and no. 1971 (RF 3820) having three (Fig. 5.8). Simple prongs such as those found on these two objects are best paralleled on latch-lifters, which, like slide keys, were invariably made of iron, and were generally a simple stem with a hooked end; these are fairly common finds in Saxon cemeteries,

frequently in female graves, as at Sewerby (Hirst 1985, 88, fig. 47, G38), and also on settlement sites, such as Mucking (Hamerow 1993, 69). As latch lifters, these objects could pre-date the slide keys, but it has been suggested that they may represent a design influenced by them (Leahy 1991, 100, nos. 69t, 69u); this would imply a date contemporary with the slide keys.

Less robust and more decorative than their iron counterparts, all the Flixborough non-ferrous keys would probably have been used with locks on small boxes or chests.

Catalogue

(Dimensions are in mm. L. = length; W. = width; Th. = thickness; Diam. = diameter.)

Slide keys (Fig. 5.8)

- 1967 Slide key with sub-circular bow of sub-triangular section, stem of circular section with hollow end, bit with four teeth projects to one side, tapering slightly away from stem, perforated between teeth and stem. L.67, Stem section diam. 9.4; Bow.diam. 28.7. Bit L.26.7, W.15. Teeth L.12, Section Diam. 3. (Fig. 5.8)
RF 5200, Context 5193, Phase 5a.
- 1968 Slide key with circular bow of rectangular section, with large perforation, solid stem of circular section, with three incised lines just below bow, perforated rectangular bit of rectangular section at 90° to the stem with two projecting teeth of circular section, narrowed projection from end of stem beyond bit. L.46.4, Stem section diam. 6.2, Bow diam. 22.4. Bit L.17.3, W.9. Teeth L.5.8, Section Diam. 2.8. (Fig. 5.8)
RF 2573, Context 2181, Phase 6iii.
- 1969 Complete slide key. Upper end of stem spatulate, with projecting loop at top, through which twisted wire ring passes; lower end of stem of sub-circular section, tip hollow, rectangular bit projects to one side of stem, with semi-circular cut-out on one side of bit. L.41.7. Stem section diam. 3.6, Bit L.15.5, W.3.6, Th. 1.8. Ring Diam.12.7, Section Diam. 1.5. (Fig. 5.8)
RF 11020, Context 6469, Phase 6iii.

?Latch lifters (Fig. 5.8)

- 1970 Possible latch-lifter with lozenge-shaped stem of rectangular section, top looped over twisted wire ring, at lower end stem split into double-toothed bit, tips of teeth bent up. L.77.9, Stem W.7.2, Th.2.4. Ring D.12.8, Section Diam. 2. (Fig. 5.8)
RF 3776, Unstratified
- 1971 Possible latch-lifter suspended from twisted wire ring, upper part of stem of circular section with double collar below suspension eye, Below a second double collar, stem changes to rectangular section with three teeth of sub-square section at tip, projecting at 90° to stem, central tooth extending beyond others L.100.3. Upper stem Section Diam. 3.6. Lower stem W.8. Longest tooth L.12, W.2, Th.1.7. Ring Diam.12.6 Section Diam. 2.1. (Fig. 5.8)
RF 3820, Unstratified

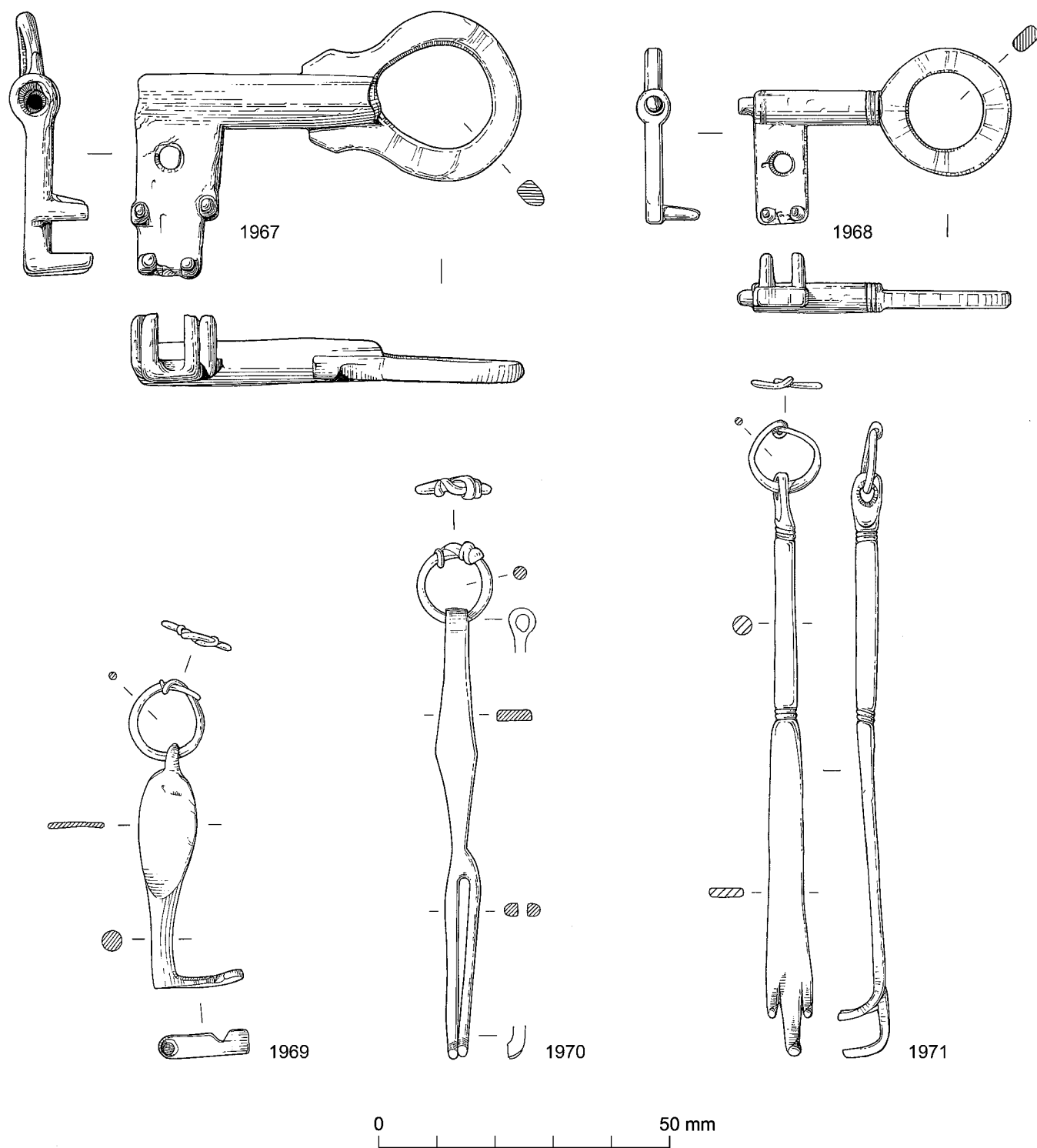


FIG. 5.8. Copper alloy keys. Scale 1:1.

5.4 Miscellaneous copper-alloy fixtures and fittings

by Nicola Rogers, with contributions
by Glynis Edwards[†], Jacqui Watson and
Ian Panter

Structural metalwork and fittings

Nail

No. 1972 (RF10951) is made of copper alloy, and was unstratified.

Hinges (Fig. 5.9)

All the copper alloy hinges found at Flixborough were unstratified. No. 1973 (RF 12748) is complete apart from a fragment missing from one of the rounded terminals, and the upper face, which may have been tinned, is decorated all over with ring-and-dot motifs (Fig. 5.9). Curved in profile, the hinge may have come from a small box or casket lid, to which it would have been attached via the three rivet- or nail-holes on each plate. The decoration and shape suggest a possible Saxon date for this hinge, which has some structural similarities to hinges found associated with a casket in the bed burial at Swallowcliffe Down, Wilts. (Speake 1989, 24–6, fig. 24, h, i).

No. 1974 (RF 2597) has been made by folding a strip of copper alloy sheet in half, creating two opposing plates, of which one now survives. Four slots were cut into the fold, into which a second hinge would have engaged. Two iron rivets retain fragments of iron sheet on one side of the hinge. Like no. 1973 (RF 12748), no. 1974 (RF 2597) may also be of Saxon date; in form it resembles the iron hinges used to suspend the cheek-pieces on the Anglian helmet found at Coppergate, York (Tweddle 1992, 989–91, figs 452, 457–8). Being somewhat smaller than the cheek-piece hinges, and made of copper alloy rather than iron, it is likely to have been applied where little weight was suspended, and limited strength was required.

The fragmentary no. 1975 (RF 12779) is possibly part of a strap hinge; it is broken at one end, the other being looped up and having a slot just behind it.

Corner bindings

Four similar corner bindings (nos 1976–9: RFs 112, 7955, 12338, 13462) were found in topsoil and unstratified contexts; all have a L-shaped form and section, with an inner wavy edge and evidence for attachments at each end. They are of uncertain date, and it is unclear to what they were originally attached.

Possible bindings

A strip in two fragments, and decorated with lateral repoussé bands no. 1980 (RF 6272) was found in a Phase 6i trench fill in Building 7, and may be part of a binding; one end of one of the fragments has a rivet-hole. Found unstratified, no. 1981 (RF 14020) is a slightly curved

rectangular strip, with two rivet-holes, a double-banded border and central zigzag decoration; also unstratified and convexly curved, no. 1982 (RF 14223) has three rivet-holes along each long edge. Both of these strips could have been attached to vessels, such as buckets.

No. 1983 (RF 177) was recovered from topsoil and comprises four fragments, two of which have one edge bent at right angles, one of these two retaining an iron nail-head with traces of wood on the underside. One or both of these may have been attached to a wooden vessel, such as a box. A third fragment has a folded sheet rivet, and may be part of a metal vessel repair (see above).

Copper alloy strips and strip fragments of varying sizes, all undecorated with rivet-holes or rivets *in situ*, were found in stratified contexts (nos 1984–91: RFs 6209, 7312–3, 11037, 4633, 10971, 3678, 6970) – ranging from Phase 3bv (no. 1984; RF 6209) to 6iii–7 (no. 1991; RF 6970) – and also in topsoil and unstratified deposits (nos 1992–7; RFs 21, 2579, 2673, 2968, 11940, 13532). These may also have been bindings for boxes or other vessels.

Decorated strips

Strip fragments with decoration, but no rivet-holes, include no. 1998 (RF 2445) found in a Phase 5b dump, and decorated with simple incised lines.

Decorated bands or fittings (Fig. 5.9)

Two circular decorated bands (nos 1999–2000: RFs 3176, 11925), both of uncertain function, were found on the site.

No. 1999 (RF 3176) is made of copper alloy, and decorated with deeply incised circumferential lines at each end (Fig. 5.9); it has two rivet-holes at one end, and was retrieved from a Phase 5b dump.

Found unstratified, no. 2000 (RF 11925) is a silver band with ends overlapped to form a small tube of sub-oval section, and with a pair of internal rivets; it has been decorated with three fields of inscribed motifs (Fig. 5.9). Two fields contain interlace motifs, which could both be described as straight line lacing patterns (Cramp 1984, xxxiii, fig. 25 Cvi and Cvii); the second interlaced field is approximately half the area of the other. The third field contains a quadruped, with an open-mouthed head with pricked ear and a collar below; the front leg extends forwards, and the tail is upright. Although the inscribed motifs are now very faint, the surface around them is scratched, possibly for the keying in of gilding; in this way, the original decorative motifs would have stood out. While difficult to parallel exactly within Anglo-Saxon metalwork, the faunal element of this band seems to bear some similarities to prancing quadrupeds depicted in friezes built into the walls of the church at Breedon-on-the-Hill, Leicestershire (Kendrick 1938, 172–3, pl. LXXIII; Jewell 2001, 262), and dating to the very beginning of the 9th century; as with no. 2000 (RF 11925), the friezes incorporate separate fields of interlace and animal ornament. It seems likely that no. 2000 (RF

A small undecorated band (no. 2001; RF 7960) was unstratified.

A small decorated disc with a loop on the reverse (no. 2002; RF 12444; FIG. 5.9), which was found unstratified, resembles a button, but may be a decorative appliqué. The disc is decorated with a concentric circle close to the circumference within which is a cross with expanded terminals outlined by punched ovals. It is possible that this is a medieval or later button, rather than a Saxon appliqué.

Possibly a spangle, no. 2003 (RF 2265) is a sub-triangular piece of sheet with the top end rounded and perforated; it was recovered from Phase 5a occupation levels. Spangles are found attached to iron or copper alloy dress pins via rings as a decorative element, and have been recovered

Terminals

Tubes

Chain

A short fragment of plaited wire chain (no. 2009; RF 11364) was found in a Phase 6ii dump, and a distorted

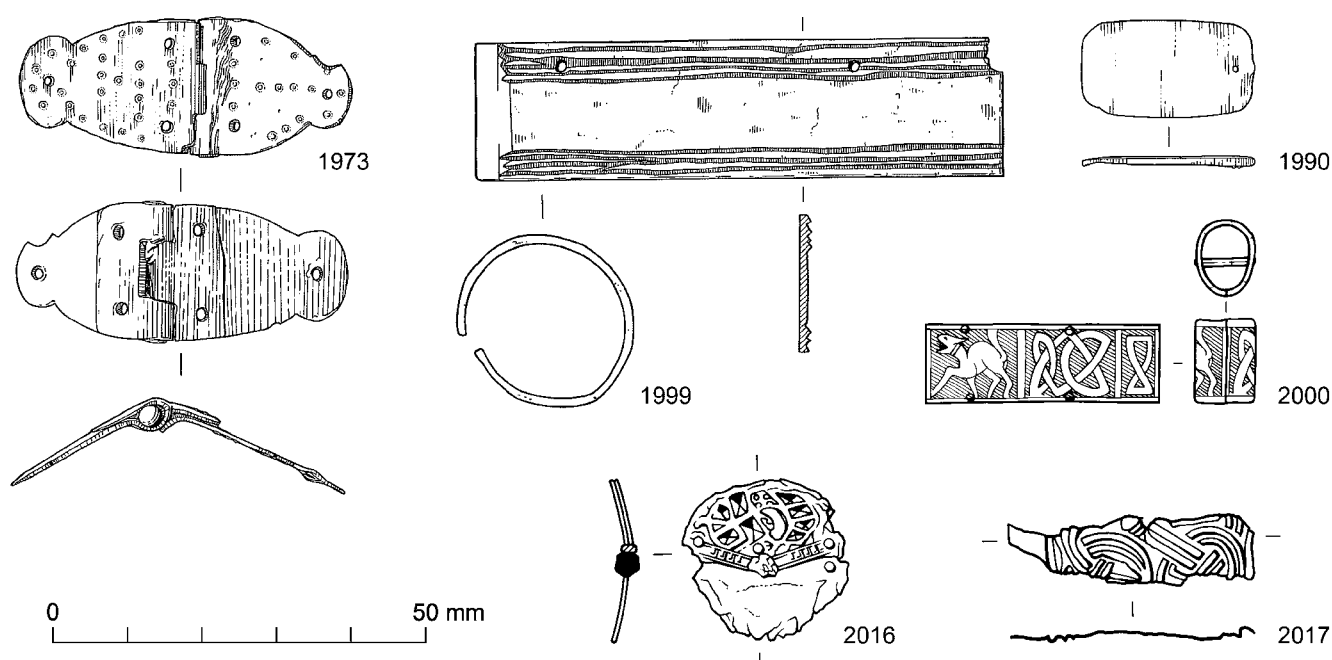


FIG. 5.9. Miscellaneous copper alloy fixtures and fittings. Scale 1:1.

chain link (no. 2008; RF 5999) came from a Phase 6i trench fill.

Wire

Miscellaneous fragments of wire were recovered; nos 2010–12 (RFs 1311, 1341, 1343) are all fragments of wire from two Period 7 deposits. No. 2012 (RF 1343) includes wire fragments wrapped around some wood; the function of these is unclear. Other finds of wire comprise nos 2013 (RF 2283) from context 4 (natural), no. 2014 (RF 10630) from Phase 6ii occupation deposits, and no. 2015 (RF 8630) from Phase 3bii occupation levels. Both nos 2014–15 (RFs 8630 and 10630) are very short fragments, and alternatively may represent pin shank fragments.

Miscellaneous objects (FIG. 5.9)

The incomplete no. 2016 (RF 7241) was recovered from a Phase 6ii–iii dark soil. Probably circular originally, the object is made up of two plates, the upper plate decorated and gilded; the gilding disappears off the edge, indicating that the original edge of the object has been lost. Almost two-thirds of the upper plate has broken away across the central iron rivet; three copper alloy rivets attach the surviving part to the back plate, with a fourth copper alloy rivet also visible on the back plate. The decoration incorporates a narrow strip border perforated by the iron rivet and containing squares defined by the gilding; beside this is deep chip-carved irregular interlace containing a now largely illegible circular motif (FIG. 5.9).

The function of no. 2016 (RF 7241) is uncertain, although its shape suggests that it may be part of a disc-headed pin, other examples of which have been found at Flixborough (see for example no. 559, RF 4157). No. 559 (RF 4157) has an integral shank and a linked chain, both features which are absent on no. 2016 (RF 7241), although non-linked disc-headed pins with separately made shanks riveted to the head also have been recovered at Flixborough (see no. 674, RF 5334, for example) and elsewhere, as at *Hamwic*, where the pin was thought to have been repaired (Hinton 1996, 31–2, 169/29590). It is nevertheless hard to make a case for no. 2016 (RF 7241) being a pin, as there is no indication of it ever having had a shank, either integral or separately made; use as a mount or boss seems more likely. The irregular chip-carved interlace is a feature of other metalwork from Flixborough – see for example the hooked tag no 90 (RF 1816) – with which no. 2016 (RF 7241) seems likely to be contemporary.

No. 2017 (RF 76) was found in a Phase 5a occupation deposit; a small, thin sheet fragment with one original edge, it has been decorated with a repoussé interlace (FIG. 5.9). Although it is unclear of what type of object no. 2017 (RF 76) was originally a part, the interlace design suggests that it is contemporary in its 9th-century context. Several tiny fragments of bronze sheet with mercury gilding (no. 2018; RF 13982) which were found in a Phase 3bi–3bv trench fill, are also decorated with a repoussé design. Unfortunately, the fragments are so small, that interpretation of their

original function is very difficult, although some sort of decorative mount is a possibility.

A folded strip (no. 2019; RF 10949) from a Phase 2–5a ditch fill has no clear function.

No. 2020 (RF 12715) was unstratified; of trapezoidal section, one end is lanceolate, the other sub-trapezoidal and incomplete. Its function and date are unknown.

Possible buckle plates include the unstratified nos 2021–2 (RFs 7400, 14204), both of which incorporate one looped end, and rectangular slots in the plate.

No. 2023 (RF 2886) is made of a rectangular piece of copper alloy sheet, the ends folded into the middle, and one end rolled to form a tube; its function is unclear. No. 2023 (RF 2886) was found in a Phase 2i–4ii ditch fill.

Found unstratified, no. 2024 (RF 14032) is a fragment of rectangular section, one end broken across a rectangular slot, the other end rounded; its function and date are unknown.

No. 2025 (RF 110) was recovered from topsoil, and is now too fragmentary to identify; possibly some sort of mount, it appears to have been sub-circular originally, with a central punched hole and at least one rivet-hole. It has the faint traces of ring-and-dot motifs on it.

The fragmentary no. 2026 (RF 10926), which was unstratified, may be an 8th–9th century strap-end fragment; sub-rectangular, and broken at both ends, it bears incised curvilinear motifs.

Catalogue

All made of copper alloy, except where otherwise stated (e.g. no. 1979). (Dimensions are in mm. L. = length; W. = width; Th. = thickness; Diam. = diameter)

Structural metalwork and fittings (FIG. 5.9)

NAIL

- 1972 Nail with square head, shank bent up. L.20 shank section W.3.8, Th.3.6
RF 10951, Unstratified.

HINGES (FIG. 5.9)

- 1973 Hinge: sub-oval, with perforated sub-circular projection at each end of plates, hinged just below central axis, pair of rivet-holes on each side of hinge mechanism, one face decorated with ring-and-dot motifs. L.44.7, W.18.5, Th.3.6 (FIG. 5.9)
RF 12748, Unstratified.
- 1974 Hinge fragment, rectangular, folded across four projecting loops, one loop incomplete, edges of hinge plates broken, fragment of iron sheet attached by two iron rivets. L.29.9, W.12.8, Th.2.6
RF 2597, Unstratified.
- 1975 Hinge: incomplete strap, broken at upper end, of rectangular section, thinning and broadening out to lower end which is bent up, tip rolled over, sub-rectangular slot just above. L.40.3, W.9, Th. 2.5
RF 12779, Unstratified.

CORNER BINDINGS

- 1976 Corner binding of L-shaped form and section, one end broken, other with flat rounded terminal with traces of

iron rivet, inner edge wavy. L.32.6, W.27.3 section: W.7.2, Th.0.6
RF 112, Context 1, Topsoil.

1977 Corner binding of L-shaped form and section, one end broken, other with flat rounded terminal, inner edge wavy. L.36.2, W.30.7 section: W.6.5, Th.1.1
RF 7955, Unstratified.

1978 Corner binding fragment, of L-shaped section, perforated circular projection at one end, other end broken across rivet-hole. L.31.1, W.6.7, sheet Th.1
RF 12338, Unstratified.

1979 Corner binding fragment, of L-shaped section, circular projection at one end contains iron rivet, second rivet in one side other end broken. L.32, W.7, sheet Th.0.8
RF 13462, Unstratified.

POSSIBLE BINDINGS

1980 Possible binding strip fragments (2), with repoussé bands along long sides, smaller fragment broken at one end across possible rivet-hole. L.60.2, W.16.5, Th.0.5
RF 6272, Context 5871, Phase 6i.

1981 Possible binding: slightly curved rectangular strip, with two rivet-holes, a double-banded border and central zigzag decoration. L.64, W.8.8, Th.2
RF 14020, Unstratified.

1982 Possible binding: rectangular strip, convexly curved, with three rivet-holes along each long edge. On inside, black charred-looking material – degraded organic? L.32.8, W.13.2, Th.1.3
RF 14223, Unstratified.

1983 Possible binding fragments (4), two of which have one edge bent at right angles, one retaining an iron nail-head with traces of wood on the underside, third fragment with a folded sheet rivet. Random organic material was present on both sides; there was also degraded organic material (possibly wood) preserved on the back in the area of an iron rivet. Largest fragment L.59, W.55.6, Th.0.9
RF 177, Context 1, Topsoil.

PERFORATED STRIPS (FIG. 5.9)

1984 Perforated strip fragments (3), largest with one end inturned, another broken at one end across rivet-hole. Largest: L.25, W.7.1, Th.0.7
RF 6209, Context 6136, Phase 3bv.

1985 Perforated strip fragment, both ends broken, one across rivet-hole. L.3.1, W.4.4, Th.2
RF 7312, Context 3334, Phase 4i–ii.

1986 Perforated strip fragment, rectangular, one end broken across rivet-hole, second hole close to other end. L.10.8, W.4.3, Th.0.6
RF 7313, Context 3334, Phase 4i–ii.

1987 Perforated strip fragment, both ends broken, one across rivet-hole. L.5.8, W.6.8, Th.0.3
RF 11037, Context 3107, Phase 4ii.

1988 Perforated strip fragment, sub-rectangular, with rivet-hole at one end. L.19, W.8, Th.1.7
RF 4633, Context 4632, Phase 4i–5a.

1989 Perforated strip fragment, one end cut square with rivet-hole below, other end broken. L.6.5, W.4.3, Th. 1.5
RF 10971, Context 10177, Phase 4i–5a.

1990 Perforated strip, rectangular, corners rounded, rivet-hole at one end. Random organic material survived on this strip. L.23.2, W.13.2, Th.1.2. (FIG. 5.9)
RF 3678, Context 3597, Phase 5b.

1991 Perforated strip, sub-rectangular, with rivet-hole at each end, one end bent up. L.25.9, W.8.6, Th.0.4
RF 6970, Context 6300, Phase 6iii–7.

1992 Perforated strip fragment, both ends broken, tapering from one end which is partially bent and broken across rivet-hole. L.35.6, W.9.3, Th.0.5
RF 21, Context 1, Topsoil.

1993 Perforated strip fragment, copper alloy rivet *in situ* at one end. L.8.8, W.12, Th.0.8
RF 2579, Unstratified.

1994 Perforated strip: rectangular, folded, one end broken and twisted up, two rivet-holes along one edge. L.45.5, W.11.7, Th.1.2
RF 2673, Unstratified.

1995 Perforated strip: sub-rectangular, tapering to tip at one end with irregular hole, other end broken across fold, second hole in centre, holes possibly corrosion. L.21.9, W.12.9, Th.1
RF 2968, Unstratified.

1996 Perforated strip fragment, one end broken, other rounded with rivet. L.34.2, W.5, Th.0.6
RF 11940, Unstratified.

1997 Perforated strip: sub-rectangular, iron rivet at one end, other end and side broken. L.19.3, W.10.8, Th.0.5
RF 13532, Unstratified.

DECORATED STRIP

1998 Strip, sub-rectangular, decorated with pairs of incised lines. L.14.6, W.5.3, Th.1
RF 2445, Context 2438, Phase 5b.

DECORATED BAND OR FITTING (FIG. 5.9)

1999 Broad ring in two adjoining fragments, decorated with incised circumferential rings around upper and lower edges, two rivet-holes at one end. Diam.24.5, W.18.4, Th. 0.9. (FIG. 5.9)
RF 3176, Context 3081, Phase 5b.

2000 Decorated band made of silver sheet, rectangular, ends overlapped to form small tube of sub-oval section, a pair of internal rivets run from one side to the other, inscribed decoration now faint covers the band overlying the rivet heads. There are three fields of inscribed motifs, two contain interlace motifs, second interlaced field approximately half area of other. Third field contains quadruped with open-mouthed head, pricked ear, collar below, front leg extended forwards, tail upright L.10.7 W.9.9 Th.0.5. (FIG. 5.9)
RF 11925, Unstratified.

UNDECORATED BAND

2001 Ring, ends rounded, overlapped, and perforated. Diam. 10.6 Band section W.8.8, Th.4.3
RF 7960, Unstratified.

APPLIQUE? (FIG. 5.9)

2002 Discoidal, with circular loop on reverse, decorated with concentric circle close to the circumference, cross with expanded terminals outlined by punched ovals, gilding. Diam. 10.7, Ht. 3.9mm (FIG. 5.9)
RF 12444, Unstratified.

SPANGLE

- 2003 Sub-triangular, made of sheet, top end rounded and perforated, whole now bent up L.16.4, W.12.3, Th.0.9
RF 2265, Context 72, Phase 5a.

TERMINALS

- 2004 Socketed, tapering from open end up to projecting perforated suspension loop of rectangular section, with iron rivet across lower end, traces of wood within the socket. Diam. 7.7, L.21.5
RF 585, Context 555, Phase 6ii–iii.
- 2005 ?Socketed, tapering slightly from lower end which has rivet-holes across, upper end with rectangular projection. Wood survived on the inside of this object. Diam. 7.9, L.21.4
RF 14262, Unstratified.

TUBES

- 2006 Tube, tapering slightly, edge-to-edge seam. Diam. 6.5, L.35.7; sheet Th.0.7
RF 1570, Unstratified.
- 2007 Tube, edge-to-edge seam. Diam. 6.2, L.10.2
RF 7951, Unstratified.

CHAIN

- 2008 Chain: distorted figure-of-eight link. L.21.1; Wire section Diam.1.8
RF 5999, Context 5930, Phase 6i.
- 2009 Chain fragment, of plaited wire, three complete, two incomplete links. L.11.4, Wire section Diam.0.9
RF 11364, Context 3610, Phase 6ii.

WIRE

- 2010 Wire lengths (4), two being of twisted double strands, one with loop at one end, other pieces single strand. Longest L.228.7; Section Diam. 0.9
RF 1311, Context 1312, Period 7.
- 201 Wire length, both ends broken. L.91.9, Section Diam. 1.2
RF 1341, Context 1306, Period 7.
- 2012 Wire, approximately 20 lengths, all curved, associated with wood fragment with two lengths twisted around it. Longest wire L.56, Section Diam. 0.9
RF 1343, Context 1312, Period 7.
- 2013 Wire lengths (2), of twisted double strands, one with loop at one end. Longest L.45, Section Diam. 0.8
RF 2283, Context 4, Phase 0.
- 2014 Wire lengths (3) or pin shank fragments. Longest L.11, Section Diam. 2.4
RF 10630, Context 6465, Phase 3bii.
- 2015 Wire length or pin shank fragment. L.17.3, Section Diam. 2.8
RF 8630, Context 8149, Phase 6ii.

Miscellaneous objects (Fig. 5.9)

- 2016 Incomplete, sub-circular object, made up of two layers of sheet, part of upper layer broken away across central iron rivet, three copper alloy rivets attach surviving part to back plate, with a fourth copper alloy rivet also visible on back plate. Surviving upper layer is gilded and decorated with a narrow strip border perforated by the iron rivet and containing squares defined by the gilding; beside this

is deep chip-carved irregular interlace containing a now largely illegible circular motif. Diam. 21, Th.2.3mm (Fig. 5.9)

RF 7241, Context 6343, Phase 6ii–6iii.

- 2017 Sheet fragment, irregularly shaped, with one original edge, decorated with a repoussé interlace. L.32.8, W.9, Th.0.7. (Fig. 5.9)
RF 76, Context 70, Phase 5a.
- 2018 Fragments (6), of sheet, one folded up, all decorated with repoussé lines and dots, all with mercury gilding. Largest L.6.5 W.3.9 Th.0.5
RF 13982, Context 6382, Phase 3bi–3bv.
- 2019 Strip, folded lengthways, ends broken. L.41.5, W.5, Th.2.3
RF 10949, Context 10772, Phase 2–4ii.
- 2020 Object of trapezoidal section, sides bevelled, upper part sub-trapezoidally shaped, end broken, lower part lanceolate. L.32.3, W.12, Th.2.2
RF 12715, Unstratified.
- 2021 Object made of sheet, sub-rectangular, with line of three rectangular slots, lower edge broadening out into oval terminal, with curving projection folded under. L.22.7, W.15.1, Th.1.1
RF 7400, Unstratified.
- 2022 Sub-rectangular object, of rectangular section, with two rectangular cut-out slots, loop of plano-convex section at one end, three rivet-holes at other end, one with iron rivet surviving. L.34.6, W.19.3, Th.2
RF 14204, Unstratified.
- 2023 Object of sheet, rectangular, ends folded into middle, one end back rolled to form tube, whole compressed. L.42.2, W.25.7, Th.2.6
RF 2886, Context 2860, Phase 2i–4ii.
- 2024 Fragment, of rectangular section, one end broken across rectangular slot, other end rounded. L.20.8 W.7.5 Th.1
RF 14032, Unstratified.
- 2025 ?Mount, fragmentary, originally sub-circular with central punched perforation, rivet-hole, ring-and-dot motifs on upper face. L.19.5, W.8.8, Th.0.7
RF 110, Context.1, Topsoil.
- 2026 ?Strap-end fragment, sub-rectangular, both ends broken, sides thickened, decorated with incised curvilinear motifs within field defined by parallel lines on one side, single line on other. L.10.1, w.18.1, Th.1.9
RF 10926, Unstratified.

Unidentifiable fragments

RF 974, Context 972, Phase 2–3bv pit fill; RF 4524, Context 2024, Phase 6iii dark soil; RF 5879, Context 5553, Phase 5b dump; RF 7638, Context 792, Phase 3–5a gully fill; RF 10935, Context 10176, Phase 5b–6i dump; RF 11430, Context 6465, Phase 3biii occupation; RF 13106, Context 3891, Phase 6ii dump; RF 13475, Context 10772, Phase 2–4ii ditch fill; RF 13564, Context 6464, Phase 3bii occupation; RF 13969, Context 1995, Phase 6i–6ii trench fill; RF 13988 – unstratified.

5.5 Miscellaneous lead and lead alloy objects by Lisa M. Wastling

A total of 1086 recorded finds numbers were allocated to the lead and lead alloy during the excavations at Flix-borough. Most of these are described in other parts of this volume: hence, the lead window came is discussed above in Ch. 4.3, whilst the net-weights and fishing weights are discussed in Ch. 6, the spindle whorls in Ch. 9, the metal-working evidence in Ch. 11, and the mensuration weights and ingots in Ch. 13, below. Unfortunately, much of the material was unstratified.

With the exception of the mount from Phase 5b–6i and the late medieval spoon knob (see Ch. 14), the lead alloy consisted of four unstratified post-medieval objects, not included within the catalogue. 854 recorded finds numbers were given to fragments of lead melt, though some bags contained multiple fragments. Two possible sprue fragments and 120 fragments of waste and scrap were also recovered (see Ch. 11).

The waste material consisted mainly of offcuts of lead sheet of various thickness. These are likely to have derived from structural usage, such as plumbing and flashing, or from the production and repair of containers and other objects of lead sheet (see Ch. 11).

Plumb-bobs (FIG. 5.10)

Two plumb-bobs recovered from Phase 5b and 6ii dumps

(nos 2027–8; RFs 1886 and 4147) reflect a desired accuracy of building construction on the site. Plumb-bob no. 2027 (RF 1886; FIG. 5.10), in common with a late Saxon example from Winchester (Biddle 1990, fig. 71a, 427), once bore an iron point for greater accuracy of line. The small dimensions of no. 2028 (RF 4147; FIG. 5.10) are unusual. This plumb-bob would appear not to have been very stable in wind, due to its small weight. It may, alternatively, have been used as a mensuration or other type of weight.

Lead plugs (FIG. 5.10)

Three possible lead plugs were recovered. These roughly-fashioned objects were probably made on an *ad hoc* basis, when needed. The lead plug (no. 2030; RF 12886) was used to repair a hole in a ceramic vessel, though unfortunately the adhering pottery fragments were too small to date. The remaining two have only a tentative identification, and may have had alternative uses as a tack and possibly an impromptu weight (nos 2029 and 2031; RFs 12616 and 12429; FIG. 5.10).

Rings

There were also three lead rings, all of which were unstratified (nos 2032–4; RFs 3767, 4169 and 7399). These are likely to have had a variety of makeshift uses, and are all roughly manufactured. They could possibly have functioned as looped fishing weights as such objects are known.

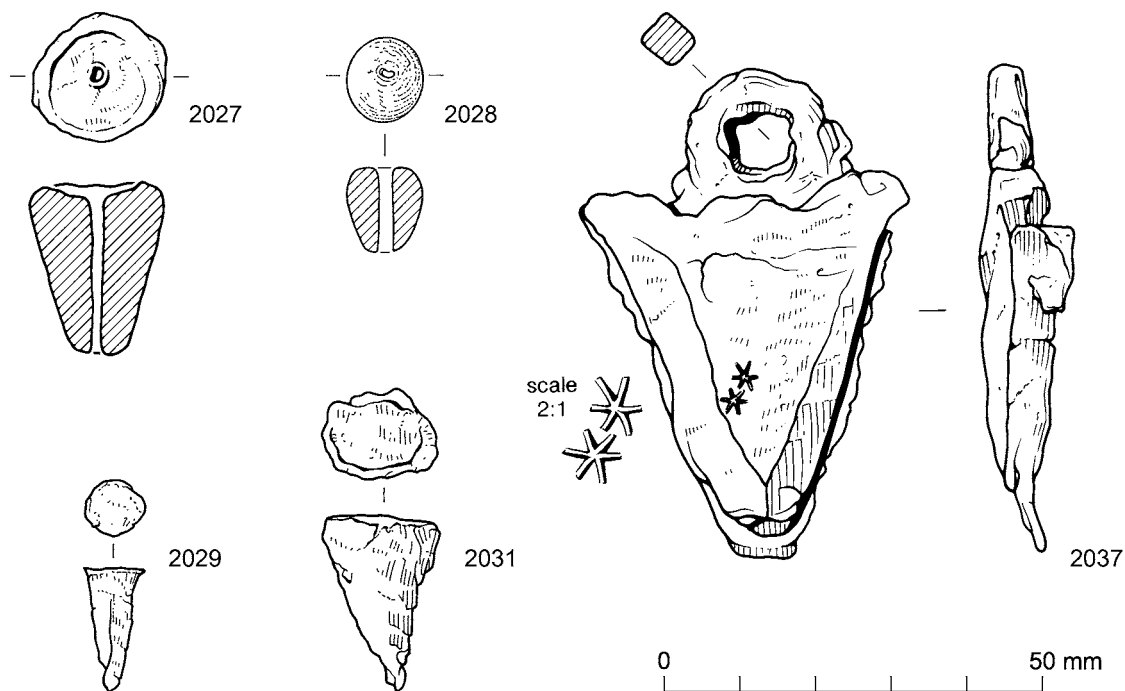


FIG. 5.10. Lead plumb-bobs, plugs and lead vessel lug. Scale 1:1.

Rods

Two lead rods were recovered. Rectangular-sectioned rod (no. 2035; RF 746) bore a melted end, which may be indicative of use for soldering, or possibly the manufacture of other lead objects such as rings, or looped fishing weights.

The hexagonal-sectioned rod, no. 2036 (RF 13548), was possibly part of a larger broken object, such as a lead stylus, or medieval spoon.

The lead vessel lug (Fig. 5.10)

The lug of a lead vessel (no. 2037; RF 7251) was recognised during the analysis of the lead objects originally identified as weights.

This is a triangular lead lug, broken where it thins into a possible rib, with an iron staple for the probable attachment of a ring handle cast within it (Fig. 5.10). The lug has been knife-trimmed along the three sides, to give a chamfered appearance. On the original cast upper surface of the lug there are two small six-pointed stars formed by three raised lines. The significance of these is not known, though they are of the same form (albeit much smaller) as that on the larger of the two lead vessels found in 1994 (see Ch. 7.3, below).

This object compares favourably with the lugs of the smaller lead vessel from the 1994 tool hoard (no 2470; RF 60020). It is therefore possible that it provides evidence for the replacement of one of the lugs on this vessel.

Conversely it may represent a fragment of a third large cylindrical lead vessel, potentially comparable to the two which constitute the containers for the Flixborough tool hoard (See Cowgill, Ch. 7.3).

The lead alloy mount

A small triangular mount of lead alloy was recovered from dark soil 6490 (no. 2038; RF 12120).

Catalogue

Plumb-bobs (Fig. 5.10)

2027 Plumb-bob

Conical slightly concave-topped casting with central longitudinal perforation (D.c.1.5mm). A small area of iron corrosion products adhering to the base of the perforation indicates the former presence of an iron point.

Max. D.16.5mm, Ht. 21mm. Wt. 28.2g. (Fig. 5.10)

RF 1886, Context 1728, Phase 5b.

2028 ?Plumb-bob

Conical slightly concave-topped casting with central longitudinal perforation (D c. 1mm). Of small dimensions.

Max. D.11mm, Ht. 11mm. Wt. 7.4g. (Fig. 5.10)

RF 4147, Context 3891, Phase 6ii.

Plugs or tacks

2029 Plug or tack

Conical casting, tapering from a flat end or head to a chisel-ended point, the tip of which is slightly twisted. The head is very slightly burred, suggesting this object has seen (gentle) use.

Size: L.15.5mm, Max. D.6.5mm. Wt. 2.9g. (Fig. 5.10)
RF 12616, Unstratified.

2030 Plug

Repair plug, deeply waisted, with a smooth upper and irregular lower surface. Fragments of pottery with a black, reduced fabric of c. 4mm thickness, remain *in situ*.

L.c.28mm, W.c.26mm, Max. Th.16.5mm. Wt. 31.1g.

RF 12886, Unstratified.

2031 Plug or weight

Roughly conical flat-based casting, tapering to a chisel-ended point. Twisted towards the point.

Base: L.14.5mm, W.11mm, Ht. 22mm. Wt. 12.7g. (Fig. 5.10)

RF 12429, Context 10772, Phase 2–4ii.

Rings

2032 Ring

Ring, apparently formed by wrapping a strip of lead sheet round a round-sectioned former, and butt-jointing ends; a slight constriction of the band may mark the join, and a red colouration appears here on the outside of the band. The band has been bevelled to give a roughly triangular section and bears knife-cut facets.

Max. D.17.5mm, W. of band 4–5mm, Max. Th. of band 2.5mm. Wt. 4.5g.

RF 4169, Area C, Unstratified.

2033 Ring

Cast oval ring, of a rounded rectangular section, bent. Cut obliquely at one end.

L 30.5mm, Max. W. (bent) 18.5mm, W. of band c.3.5mm, Th. of band c.4mm. Wt. 9.3g.

RF 3767, Area C, Unstratified.

2034 Ring

Cast oval ring, of sub-rectangular section.

L. 32mm, Max. W. 22.5mm, Max. W. of band 6mm, Th. of band 3.5mm. Wt. 10.2g.

RF 7399, Area C middle, Unstratified.

Rods

2035 Rod

Rectangular-sectioned lead rod, tapering to a melted point at one end and expanded to a roughly circular in section melted end at the other. Possibly used for solder.

L.31mm, W.6mm, Th.3.5mm. Wt. 5.6g

RF 746, Context 618, Phase 6iii.

2036 Rod

Cast rod, with hexagonal cross-section. Possibly part of a larger, broken object.

L.35mm, D.5.5mm. Wt. 8g.

RF 13548, Area M3. Unstratified.

Lead vessel lug (Fig. 5.10)

2037 Lead vessel lug

Cast lead lug, triangular. With an embedded iron loop. The lower point of the triangle possibly originally thinned out into a rib. The three sides of the lug are chamfered on the exterior. Bearing two small cast stars, 4mm in length, formed by three intersecting lines. These symbols are of the same form as those on the largest lead vessel in the 1994 tool hoard (see Ch. 7.3, below).

L.50mm, W.40mm, Th.10.5mm. Loop D.17mm; Wt. 94.4g.
(Fig. 5.10)
RF 7251, Area C east. Unstratified

Lead alloy

2039 Mount

Triangular mount of lead alloy sheet (incomplete), with two small holes punched through for attachment: a third is probably missing.
L.33mm, W.23mm, Th.1.5mm. Wt. 4g.
RF 12120, Context 6490, Phase 5b–6i.

5.6 Miscellaneous iron fixtures and fittings

*by Patrick Ottaway, with contributions
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Starley, Ian Panter and Jacqui Watson*

Knives

*by Patrick Ottaway, with contributions by
Glynis Edwards[†], Jennifer Jones, David Starley
and Jacqui Watson*

Introduction

One of the largest groups of objects from Flixborough is the knives, of which there are 250 (85 unstratified). They exhibit considerable diversity in terms of form, size and decoration.

One of the main problems of classifying knives is that their original form may have been altered by wear and sharpening; however, a feature which is unlikely to have been greatly affected in this way is the blade back, and so it is here that the analysis of blade form may begin. In the study of Anglo-Scandinavian knives from 16–22 Coppergate, York, and other Anglo-Saxon sites, five basic blade back forms (A–E) have been identified (Ottaway 1984; 1990, 399–428; 1992, 558–61). In form A, the blade back has two straight parts meeting at an angle (e.g. nos 2062 and 2050; RFs 10405 and 12255). Knives of this form are often described as having an ‘angle-back’. In form B, the rear part of the back is straight and the front part is concave (there are no examples from Flixborough), while in form C, the front part is convex (e.g. nos 2099 and 2114; RFs 3569 and 4116). Blade backs of form D are convex from shoulder to tip (e.g. no. 2234; RF 12170), and those of form E are straight from shoulder to tip (no examples from Flixborough). Further subdivision of forms A–C is sometimes possible, according to whether, when the knife is placed on a horizontal line between the blade and tang tips, the straight rear part of the blade back appears horizontal (forms A1, B1, C1), or slopes up (forms A2, B2, C2), or slopes down (forms A3, B3, C3). If the blade or tang tips do not survive, then it will not usually be possible to assign the knife to one of the three variants, and they are referred to as Ai, Bi or Ci (i = indeterminate).

In addition to back form, other aspects of knives are amenable to classification, including the location of the tip

of the blade and the cutting edge, although these features are clearly as likely to be the result of the use of a knife, as to the way in which it was manufactured.

Blade back form

Fig. 5.11 summarises the occurrence of knife blade back forms at Flixborough, and shows that blade back form C is dominant, being found on c.77% of the knives of which back form can be determined, and C1 alone makes up c.61.5%. Knives of back form A make up c.18.5%, and those of back form D a mere 4.5%. These data, however, hide notable differences between earlier and later phases. There are nine knives assigned to Phase 1, 1–2, 1–3a, of which all have back form C1, except no. 2229 (RF 4890) which has back form D. Until Phase 5a the dominance of form C, especially C1, remains total. In Phases 5b–6, however, there are 17 knives of back form A, equivalent to 31.5% of knives of which back form is determinable.

When the knives from Flixborough are compared with those from other sites, in respect of back form, a number of points arise which require comment. First of all, the percentage of knives of back form A in Phases 1–5a is rather lower than one would expect in a middle Anglo-Saxon assemblage. For example, in a sample of 78 knives examined from middle Anglo-Saxon contexts at *Hamwic* nearly 40% had back form A (Ottaway 1990, 420–78), and of 31 knives in middle Anglo-Saxon contexts at *Thwing*, 55% had back form A (Ottaway unpublished a). Knives of back form A made up 19% of those in the large assemblage of 218 knives from Anglo-Scandinavian contexts at 16–22 Coppergate, York, but, it may be noted that in late 9th–early 10th contexts the figure was 33%, more or less the same as in Phase 5b–6iii contexts at Flixborough. What these data may suggest is that, although its origin may lie in the 7th century, the 8th–early 10th centuries is the period in which the angle-back blade was at its most popular. The form remained current, however, until the early 12th century.

Knives with blade back form C are common throughout the Anglo-Saxon period, but the most striking difference between Flixborough and Coppergate is in the percentage of variant C3, in which the straight rear part of the back slopes down. Flixborough produced only two examples (nos 2205–6: RF 3613, Phase 6ii; RF 5892, Phase 5a), but Coppergate produced 30 (17% of knives with recognisable blade back forms), and the form is common in other late Anglo-Saxon assemblages. It is quite possible that blades with back form C3 began life as back form C1, that is with the straight part of the back horizontal, and then changed as a result of wear on the cutting edge. The reason why blades in the late Anglo-Saxon period should be subjected to greater wear is discussed below. There are also differences between Flixborough and Coppergate in respect of blade back form D, which occurred in very small numbers at Flixborough, but made up 24% of knives with recognisable blade back forms at Coppergate.

In conclusion, as far as blade back form is concerned, the picture from Flixborough is one of a fairly high degree

Backform										
	A1	A2	Ai	C1	C2	C3	Ci	D	Indet	Total
Phases 1–5a	2	1	1	53	3	1	13	4	10	88
Phases 5b–6iii	7	6	4	29	2	1	4	1	15	69
Period 7	0	1	1	3	1	0	0	0	2	8
All stratified	9	8	6	85	6	2	17	5	27	165
Unstratified	3	6	5	35	2	0	5	4	25	85
All	12	14	11	120	8	2	22	9	52	250

Note: three knives from Phase 5a–b contexts are counted in the Phases 5b–6iii group.

FIG. 5.11. Flixborough: numbers of knives by blade back form.

of uniformity in the earlier phases, but in Phases 5b–6iii this is less marked. Nonetheless, there still appears to be less diversity than in assemblages of the later Anglo-Saxon/Anglo-Scandinavian period, as exemplified by Coppergate in which a few knives of back forms B and E appear, and there is a higher proportion of back forms C3 and D.

Cutting edges

The commonest cutting edge form is a gentle reverse S-shape, which arises from sharpening with a hone stone (e.g. nos 2133, 2156 and 2050: RFs 5386, 8213, 12255). This form is about twice as numerous as the second most common form of cutting edge, which is straight before curving up at the tip (e.g. no. 2142; RF 6055). This may represent how the knives were originally made. An unusual cutting edge feature, which appears to have been deliberately formed, is a small U-shaped notch at the back of the cutting edge on no. 2136 (RF 5485).

There are few examples of heavily worn cutting edges, and this may be due to the prevailing mode of manufacture in which a steel strip was welded to an iron back (Type 2, Tylecote and Gilmour 1986, 2–3). All but three of the 14 knives examined metallographically were made in this way (see Starley, 5.6 Appendix 1, below), and X-radiographs confirm that many other knives were similarly manufactured. After a certain amount of use and sharpening, a knife with this type of structure will lose its cutting ability, as the steel wears through, and it may then be discarded. Although only a small sample was examined metallographically, it should be noted that there were no examples from Flixborough of the ‘sandwich type’ of structure, in which a steel strip welded between two iron pieces runs through the whole thickness of the blade (Type 1, Tylecote and Gilmour 1986, 2–3). In theory this allows the knife to be more heavily worn. It may be because this ‘sandwich’ type was apparently used frequently in the 10th–11th centuries (Ottaway and Wiemer 1993), that many more knife blades with back form C3 appear in the late Anglo-Saxon period than in the middle Anglo-Saxon

(see above). In other words, it was possible to wear a blade originally of C1 (straight part of back horizontal) down to a blade which now appears to be C3 (straight part of back downward sloping) because of its metallographic structure.

Decorative features

The most common decorative feature to be found on the Flixborough knives, of which there are 13 examples, is a groove cut into the top of the blade face. The number of grooves on each blade face is not always determinable without conservation, but, where it can be determined, the most usual patterns at Flixborough are either one on each blade face (five examples), or one on one face only (four examples). There is only one example of a blade with more than one groove on a face; no. 2252 (RF 2916, unstratified) has three on one face, the other is obscured by corrosion. These grooves can be seen on knives throughout the Anglo-Saxon period on blades of all forms and sizes, although they are more common on blades of back form A, than on blades of other forms.

In addition, five knives have grooves which are inlaid, three are stratified: no. 2137 (RF 5516, Phase 2–3a), no. 2046 (RF 6361, Phase 6i) and no. 2165 (RF 10581, Phase 5b–6i), and two are unstratified: nos 2060 and 2075 (RFs 7882 and 13485). No. 2060 (RF 7882) also has inlaid notches in the back (see below). The three stratified knives have been conserved, and it can be seen that on no. 2137 (RF 5516) the inlay is in the form of a strip of copper alloy wire, while on the other two it takes the form of spirally-twisted copper and silver wire. On no. 2046 (RF 6361) the wires were S-twisted on the left face of the blade, when viewed from the tang, and Z-twisted on the right face; on no. 2165 (RF 10581) this arrangement is reversed. The X-radiographs suggest that the inlay on the unstratified knives also took the form of twisted wires.

Inlay of knives with non-ferrous metal appears to begin in the middle Anglo-Saxon period, and examples come from Easton Down, Hants. (Davies 1991, 42–3,

fig. 33, 10), and *Hamwic* (SOU24.1889, SOU99.153, SOU169.266; unpublished, excavated by Southampton City Council). Late Anglo-Saxon examples come *inter alia* from Canterbury (Saunders 1978, fig. 11, 13), Cheddar (I. H. Goodall 1979, 264, 31), London (Pritchard 1991, 124–7, figs 3.1–3, 1) Oxford (Durham 1977, fig. 25, 5), Wicken Bonhunt, Essex (Musty *et al.* 1973), Winchester (I. H. Goodall 1990b, 841, fig. 253, 2654; Ottaway forthcoming; and Rees *et al.* 2008, 314, pl. 4, 2238, Sussex Street site, sf800), and York (Ottaway, 1992, 579–81, 2809). The spirally-twisted wire motif remains the most common, but on occasions the inlay patterns are very elaborate, as on the knife from Wicken Bonhunt, although no knife has anything like the elaborate patterns seen on some of the seaxes of the period. It may finally be noted that three of the five knives with inlaid grooves from Flixborough have back form A, while nos 2137 and 2165 (RFs 5516 and 10581) have back form C; this is very unusual, as there are no examples of inlaid blades with back forms other than A from elsewhere.

Another cut feature is the notch in the back of the blade, of which there are seven examples from Flixborough, five of which have a single notch. Three of the blades are stratified: no. 2053 (RF 595, Phase 6ii–iii), no. 2094 (RF 3310, Phase 4ii), and no. 2127 (RF 4466, Phase 3bi–4i), while of the four unstratified knives, no. 2043 (RF 3780) has a blade with six notches, one of which is inlaid – presumably the others also were at one time – and no. 2060 (RF 7882) has a blade with five notches, all of which are inlaid. These notches are a fairly common feature of Anglo-Saxon knives, although hitherto they have been more frequently recorded on knives from later, than from early or middle Anglo-Saxon contexts. There are, for example, 10 knives from Anglo-Scandinavian contexts at 16–22 Coppergate, York, which have them (Ottaway 1992, 581–2). In most cases, one or two notches are found at the shoulder, or at the point where the back starts to curve or slope down to the tip. Multiple, inlaid notches, as on nos 2043 and 2060 (RFs 3780 and 7882), have not been recorded hitherto on knives, but occur on seaxes, such as that from the Thames at Battersea (Wilson 1964, 60, pl. 22, 36).

Other features to be noted under this heading include the chamfering of the blade back edges, to be found on no. 2088 (RF 1981, Phase 5b). This feature is again more common on late, than middle Anglo-Saxon knives, and there are nine examples from Coppergate (Ottaway 1992, 579), although it also occurs on an early Anglo-Saxon knife blade from West Stow, Suffolk (West 1985, 61, fig. 240, 22). A most unusual feature can be seen on no. 2120 (RF 4184, Phase 6ii), where the blade shoulder has been tapered to a point; this is rare, but there is a knife similarly treated from Coppergate (Ottaway 1992, 581, fig. 230, 2822).

Detailed comparative data for knives both from Flixborough and from other Middle and Late Saxon sites are presented in Figs 5.12–5.27.

Dimensional patterns

In order to explore the character of the knives from Flixborough more fully than is possible through consideration of form alone, a detailed analysis of their principal dimensions (length, length of blade, maximum width and maximum thickness of blade) and two of the ratios between them (length to length of blade, and length to maximum width of blade) has been made, employing methods similar to those used on the Anglo-Scandinavian knives from 16–22 Coppergate, York, and other middle and late Anglo-Saxon sites (Ottaway 1990, 420–78; 1992, 574–8).

100 knives from Flixborough were chosen for analysis, which either survive unbroken, or have unbroken blades, if incomplete tangs. Of these knives, 70 were stratified and 30 unstratified. The stratified knives were divided into two roughly equal-sized groups: the first (Group 1) of 32 knives from Phases 1–5a, and the second (Group 2) of 38 knives from Phases 5b and 6. As will become apparent, however, there was little difference between the two stratified assemblages, and between them and the unstratified group. The Flixborough data have been compared with those from Anglo-Scandinavian contexts at Coppergate, York, and also with a much larger body of data compiled by the writer from examination of other specimens from middle Anglo-Saxon (149 knives) and late Anglo-Saxon (251 knives) contexts found on a number of English sites (Ottaway forthcoming). The knives from middle Anglo-Saxon (8th–mid 9th century) contexts come from Barking Abbey (unpublished, excavated by Passmore Edwards Museum), Cottam, East Yorkshire (Ottaway 1999), *Hamwic*, Six Dials sites (unpublished, excavated Southampton City Council), Riby, Lincs. (Ottaway 1994), Thwing (Ottaway unpublished a), Wicken Bonhunt (Ottaway unpublished d) and Fishergate, York (Rogers 1993a, 1273–6). The knives from late Anglo-Saxon/Anglo-Scandinavian contexts come not only from Coppergate, but also from 22 Piccadilly, York, Goltho, Lincs. (I. H. Goodall 1987, 181), London (Pritchard 1991, 124–30), Repton, Derbys, (unpublished, excavated by M. Biddle and B. Kjølbye-Biddle), Thetford, Norfolk (I. H. Goodall 1984; I. H. Goodall and Ottaway 1993) and Winchester (Rees *et al.* 2008, 311–25). It should be noted that the maximum length admitted for the inclusion of a knife in the database was 250mm. Although this is an arbitrary figure, any tanged single-bladed object of greater length is considered to be a seax, i.e. a weapon, rather than a tool for craft or domestic use. Seax no. 984 (RF 942) from Flixborough has already been noted (see Ch. 3.2, above); c.247mm survives, of an object which was probably c.300mm long originally.

The Flixborough data will be considered first, and then set alongside those from elsewhere. Length is the first dimension to be considered, and 70 knives with unbroken blades and tangs form the sample. The longest knife from Flixborough is no. 2111 (RF 3865, Phase 6ii), which stands out from the rest in this and in a number of other respects; with a length of 220mm, it is 54mm longer than the next knife no. 2103 (RF 3742, unstratified) at 166mm, and no.

2152 (RF 7854, Phase 6ii–iii) at 163mm. The shortest knife is no. 2045 (RF 5639, Phase 5b–6i), which again stands out from the rest in a number of respects and is a mere 38mm long. The overall distribution of lengths is shown in FIG. 5.12. It approximates to a normal distribution, with a peak in the range 100–109mm, and c.33% of lengths lie in the range 80–109mm. Average length is 102.69mm, but for Group 1 it is 108.26mm, and for Group 2 101.74mm. This difference is probably due to a peculiar aspect of the Flixborough knife assemblage, which is the unusually small size of knives with back form A, of which there are only three in Group 1, but 10 in Group 2. This point will be discussed further below.

As far as length of blade is concerned, the longest is again no. 2111 (RF 3865) at 167mm, otherwise the longest is no. 2103 (RF 3742) at 116mm, while the shortest again belongs to no. 2045 (RF 5639) at just 21mm. The overall distribution of lengths is shown in FIG. 5.13. There is a peak between 60 and 69mm, but 71% lie in the range 40–79mm. Average blade length is 66.76mm for the whole sample, while for Group 1 it is 69.09mm, and for Group 2 65.42mm. The maximum width of a knife blade usually lies at the shoulder, although in the case of knives of back form A it may lie at the point of the angle where the back slopes down to the tip. Greatest maximum blade width is 20mm (nos 2041 and 2056: RF 2234, Phase 6iii; and RF 4096, Phase 4ii) and the lowest 5mm (no. 2045; RF 5639). Between these two extremes c.72% have maximum widths between 10 and 14mm. The average is 12.64mm; there is little difference between Group 1 at 12.84mm, and Group 2 at 12.58mm.

The point of maximum thickness of a knife blade usually lies at the shoulder, although, again, in the case of knives

of blade back form A, it may lie at the point of the angle where the back slopes down to the tip. Maximum thickness of Flixborough knife blades varies relatively little between 3mm and 7mm.

There are two ratios between dimensions which will be analysed here. The first is the ratio between the overall length of the knife and the length of its blade (knives with unbroken blades and tangs only). The lowest ratio of length to length of blade is 1.31:1 (no. 2175; RF 12303, unstratified), i.e. in this case, the blade occupies c.76% of the length of the knife, and the tang c.24%. The largest ratio is 2.22:1 (no. 2204; RF 12346, unstratified) on which the blade occupies only 45% of the knife, and the tang 55%. The distribution of values is depicted in FIG. 5.14 which shows that 38% of the knives are concentrated between 1.41:1 and 1.69:1. There are only two (not shown on FIG. 5.14) with ratios over 2:1. Average value for the assemblage as a whole is 1.56:1; in Group 1 it is 1.59:1, and in Group 2, 1.55:1. The correlation between the two dimensions is shown in FIG. 5.15, and it can be seen to be very close. The regression line is at an angle of 32° to the horizontal.

The second ratio for consideration is the length of blade to the maximum width of blade. The lowest ratio, i.e. the widest blade in relation to its length, belongs to no. 2204 (RF 12346, unstratified) with a ratio of 2:1, and the highest ratio to no. 2111 (RF 3865) with 11.13:1; this latter is a very narrow blade in relation to its length. Otherwise, no. 2174 (RF 12303) has the highest length of blade to width of blade ratio with 9:1. The distribution of values is shown in FIG. 5.16. The average value is 5.35:1, for Group 1 it is 5.41:1, and Group 2 5.26:1. The correlation between the two dimensions is shown in FIG. 5.17, where the regression line is at 12° to the horizontal.

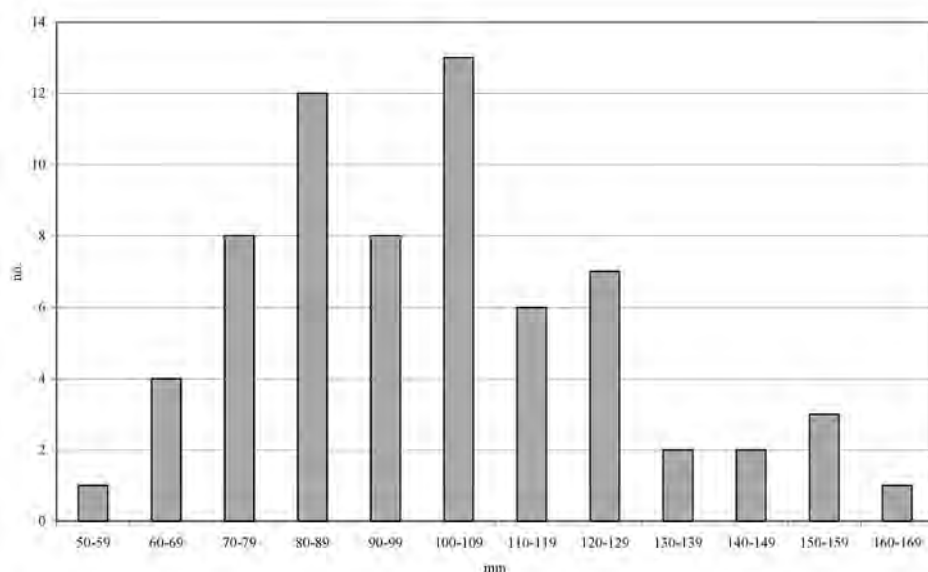


FIG. 5.12. Flixborough knives. Length of knives.

Having summarised some of the principal dimensional data from Flixborough, we may compare these with those from the other sites of the middle and late Anglo-Saxon period referred to above. The distribution of knife lengths from the middle Anglo-Saxon sample is depicted in FIG. 5.18. This shows a peak in a slightly higher value range (110–119mm) than at Flixborough (100–109mm). The average length of knives from the middle Anglo-Saxon sites is 112.61mm, as opposed to 102.69mm for Flixborough, but there is a similar range of values, and the shapes of the two distributions are similar. FIG. 5.19 shows the distribution of values in the sample from late Anglo-

Saxon contexts. Here, although the peak is again in the range 110–119mm, there is a much greater range of lengths than in the middle Anglo-Saxon sample, and the shape of the distribution is quite different because of a number of unusually long knives. The existence of these knives also means that the average length of knives from late Anglo-Saxon contexts is 118.15mm.

While the Flixborough data match the middle Anglo-Saxon sample more closely than the late Anglo-Saxon, the lower peak range and lower average relative to the former may be recalled. This is probably because of the unusually small size of knives of blade back form A from

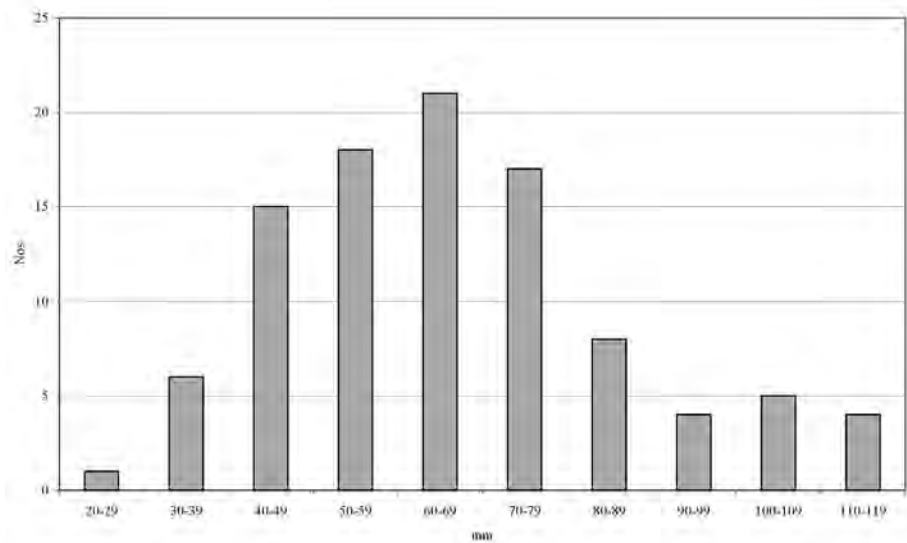


FIG. 5.13. Flixborough knives. Length of knife blades.

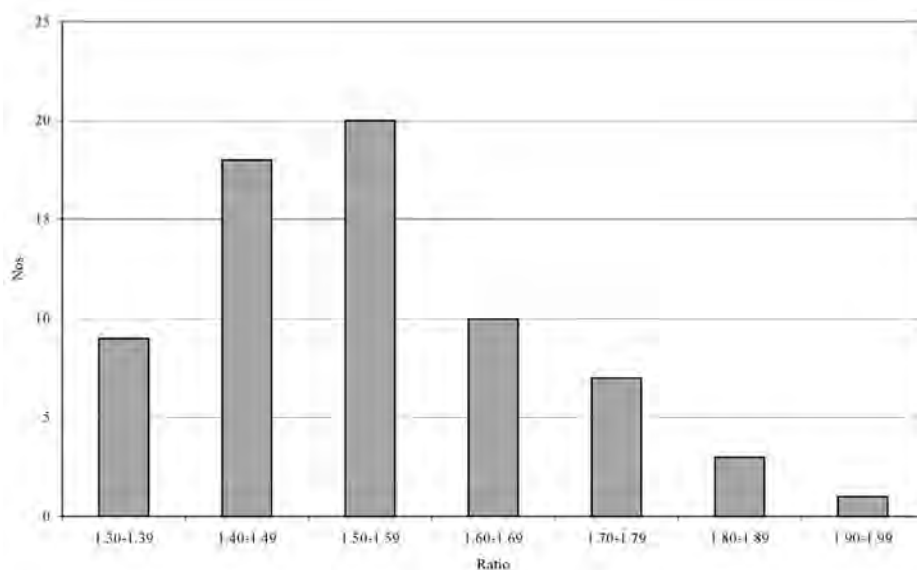


FIG. 5.14. Flixborough knives. Length: length of blade ratio.

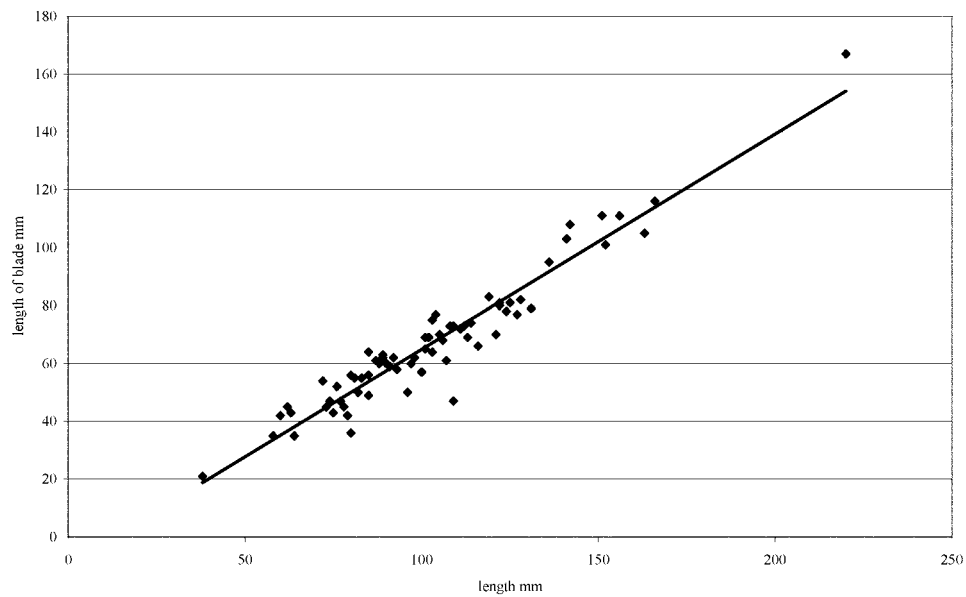


FIG. 5.15. Flixborough knives. Length: length of blade ratio.

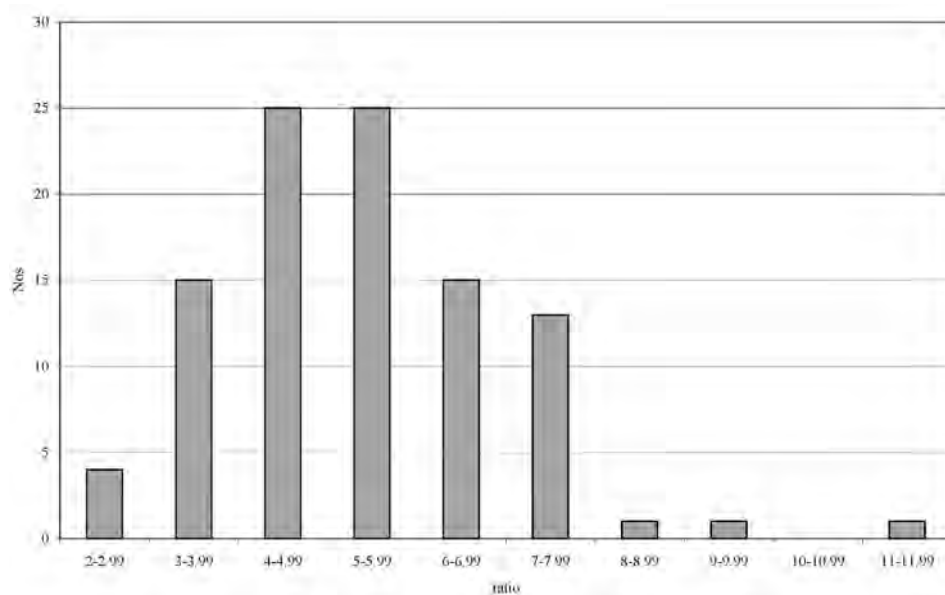


FIG. 5.16. Flixborough knives. Length of blade: maximum width of blade ratio.

Flixborough. Normally knives of blade back form A are on average slightly longer than those of other back forms. The average length of blade back form A knives in the middle Anglo-Saxon sample from other sites is 121.30mm, while the average for back form C knives is 107.02mm. At Flixborough the average length for 14 unbroken blade back form A knives is only 93.43. The reason why large back form A knives are missing at Flixborough is an intriguing

question, and the point will be returned to below under knife function.

The distribution of blade length data from the middle Anglo-Saxon sample from other sites is shown in FIG. 5.20. Again, the peak range is slightly higher than that for Flixborough; 70–79mm as opposed to 60–69mm, and the average length is 76.67mm, as opposed to 66.76mm. The discrepancy must again be due to the small size of back

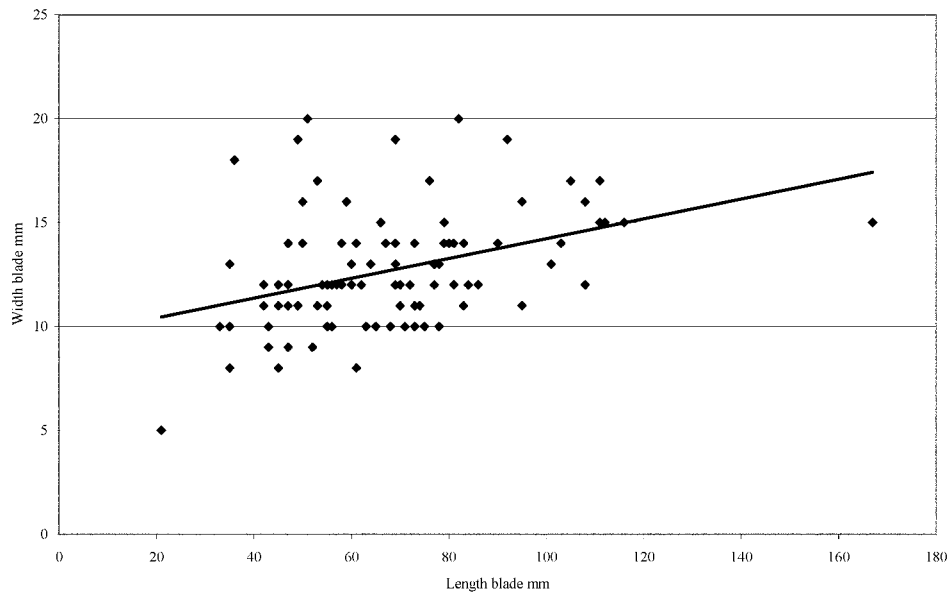


FIG. 5.17. Flixborough knives. Length of blade: maximum width of blade ratio.

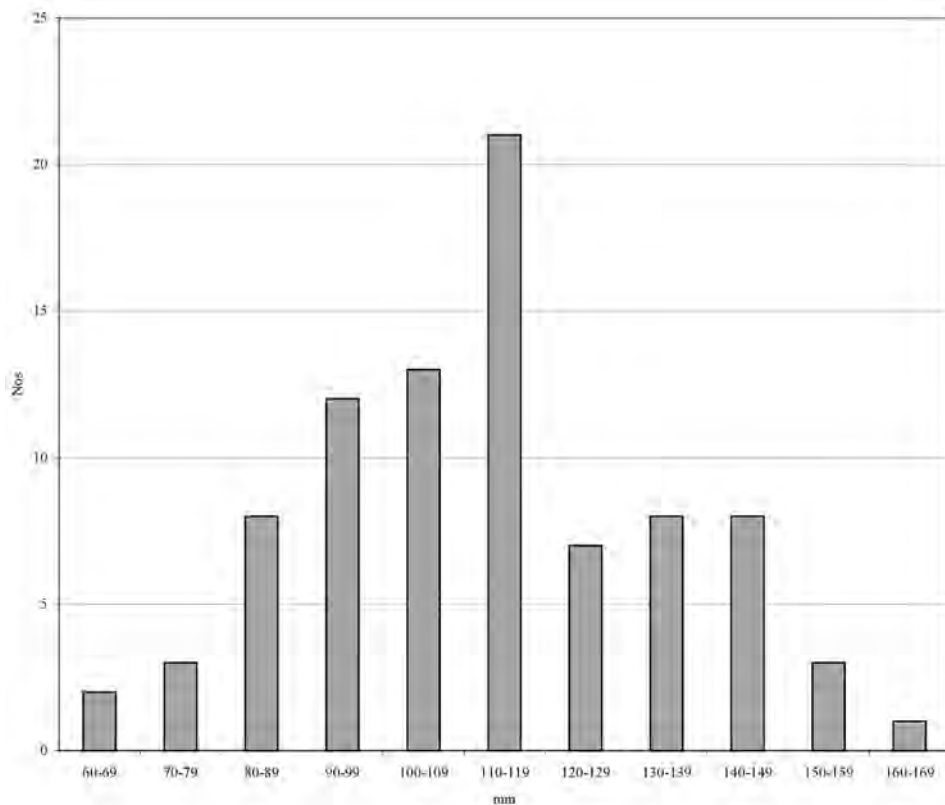


FIG. 5.18. Iron knives. Middle Anglo-Saxon sample, lengths of knives.

form A knives at Flixborough. The average length of blades with back form A in the middle Anglo-Saxon sample is 84.27mm, as opposed to only 58.50mm at Flixborough.

In spite of the differences, however, the shape of the distribution and range of values are much the same in the Flixborough data as in the middle Anglo-Saxon sample.

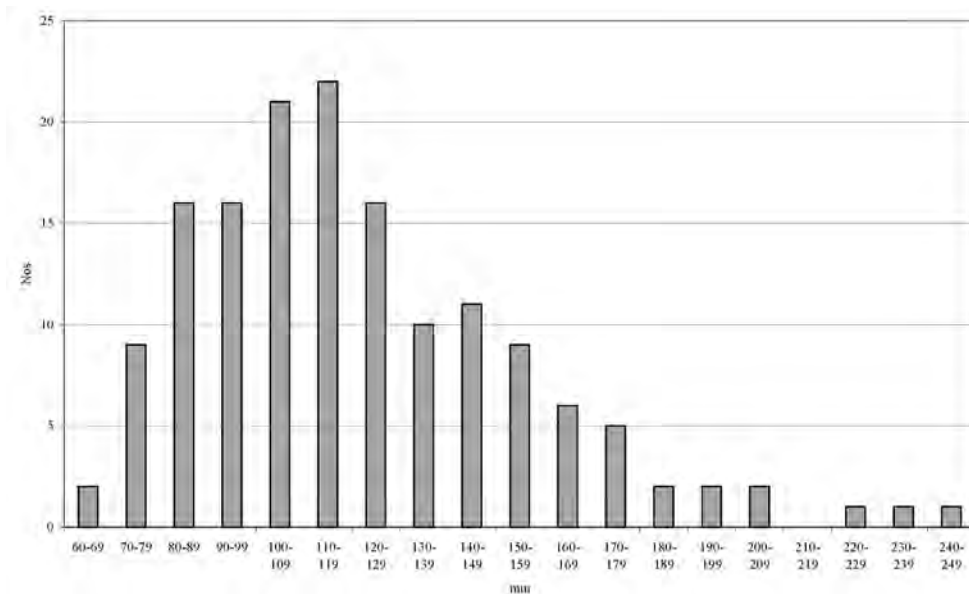


FIG. 5.19. Iron knives. Late Anglo-Saxon sample, length of knives.

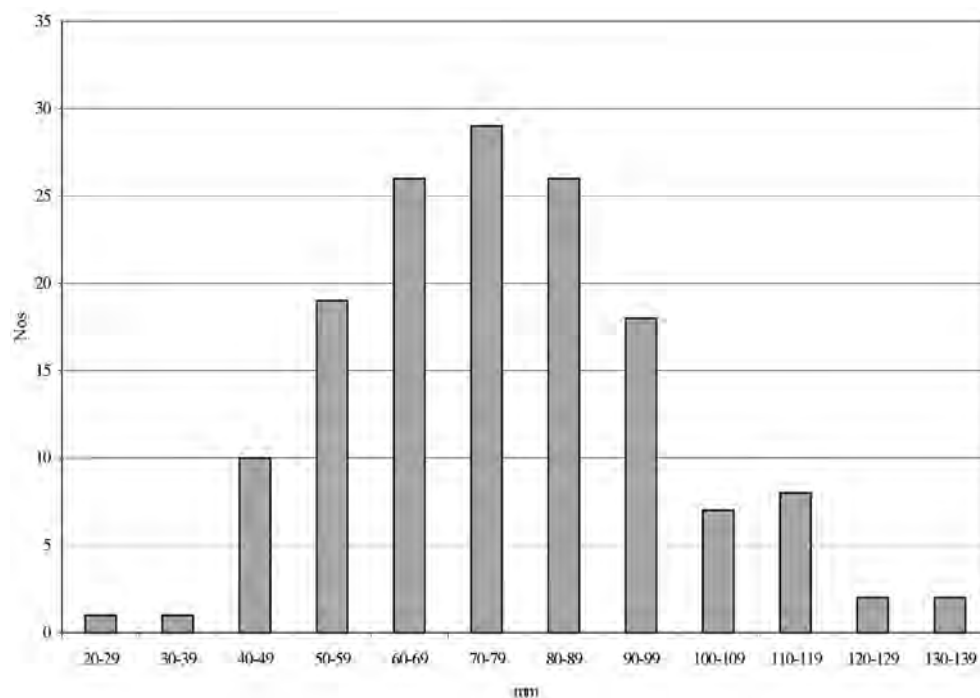


FIG. 5.20. Iron knives. Middle Anglo-Saxon sample, length of knife blades.

The data from the late Anglo-Saxon sample are shown in FIG. 5.21. The peak range at 60–69mm, and average at 72.10mm, are slightly lower than in the middle Anglo-Saxon sample, but the shape of the distribution is rather different, largely because of the greater number of knife blades with above average lengths.

In respect of maximum blade width, the Flixborough average at 12.64mm is slightly lower than the middle Anglo-Saxon sample average of 13.48mm, which in turn is lower than the late Anglo-Saxon sample average of 14.08mm. Once again, the Flixborough data may be affected by the small size of its blade back form A knives.

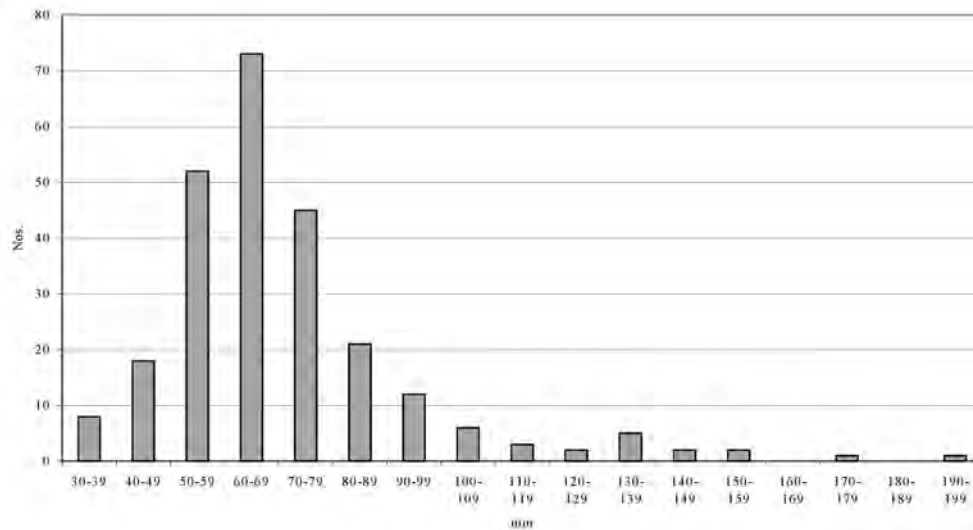


FIG. 5.21. Iron knives. Late Anglo-Saxon sample, length of knife blades.

The middle Anglo-Saxon average width for these knives is 15.78mm, and late Saxon 17.77mm, while for Flixborough it is only 14.20mm.

If we now turn to the ratios, the distribution of values for length in relation to length of blade in the middle and late Anglo-Saxon samples is shown in FIG. 5.22, and it will immediately be clear that the two are very different. The middle Anglo-Saxon values approximate to a normal distribution, and the average ratio is 1.60:1. The distribution is similar to that at Flixborough (FIG. 5.14), which has a very similar average of 1.56:1. The late Anglo-Saxon knives, however, have an average ratio of 1.78:1, and exhibit a highly skewed distribution with a long tail towards the upper end of the scale of values. After a dip in the range 1.80:1–1.89:1, there are a further 49 knives which have tangs which are as long or longer than their blades. The distinction between the middle and late Anglo-Saxon data shows again in the correlation diagrams. FIG. 5.23 shows the close correlation between the variables in the middle Anglo-Saxon sample, as in the case of Flixborough, and the angle of the regression line at 36° is similar to the 32° for Flixborough. FIG. 5.24 shows the late Anglo-Saxon data, in which there is a much less close correlation and a regression slope of 19° to the horizontal. The distinction between the middle and late Anglo-Saxon samples appears to be largely a function of the presence of the knives with long tangs in the latter. FIG. 5.25 shows the correlation of the variables in the late Anglo-Saxon assemblage, excluding knives with a length to length of blade ratio over 2:1. The correlation between the variables is now much closer, and the angle of the regression slope has moved up to 27°. Although no. 2100 (RF 3579) from Flixborough, which does have a tang longer than the blade, is from a Phase 3bv (mid 8th–early 9th century) context, the introduction

of knives with long tangs in any numbers appears to occur in the mid–late 9th century in northern Europe. They should probably be seen as tools for specialised uses.

The distinction between the middle and late Anglo-Saxon samples is not so marked in respect of the ratio of length of blade to maximum width of blade. The average for the middle Anglo-Saxon sample is 5.83:1, which is slightly greater than the Flixborough average at 5.35:1. Again, the anomalous back form A knives from Flixborough may have an influence here, in that their average ratio is 4.29:1 – i.e. their blades are unusually narrow in relation to their length, whereas the average for the middle Anglo-Saxon back form A knife blades in the sample from other sites is 5.42:1. The average for blade back form C knives from Flixborough is 5.74:1, which compares well with the middle Anglo-Saxon sample average. The late Anglo-Saxon averages are rather less than for the middle Anglo-Saxon, with the overall sample average being 5.21:1, while the average for back-form A knives is 4.70:1. In terms of correlation, the middle Anglo-Saxon data are shown in fig. 5.26; the pattern is similar to that for Flixborough shown in Fig. 5.17, as is the regression slope at 14° rather than 12°. The late Anglo-Saxon pattern shown in Fig. 5.27 is quite different, and the regression slope is at 23° to the horizontal.

This discussion has touched on a number of aspects of a subject which could be examined in much greater detail in terms of data for other measurements and the ratios between them, but this would not alter the overall conclusions significantly. The first of these is that in terms of dimensional patterns the assemblage of knives from Flixborough is homogeneous, in the sense that there is little appreciable difference between the knives from the earlier phases (Group 1), those from the later phases (Group 2),

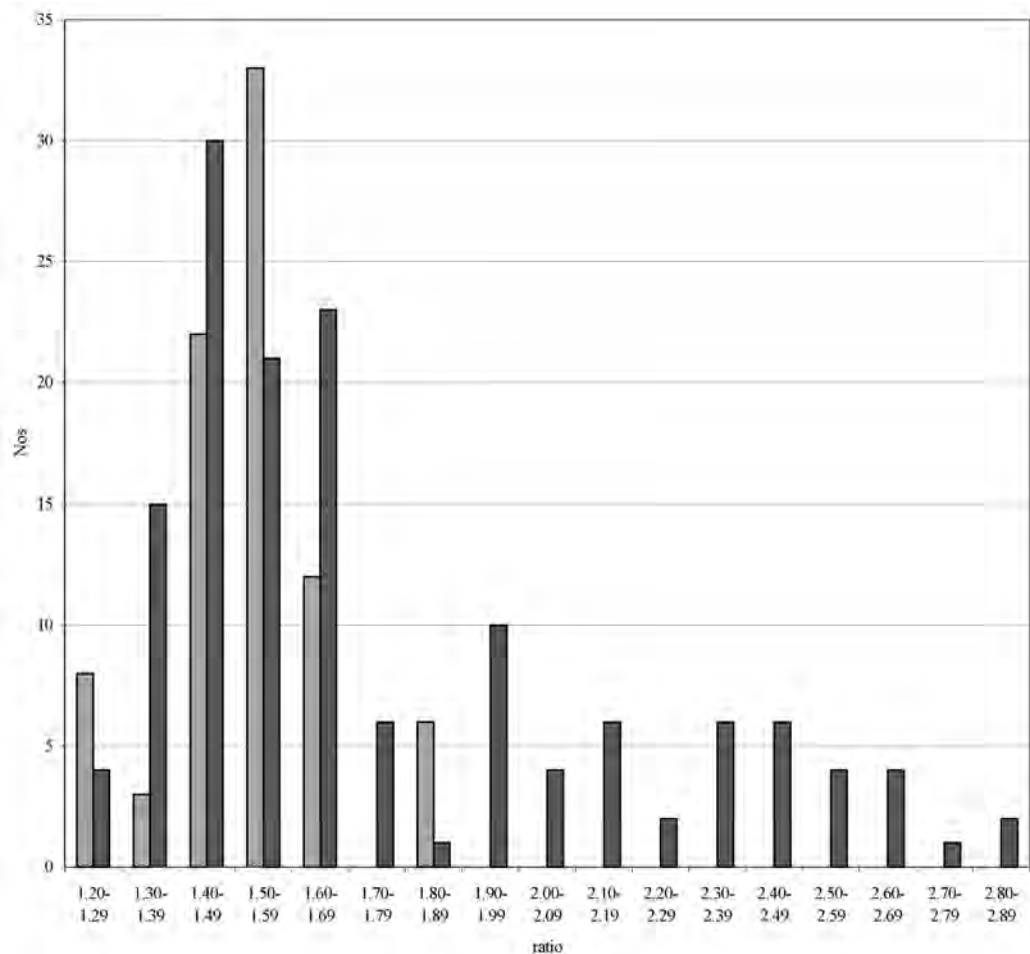


FIG. 5.22. Iron knives. Middle and Late Anglo-Saxon samples, length: length of blade ratio.

and those which are unstratified. The second conclusion is that in terms of distribution and range of values for the principal variables and ratios between them, Flixborough corresponds much more closely to the middle Anglo-Saxon sample from other sites in England, than to the late Anglo-Saxon sample. If the data on back form are set alongside the data on dimensions, the Flixborough knife assemblage as a whole should probably be dated to the 8th–mid 9th century, although individual specimens may be earlier or later.

Handles and sheaths

No knife handles are preserved in their entirety at Flixborough, but conservation has revealed traces of mineralised horn and wood handles, and also of leather sheaths.

Eighty-seven knives have the remains of horn handles preserved on the tangs. This corresponds with evidence from cemeteries, where this material is the most common in use for this purpose (Drinkall and Foreman 1998, 242, 283). At West Stow, several knives were described as having the remains of wooden handles (West 1985,

124), but these were also probably made of horn, and the information was taken from conservation notes made at a time when material on tangs was described as wood. At that site, wood-like material on the inside of an iron mount was found to be horn (West 1985, 47), and this led later to a more close examination of handle remains (Edwards 1989, 6). A straight edge showing the extent of the handle is visible extending onto the blade, on 40 knives, and a further five knives (although there were no clear or identifiable organic remains) have a mark indicating this in the corrosion. Two knives, nos 2251 and 2119 (RFs 3296 and 4175), have handles which do not extend beyond the tang. Two handles, nos 2123 and 2201 (RFs 4324 and 4391), have a fibrous material as a packing between the horn and the tang. Two of the knives have wooden handles, one of which was identified as possibly maple, which was commonly used for this purpose.

More surprisingly, 25 knives have the remains of sheaths – as it would seem probable that these knives were less likely to have been discarded with these present. In most cases these were of leather, but in two cases (nos 2129 and

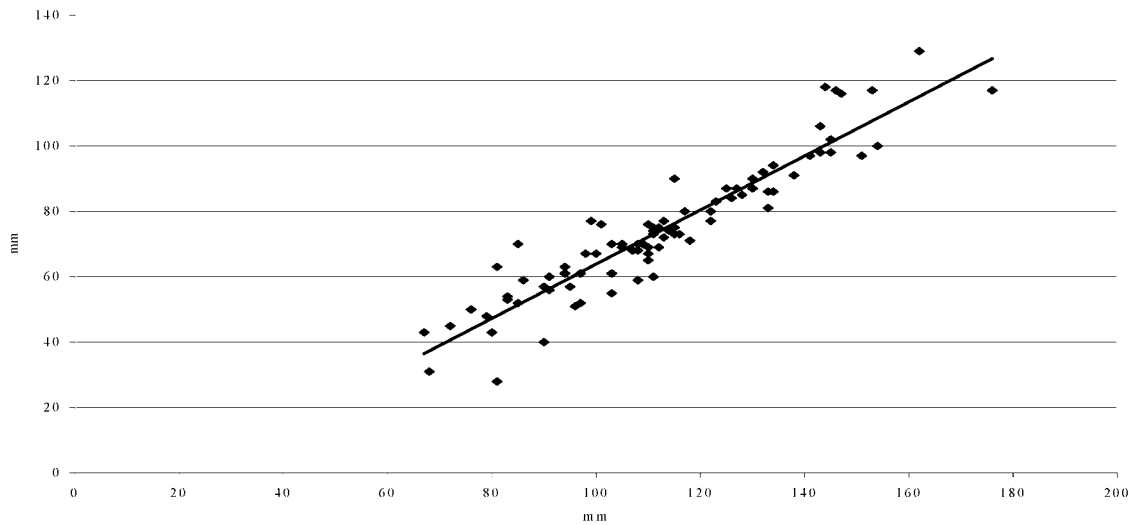


FIG. 5.23. Iron knives. Middle Anglo-Saxon sample, length: length of blade ratio.

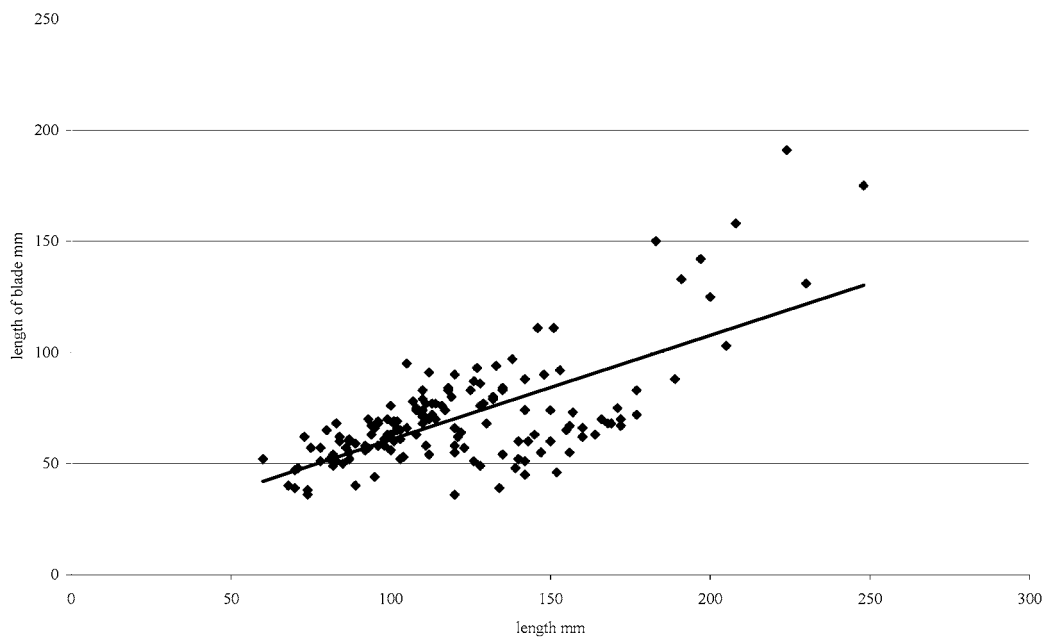


FIG. 5.24. Iron knives. Late Anglo-Saxon sample, length: length of blade ratio.

2070; RFs 5147 and 3837) the sheaths may possibly have been made from pelts, as hairs are visible on the surface of the sheath. The sheath on no. 2169 (RF 11132) is decorated with two engraved lines in the leather along the cutting edge, and another (no. 2132; RF 5375) may have embossed decoration. In two cases (nos 2169 and 2173; RFs 11132 and 12167) the sheath overlaps the handle. No. 2168 (RF 11563) has a wood strip on one side at the cutting edge,

and no. 2130 (RF 5186) has two large areas of wood with the grain running along the length of the blade, but there is not enough information to confirm that this represents stiffeners for the sheaths.

Knife function

Assigning a specific function to any particular knife is usually difficult, unless it is found in some very specific

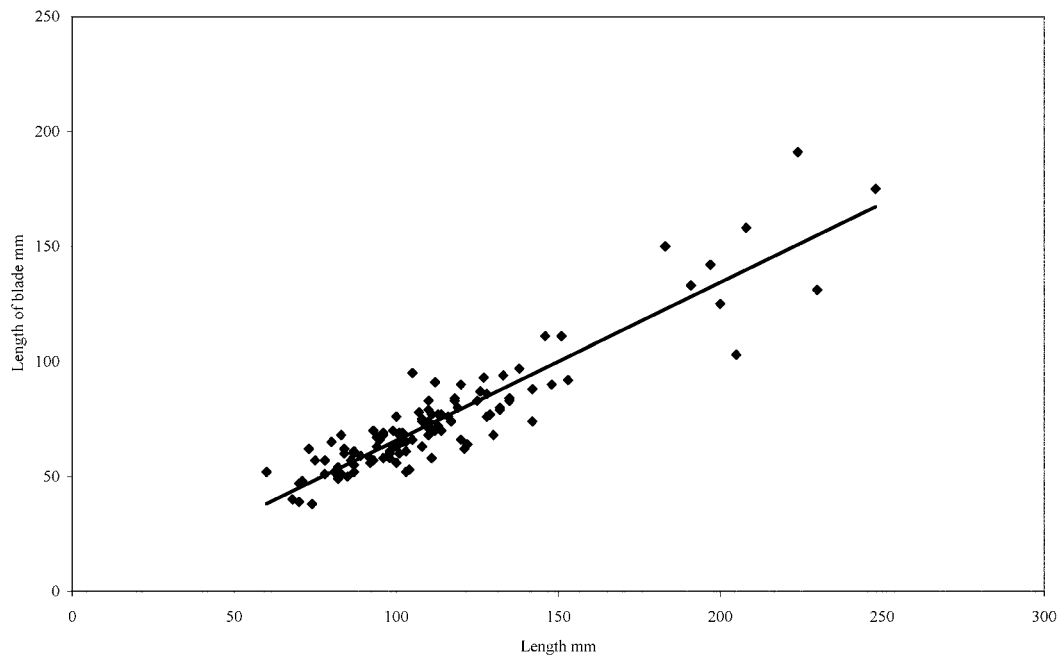


FIG. 5.25. Iron knives. Late Anglo-Saxon sample, length: length of blade ratio greater than 2:1.

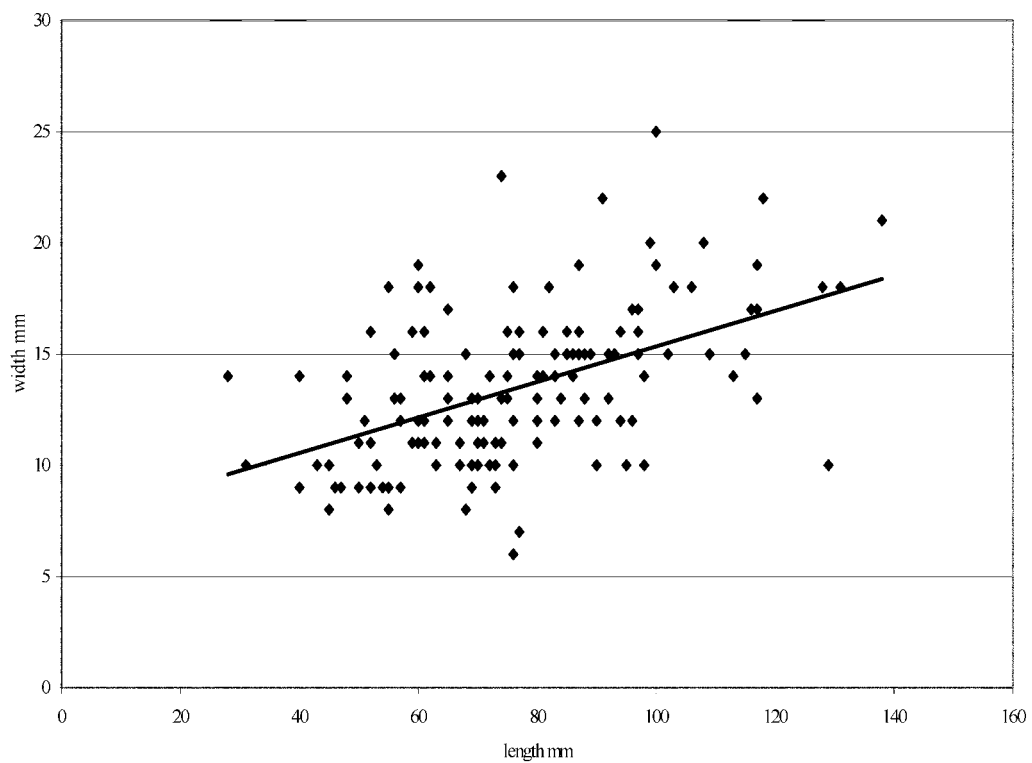


FIG. 5.26. Iron knives. Middle Anglo-Saxon sample, length of blade: maximum width of blade ratio.

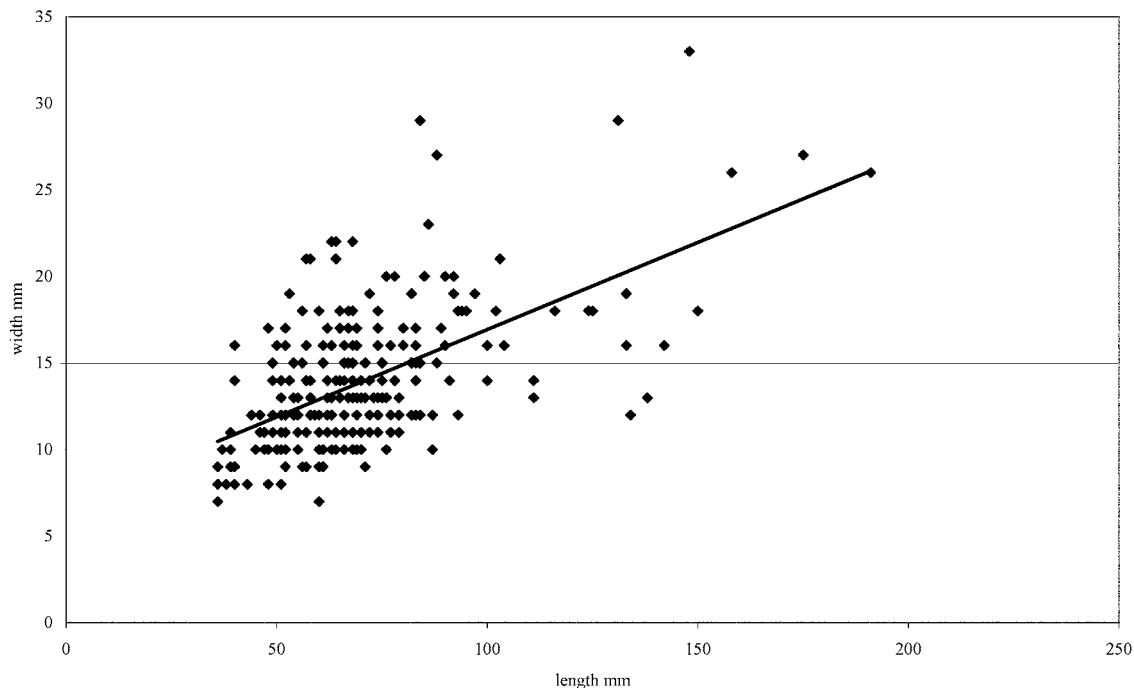


FIG. 5.27. Iron knives. Late Anglo-Saxon sample, length of blade: maximum width of blade ratio.

context. The majority of the Flixborough knives come from refuse dumps, but they must have been suitable for a wide range of domestic and craft tasks. To some extent function must relate to form and size, and it is therefore worth noting that, with the exception of no. 2111 (RF 3865), which has an unusually long slim blade, there are no knives which would seem suitable for hunting, or indeed for use as weapons. This point is reinforced by the absence of large knives with angle-backs (already noted), as this is the back form usually found on probable hunting knives or weapons in the mid-late Anglo-Saxon periods. In contrast to no. 2111 (RF 3865), no. 2045 (RF 5639) is an unusually small knife and may have been used for some specific craft function or, perhaps, for personal toilet. That some of the knives were used for more than simply practical purposes, and were considered suitable for making statements about their owner's social status, is suggested by the inlaid decoration seen on five specimens.

Incomplete knife

It appears that part of the cutting edge of no. 2293 (RF 5299, Phase 2–3a) has been removed from it, and on the left-hand blade face there is a chisel mark above the cutting edge. This may be a knife which was discarded while in the process of being broken up for recycling.

Paring knives (FIG. 5.30)

Nos 2290–1 (RFs 5312 and 5320, both from Phase 6ii context 3891), and no. 2292 (RF 7869, unstratified) are

three tanged knives which when viewed from the tang are curved to the left at 90°. They are probably specially-made paring knives, and would have been ideal for cleaning out and trimming horses' hooves.

Knife with iron tang (FIG. 5.30)

No. 2294 (RF 11042, Phase 5b) is a knife with a short angle-backed blade, behind which is a short neck, and then an iron tang of oval cross-section. This is an unusual object made, presumably, for some specialised function. It may have been used in some process or activity in which heat was involved, such that an organic handle would have been damaged. A similar knife from a late 11th–12th century context at Beverley was identified as a possible surgical instrument (I. H. Goodall 1991, 132, fig. 102, 327).

Pivoting knives

There are three pivoting knives: nos 2295–7 (RF 624, Phase 6iii; RF 7068, Phase 6ii–iii; and RF 3783, unstratified). They have or had two blades, one on each side of a slightly off-centre pivot, which is or was in a U-shaped area flanked by two inverted U-shaped notches between the cutting edges. When a blade was in use, the notch on the opposite side of the pivot rested on a rivet, which was also one of two holding the sides of the handle-cum-case together; this rivet counteracted the upward pressure on the blade's cutting edge (Ottaway 1992, fig. 243).

No. 2296 (RF 3783) is almost complete, and both blade backs curve down to the tip; this form appears to

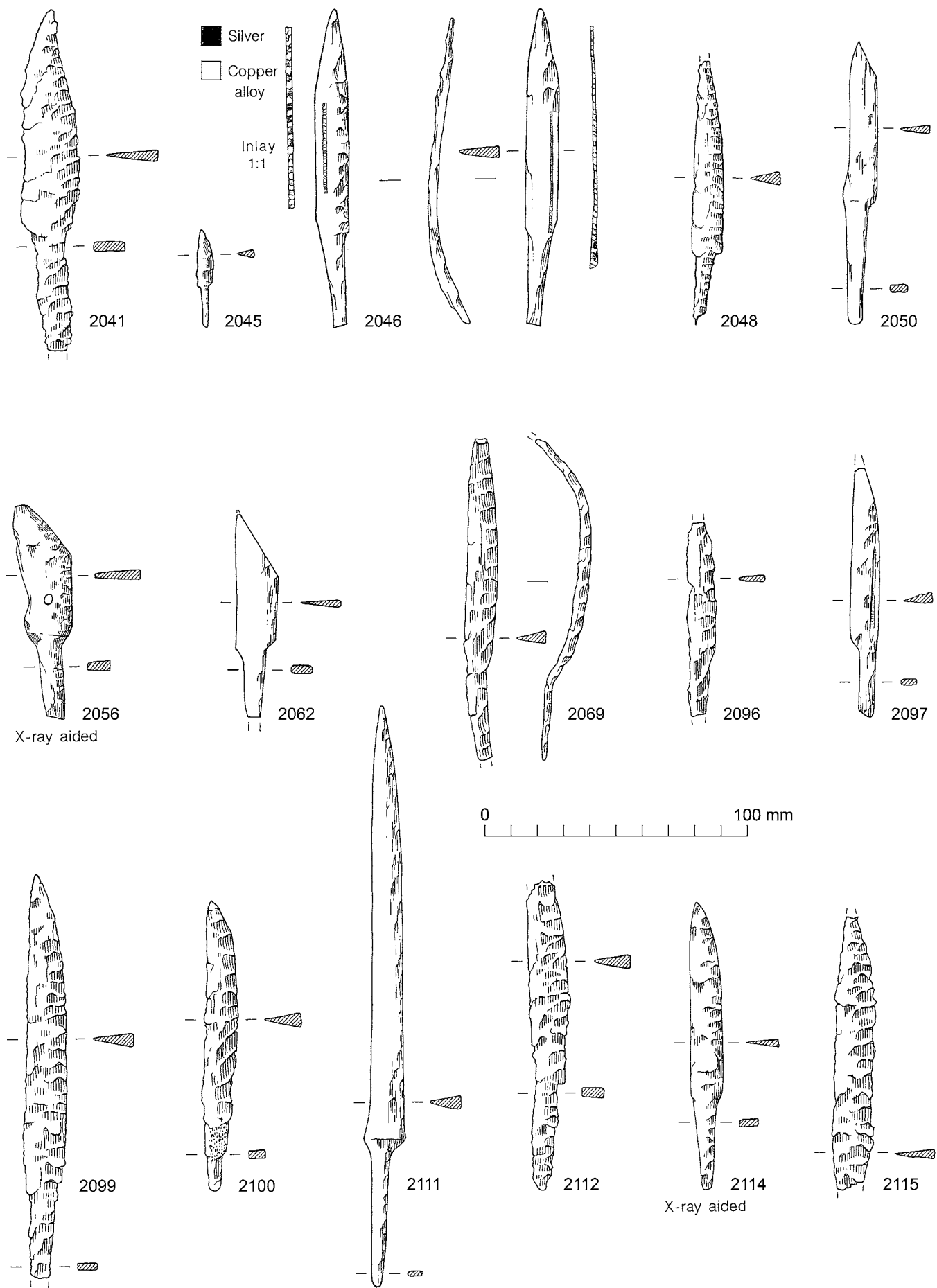


FIG. 5.28. Iron knives. Scale 1:2.

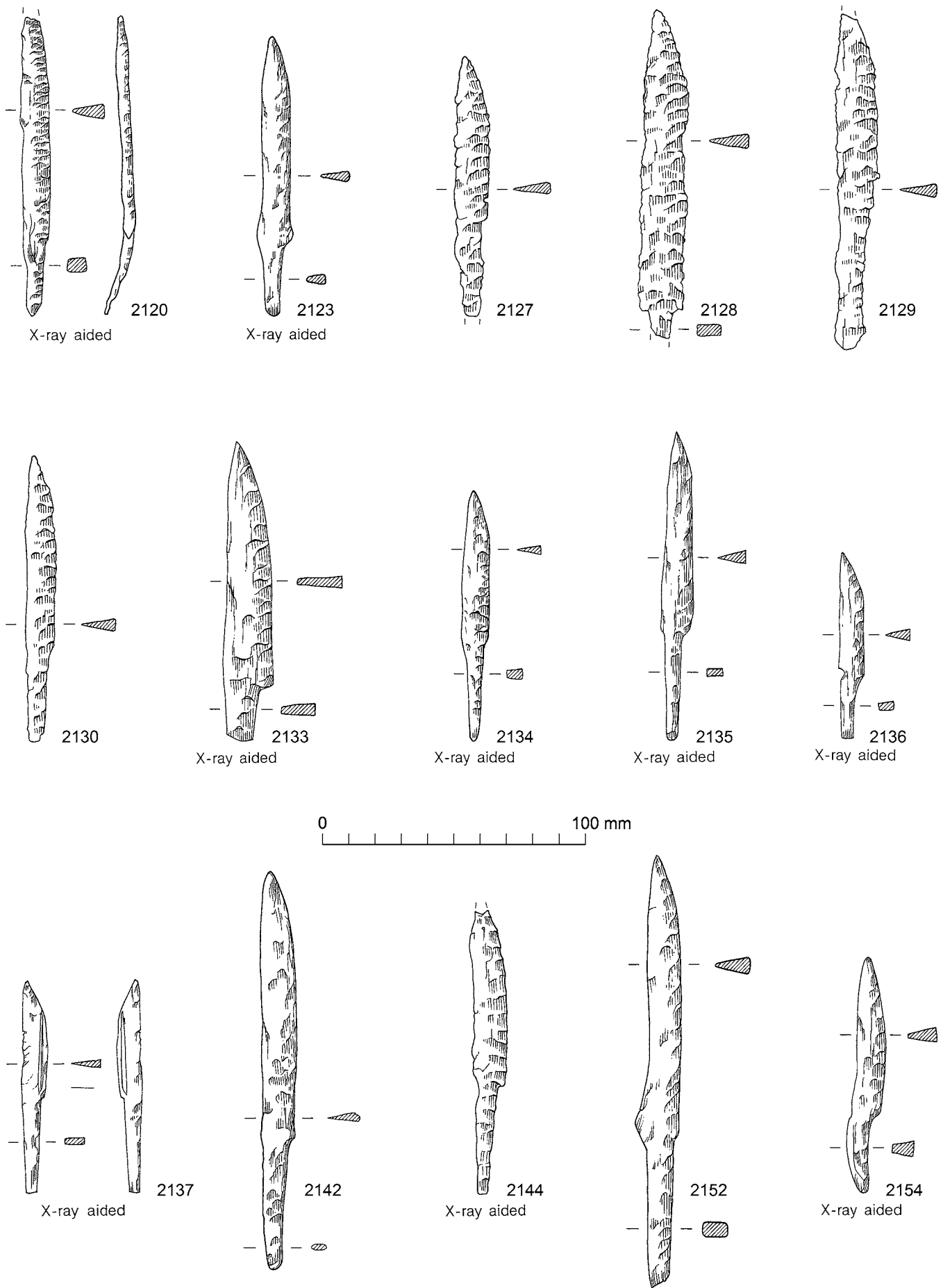


FIG. 5.29. Iron knives. Scale 1:2.

be more common in the middle Anglo-Saxon period than the later, but the usual form in the middle Anglo-Saxon period combines a blade with a curving back with a blade with an angle-back, as can be seen, for example, on three from *Hamwic* (SOU24.13, SOU24. 278, SOU31.1557; unpublished, excavated by Southampton City Council). Late Anglo-Saxon examples have this form, as seen on two from a late 9th–early 10th century Viking grave at Middle Harling, Norfolk (Margeson 1995b, 79–80, fig. 76, 4–5), but it is equally common to find one blade with an angle-back, and one with a concave back, as on three from York (Ottaway 1992, 586–8, fig. 244, 2976–8). The surviving blade of no. 2295 (RF 624) from Flixborough has an angle back. No. 2297 (RF 7068) is a fragment, and its original form cannot be determined.

Pivoting knives appear to be an introduction of the middle Anglo-Saxon period and remained current in the later, but there are no examples securely datable to the medieval period. Their function is unknown, although Biddle (1990a) has suggested they were used by scribes. Except for those from Middle Harling, they usually occur on occupation sites, suggesting they had some craft purpose, although a wide variation in size suggests there may have been more than one.

Flesh forks (FIG. 5.31)

There are seven flesh forks or parts of forks (three unstratified), probably used in cooking and preparing food. No. 2303 (RF 4170, Phase 4ii) is more or less complete, and may serve as an exemplar (FIG. 5.31). It is tanged, and has three tines, the tips of which are curved over to allow them to grip meat or other comestibles. Nos 2302, 2305, 2308 and 2307 (RF 3835, Phase 6ii; RF 5383, Phase 2–3a; RF 9848, unstratified; and RF 9494, unstratified) were probably similar. The surviving tine of no. 2302 (RF 3835) is spirally twisted (FIG. 5.31). No. 2304 (RF 4249, Phase 4ii) is a tanged fork with only two tines, which also curve over at the tip (FIG. 5.31). Although other meat forks are known from Anglo-Saxon contexts, the tines are usually set at a right angle to the tang, a form for which there is no evidence at Flixborough.

Skewer (FIG. 5.31)

No. 2309 (RF 6696, Phase 3biv) is a tapering strip measuring 312mm with a loop, the tip of which is curved back on itself, at one end (FIG. 5.31). It may have been used for holding meat or other food-stuffs over a fire while cooking, or for skewering them afterwards. No comparable object is known from an Anglo-Saxon context.

Strike-a-light

No. 2310 (RF 13551; unstratified) is a strike-a-light, existing as a triangular plate with looped terminals. It is of a well-known Anglo-Saxon form.

Spatulate tools (FIG. 5.31)

There are four similar objects with spatulate ‘blades’ and

‘tangs’ of rounded cross-section. No. 2312 (RF 4660: Period 2) is a complete example, with a ‘blade’ which has a central slot terminating in a hole at each end (FIG. 5.31). No. 2311 (RF 353; Period 7) is incomplete, but was similar to no. 2312 (RF 4660) – as no. 2314 (RF 10488, Phase 6ii–iii) is also likely to have been, although it is now fragmentary. No. 2315 (RF 12853; unstratified) is more elaborate: the ‘blade’ has a central slot in which a zigzag strip has been set, and the tang is balustroid, and has a decorative moulding at the head. No. 2313 (RF 9079; unstratified) should probably be added to the group; although it is smaller and has no slot; it consists of a plate with a rounded head at which it is pierced, and there is a non-ferrous rivet *in situ*. At the base of the plate is a moulding, and the tang is balustroid.

Objects similar to those described above, both with and without a central slot, have been recorded elsewhere in England, usually in Anglo-Saxon graves of the 6th–7th centuries. This being the case, nos 2311 and 2314 (RFs 353 and 10488) may be residual, although there is an example, with a central slot, from a middle Anglo-Saxon context at North Elmham (I. H. Goodall 1980a, 513, fig. 266, 48), and another without a slot, and decorated with relief grooves and dots, from a contemporary context at Thwing (no. I81; Ottaway unpublished a). Slotted versions also occur on early Christian sites in Ireland, including Lagore Crannog (Hencken 1950, fig. 51, 154).

Whether with the central slot or without it, the function or functions of spatulate objects is one of the great mysteries of Anglo-Saxon archaeology. Helen Geake has suggested that they may be steels, i.e. knife sharpening tools, because they have often been found near knives in Anglo-Saxon graves (Geake 1996, 90–2). Sharpening, however, was usually done with a hone stone, and if these objects were simply for sharpening, one wonders why some of them at least have such an elaborate form. Another suggestion is that they are strike-a-lights, although again this does not explain the form of the ‘blades’. Furthermore, whether as a steel, or a strike-a-light, it has to be assumed that the tang would have been set in a wooden handle, so as to allow the user a firm grip. However, if they were intended to be given handles, the tangs would have a rectangular rather than the usual rounded cross-section, and the balustroid form would have no purpose. In view of this, one is inclined to suggest that some, at least, of these spatulate tools were intended to be gripped with the ‘blade’, while the ‘tang’ was actually used as a pointed tool.

Catalogue

Knives (Figs 5.28–5.30)

Knives are catalogued in groups based on blade-back form. There are three main groups, as defined by Ottaway (1992, 558–61): A, C and D (no examples of forms B or E were recorded). In Group A the back runs straight from the shoulder, before passing through an angle and sloping down to the tip. In Group C the back runs straight from the shoulder, before becoming convex, and curving down to the tip. In Group D the back is convex over its entire length. Groups A and C have been divided into sub-groups 1–3,

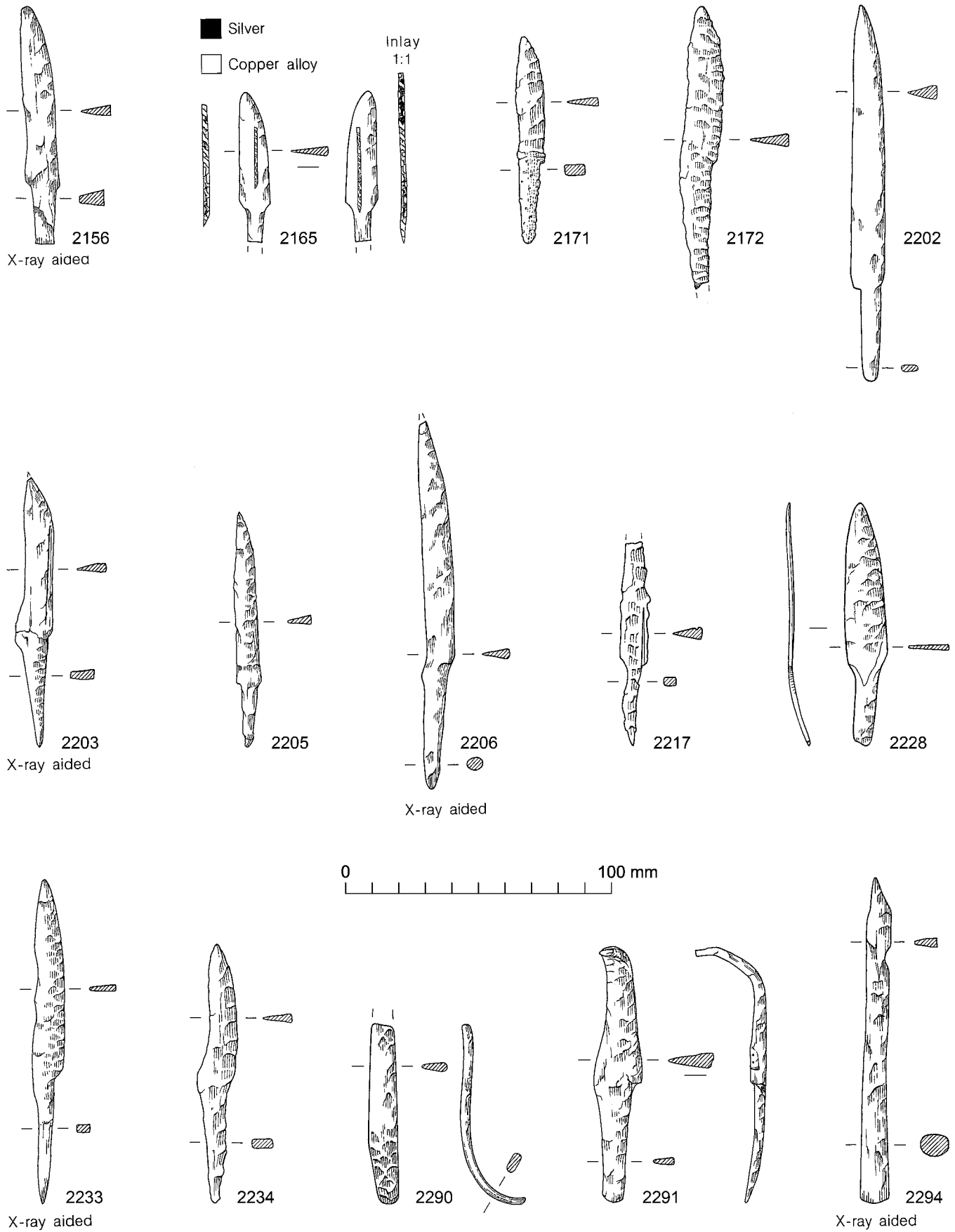


FIG. 5.30. Iron knives, and paring knives. Scale 1:2.

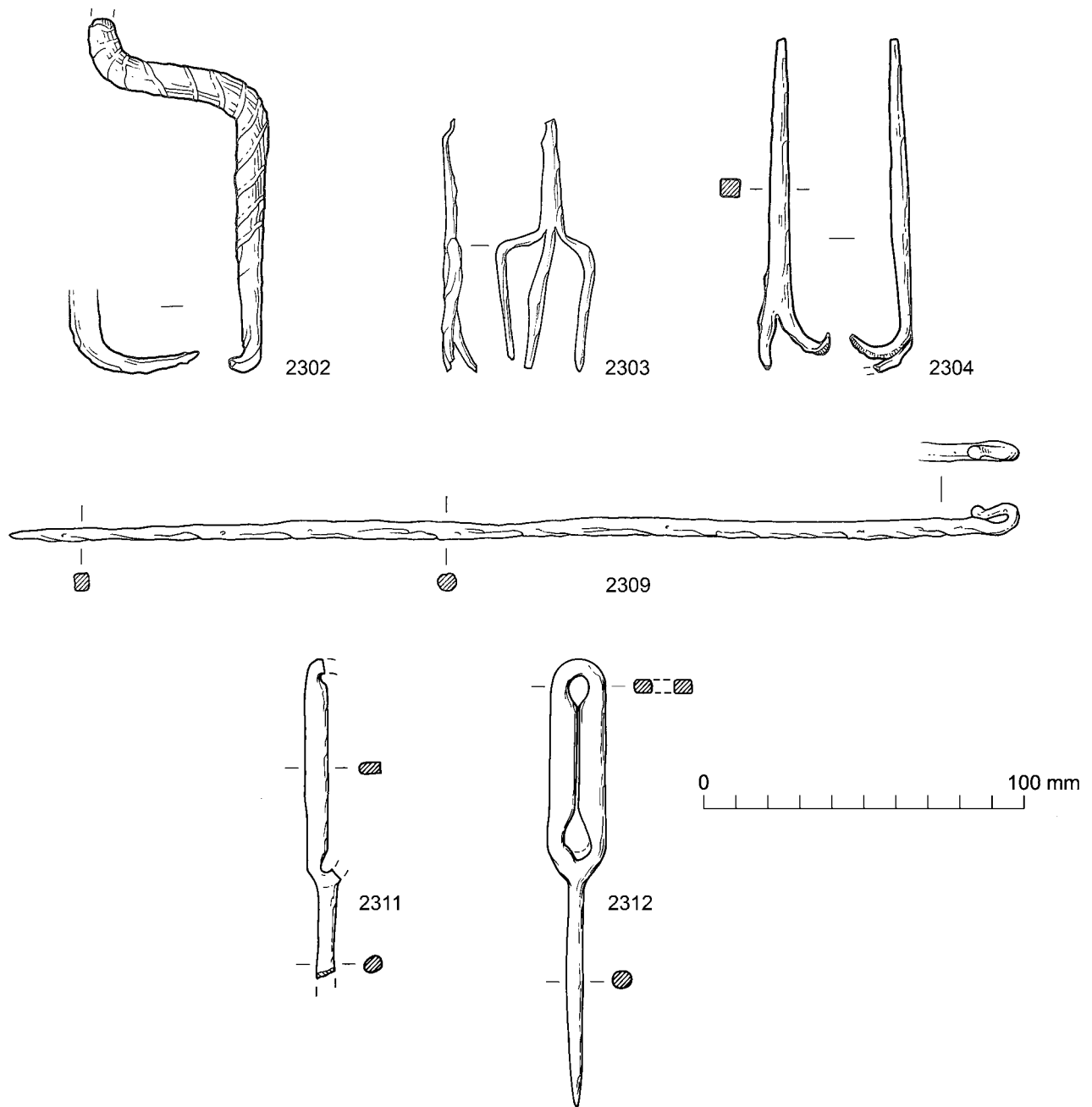


FIG. 5.31. Iron flesh forks, a skewer, and iron spatulate tools. Scale 1:2.

according to whether, in relation to a horizontal line between the tip of the blade and tip of the tang, the straight rear part of the back is horizontal (A1, C1), upward sloping (A2, C2), or downward sloping (A3, C3). The catalogue of knives is concluded with those which have blades of indeterminate back form.

BLADE BACK FORM A1 (FIG. 5.28)

- 2040 Angle 10°. Cutting edge straight before curving up at tip. Possible organic traces on the tang and suggestions of extent of handle, just onto the blade. L.62mm
RF 1913, Context 1892, Phase 6ii–6iii.

- 2041 Cutting edge slightly S-shaped. L.128mm. Metallurgy report. (FIG. 5.28)
RF 2234, Context 779, Phase 6iii.

- 2042 Angle 13°. Cutting edge straight before curving up at tip. Tang tip missing. Remains of a horn handle on the tang, extends onto the blade. L.67mm
RF 2494, Context 2470, Phase 4i–4ii.

- 2043 Angle 11°. Six notches are cut into the back and that nearest the shoulder is inlaid. Cutting edge straight before curving up at tip. Charcoal and random organic material present.

- L.105mm
RF 3780, Unstratified.
- 2044 Blade tip missing. Angle 12°. Cutting edge has a slight S-shape. Possible traces of horn on the tang; fibrous area on the blade could be leather. L.153mm
RF 4151, Context 3891, Phase 6ii.
- 2045 Cutting edge straight before curving up at tip. L.38mm (Fig. 5.28)
RF 5639, Context 5555, Phase 5b–6i.
- 2046 Bent at junction of blade and tang. Angle 12°. Cutting edge straight before curving up at tip. Running along the top of both blade faces is a groove inlaid with twisted copper and silver wires. Seen from the tang they are S-twisted on the left face, and Z- twisted on the right side. Remains of a horn handle on the tang. L.119; blade: L.83mm (Fig. 5.28)
RF 6361, Context 6344, Phase 5b–6i.
- 2047 Obscured by corrosion. Cutting edge straight. Tang incomplete. Thick deposit of charcoal and random organic material present. L.c.77mm
RF 6646, Context 6499, Phase 6ii–6iii.
- 2048 Blade and tang tips missing. Angle 10°. Cutting edge straight before curving up. Traces of a horn handle on the tang extends over the shoulder. Area of degraded fibrous organic material on the blade – leather (?) or textile (?). L.100mm (Fig. 5.28)
RF 8105, Context 8092, Phase 5a.
- 2049 Angle 14°. Cutting edge has slight S-shape. Random organic material and charcoal. L.83mm
RF 9658, Unstratified.
- 2050 Angle 25°. Cutting edge has slight S-shape. Slight traces of horn on the tang extend over the shoulder; random organic material on the blade. L.107mm (Fig. 5.28)
RF 12255, Context 12057, Phase 5a–5b?
- 2051 Angle 9°. Cutting edge straight before curving up at tip. Remains of a horn handle on the tang. L.113mm
RF 12473, Unstratified.
- BLADE BACK FORM A2 (Fig. 5.28)
- 2052 Blade tip missing, tang incomplete. L.58mm
RF 171, Context 1, Topsoil.
- 2053 Blade tip missing. Angle 22°. Cutting edge straight before curving up at tip. Two notches cut into back near shoulder. Organic remains on the tang, ? horn. L.99mm
RF 595, Context 555, Phase 6ii–6iii.
- 2054 Cutting edge convex. Angle 25°. Tang incomplete. Possible organic traces on the tang, but doubtful. L.68mm
RF 2649, Context 2184, Phase 6iii.
- 2055 Blade tip missing. Angle 9°. Cutting edge convex. Tang incomplete. Organic traces on the handle, possibly horn. L.139mm
RF 2674, Unstratified.
- 2056 Cutting edge has slight S-shape. Angle 42°. Tang tip missing. L.85mm (Fig. 5.28)
RF 4096, Context 2107, Phase 4ii.
- 2057 Blade tip missing. Angle 17°. Cutting edge convex. L.96mm
RF 4581, Unstratified.
- 2058 Angle 12°. Cutting edge convex. Remains of a horn handle on the tang, and possible leather sheath on the blade. L.97mm
RF 6753, Context 6680, Phase 6i–6ii.
- 2059 Angle 21°. Cutting edge has a slight S-shape. Tang tip missing. Possible leather remains on the blade (? sheath). L.80mm
RF 7082, Context 7054, Phase 6ii–6iii.
- 2060 Angle 23°. Cutting edge convex. A groove inlaid with non-ferrous twisted wire runs along the top of one (or both) blade faces. Five inlaid notches in the back. Tang incomplete. Possible organic layer, but may just be corrosion. L.61; blade: L.47mm
RF 7882, Unstratified.
- 2061 Angle 33°. Cutting edge has slight S-shape. L.64mm
RF 9097, Unstratified.
- 2062 Angle 35°. Cutting edge has a slight S-shape. Tang tip missing. Trace of a horn handle on the tang. L.77mm (Fig. 5.28)
RF 10405, Context 1841, Phase 6ii–6iii.
- 2063 Angle 12°. Cutting edge convex. Remains of a horn handle on the tang, extends over the shoulder. L.120mm
RF 10903, Unstratified.
- 2064 Angle 32°. Cutting edge has slight S-shape. Random organic material. L.83mm
RF 12314, Unstratified.
- 2065 Blade is bent at the angle point and the end is missing. Angle 17°. Cutting edge straight before curving up towards the tip. Traces of organic handle – wood survives, but not enough to identify the species. L.78mm.
FX 88, R33.
- BLADE BACK FORM A OF INDETERMINATE SUB-GROUP (Fig. 5.28)
- 2066 Very corroded. Blade badly damaged, tang incomplete. L.84mm
RF 608, Context 534, Period 7.
- 2067 Blade only. Angle 12°. Cutting edge convex. L.73mm
RF 829, Unstratified.
- 2068 Blade end and tang tip missing. Angle 25°. L.40mm
RF 1539, Context 1453, Phase 6iii.
- 2069 Blade and tang tips missing. Blade curved into an elongated C-shape. L.120mm. Metallurgy report. (Fig. 5.28)
RF 2463, Context 2177, Phase 6iii.
- 2070 Blade only. Angle 5°. Cutting edge straight before curving up at tip. Fibrous organic material, on back and other areas, may be crushed textile, and possible pelt. L.107mm
RF 3837, Context 3989, Phase 6iii.
- 2071 Blade only. Angle 14°. Cutting edge roughly straight before curving up at tip. L.80mm
RF 7490, Unstratified.
- 2072 Blade incomplete. Angle 15°. L.42mm
RF 8299, Context 3989, Phase 6iii.
- 2073 Blade tip missing. Angle 14°. L.90mm
RF 12358, Context 10772, Phase 2–4ii.
- 2074 Incomplete blade only. L.40mm
RF 13313, Unstratified.
- 2075 Blade tip missing. Angle 22°. Cutting edge convex. A groove inlaid with non-ferrous twisted wire runs along the

- top of both blade faces. L.65mm
RF 13485, Unstratified.
- BLADE BACK FORM C1 (FIGS 5.28–5.30)
- 2076 Blade bent at $c.90^\circ$ in centre. L.116mm
RF 87, Context 70, Phase 5a.
- 2077 Cutting edge straight before curving up at tip. L.77mm
RF 170, Context 1, Topsoil.
- 2078 Bent in the centre, tang tip missing. Trace of probable horn handle on the tang; straight edge across one side – just extends over the blade. L.108mm
RF 182, Context 70, Phase 5a.
- 2079 Blade tip missing, tang incomplete. Cutting edge has a slight S-shape. Remains of a horn handle on the tang with straight edge on one side, just extends onto the blade. Random organic, plant material on both sides of the blade. L.81mm
RF 216, Context 72, Phase 5a.
- 2080 In two pieces, tang largely missing. Possible trace of horn on the tang with hint of straight edge just onto the blade. Random organic material on the blade. L.82mm
RF 347, Context 72, Phase 5a.
- 2081 Blade only. Cutting edge convex. Traces of random organic material. L.82mm
RF 354, Context 1, Topsoil.
- 2082 Blade only. L.70mm
RF 865, Context 748, Phase 2–3a.
- 2083 Blade tip missing. Cutting edge straight. Tang incomplete. Organic traces on the tang, possible suggestion of extent of the handle, just onto the blade. L.58mm
RF 898, Unstratified.
- 2084 Blade tip missing. Cutting edge straight before curving up at tip. L.86mm
RF 1581, Unstratified.
- 2085 Blade end missing. Cutting edge has pronounced S-shape. Remains of wooden handle on the tang, extent not clear: possibly *Acer* sp. (maple). [SEM B795]. L.89mm
RF 1713, Context 1688, Period 7.
- 2086 Cutting edge has slight S-shape. Remains of probable horn handle appears to extend just onto the blade. Random organic material on the blade. L.98; blade: L.62mm
RF 1842, Context 1831, Phase 6ii–6iii.
- 2087 Blade only. Cutting edge straight before curving up at tip. Three horizontal grooves on left face. No organic material, but some charcoal is present. L.67mm
RF 1955, Context 1453, Phase 6iii.
- 2088 Cutting edge slightly concave. Blade back edges chamfered. Tang bent upwards. Possible random organic traces on the tang. L.116; blade: L.71mm
RF 1981, Context 1730, Phase 5b.
- 2089 Bent at $c.45^\circ$ in the centre. Cutting edge has a slight S-shape. Charcoal remains in soil. L.89mm
RF 2125, Context 2097, Phase 6iii.
- 2090 Blade tip missing. Cutting edge roughly straight. Fragment of *Quercus* sp. (oak) charcoal on the tang, so unlikely to be part of the handle. L.70; blade: L.43mm
RF 2350, Context 968, Phase 3bi–3bv.
- 2091 Blade and stub of tang. Cutting edge has a slight S-shape. X-ray suggests a horizontal groove runs along top of one or both faces. Trace of possible horn handle, just extends onto the blade. L.95mm
RF 2351, Context 767, Phase 1b–2.
- 2092 Cutting edge has slight S-shape. Tang tip missing. Organic traces on the tang, possibly horn. L.122mm
RF 2825, Context 2858, Phase 5a–5b.
- 2093 Cutting edge straight. Organic remains of a probable horn handle on the tang; handle extends just onto the blade. L.76mm
RF 2967, Unstratified.
- 2094 End of blade missing. Notch cut into blade back at shoulder. Trace of probable horn handle. L.92mm
RF 3310, Context 3107, Phase 4ii.
- 2095 Tips of blade and tang missing. Cutting edge straight before curving up towards the tip. Remains of a horn handle, extent not clear. L.110; blade: L.74mm
RF 3314, Context 3107, Phase 4ii.
- 2096 Blade tip missing. Cutting edge straight. L.73mm. Metallurgy report. (FIG. 5.28)
RF 3316, Context 3107, Phase 4ii.
- 2097 Blade tip missing. Horizontal grooves at top of each blade face. Cutting edge straight. Traces of a horn handle on the tang, appears to extend onto the blade. L.94mm (FIG. 5.28)
RF 3510, Context 1649, Phase 1b–3a.
- 2098 Cutting edge has slight S-shape. Tang incomplete. Remains of (?) horn handle, straight edge just onto the blade. L.131mm
RF 3540, Context 3088, Phase 3a–3bi–3bv.
- 2099 Cutting edge has very slight S-shape. Remains of a horn handle on the tang, straight edge just on the blade. L.151mm. Metallurgy report. (FIG. 5.28)
RF 3569, Context 3541, Phase 3bv.
- 2100 Cutting edge has slight S-shape. Remains of a horn handle on the tang, appears to extend onto the blade. Random organic material on the blade. L.109mm. Metallurgy report (FIG. 5.28).
RF 3579, Context 3541, Phase 3bv.
- 2101 Cutting edge S-shaped. L.79mm
RF 3614, Context 3610, Phase 6ii.
- 2102 Blade tip missing. Cutting edge has slight S-shape. Remains of a horn handle, but extent not clear. Amorphous material which overlies the top of the blade may be leather. L.90mm
RF 3662, Context 3610, Phase 6ii.
- 2103 Cutting edge S-shaped. Charcoal present. L.166mm
RF 3742, Unstratified.
- 2104 Cutting edge has slight S-shape. Charcoal and random organic material present. L.106mm
RF 3746, Unstratified.
- 2105 Blade only. Cutting edge straight before curving up at tip. L.94mm
RF 3747, Unstratified.
- 2106 Blade tip missing. Cutting edge straight before curving up towards the tip. Organic traces, but not clear if these are handle remains. L.64mm
RF 3761, Unstratified.
- 2107 Blade distorted and tip missing. Vertical splits in the cutting

- edge. L.125mm
RF 3762, Unstratified.
- 2110 Cutting edge straight before curving up at the tip. Charcoal and random organic material present – particularly large lump on the tang. L.124mm
RF 3797, Unstratified.
- 2109 Blade tip missing. Cutting edge has slight S-shape. Charcoal and random organic material present. L.86mm
RF 3844, Context 3989, Phase 6iii.
- 2110 Blade and tang tips missing. Cutting edge straight. L.61mm
RF 3851, Context 3989, Phase 6iii.
- 2111 Cutting edge has slight S-shape. Remains of a horn handle on the tang, appears just to extend onto the blade. L.220mm (Fig. 5.28)
RF 3865, Context 3730, Phase 6ii.
- 2112 Blade and tang tip missing. Cutting edge straight. Random organic material and possible trace of horn on the tang. L.118mm. Metallurgy report. (Fig. 5.28)
RF 3994, Context 3891, Phase 6ii.
- 2113 Blade and stub of tang. Cutting edge straight before curving up at tip. L.53mm
RF 4082, Context 3107, Phase 4ii.
- 2114 Cutting edge straight before curving up at tip. L.109mm. Metallurgy report. (Fig. 5.28)
RF 4116, Context 3107, Phase 4ii.
- 2115 Blade only, tip missing. Charcoal and random organic (including fibrous) material present. L.104mm. Metallurgy report. (Fig. 5.28)
RF 4125, Context 3989, Phase 6iii.
- 2116 Bent at junction of blade and tang. Cutting edge straight before curving at tip. Random organic material present; possible trace of a handle. L.111mm
RF 4126, Context 3989, Phase 6iii.
- 2117 Blade tip missing. Cutting edge has slight S-shape. Remains of a horn handle on the tang, extends just onto the blade. Random organic material on the blade. L.87mm
RF 4128, Context 3989, Phase 6iii.
- 2118 Bent at 90° in centre. Cutting edge straight. Blade and tang tips missing. Possible trace of a (?) horn handle.
RF 4129, Context 3989, Phase 6iii.
- 2119 Blade and tang tips missing. Cutting edge straight. Possible traces of a (?) horn handle on the tang: its extent can be seen to the end of the tang. L.70mm
RF 4175, Context 3891, Phase 6ii.
- 2120 Bent at junction of blade and tang. Blade tip missing. Cutting edge straight before curving towards the tip. Blade back comes to a triangular tip at the shoulder. An area on the blade resembles leather; there is also a fibrous area. Possible traces of a (?) horn handle visible. L.112mm (Fig. 5.29)
RF 4184, Context 3891, Phase 6ii.
- 2121 Blade with tip missing and stub of tang. Cutting edge straight before curving up at tip. Remains of a horn handle; wood on the blade, but probably random. L.115mm
RF 4277, Context 3347, Phase 1b.
- 2122 Blade tip missing. Cutting edge straight. Tang bent. Random organic material on the blade, and also a fibrous area; probably random organic material on the tang. L.70; blade: L.40mm
RF 4308, Context 3730, Phase 6ii.
- 2123 Cutting edge has slight S-shape. Remains of a horn handle; under it, at one point, fibrous material packing it – possible loosely spun threads. L.127; blade: L.77, W.13mm. Metallurgy report. (Fig. 5.29)
RF 4324, Context 3281, Period 2.
- 2124 Bent at c. 45° near centre. Blade tip missing. Cutting edge has an S-shape. Tang incomplete. L.87mm
RF 4338, Context 3107, Phase 4ii.
- 2125 Blade and stub of tang. Cutting edge S-shaped. L.81mm
RF 4353, Context 3730, Phase 6ii.
- 2126 Blade only, end missing. Remains of a horn handle, straight edge just at the end of the tang. Random organic material on the blade. L.103mm
RF 4439, Context 4437, Phase 1a.
- 2127 Cutting edge has a slight S-shape. Notch cut in back near shoulder. Traces of a horn handle; random organic material on the blade. L.98mm. Metallurgy report. (Fig. 5.29)
RF 4466, Context 3600, Phase 3bi–4i.
- 2128 Blade and stub of tang. Cutting edge has a slight S-shape. Trace of a horn handle, straight edge just on the blade. Probable random organic material on the blade. L.123mm. Metallurgy report. (Fig. 5.29)
RF 4881, Context 3281, Period 2.
- 2129 Blade tip missing. Cutting edge has slight S-shape. Remains of a horn handle on the tang; fibres on the blade, possibly a pelt. Random organic material on the other side, overlying possible leather. L.126mm. Metallurgy report. (Fig. 5.29)
RF 5147, Context 5193, Phase 4ii–5a.
- 2130 Cutting edge has slight S-shape. Possible organic traces on the tang; random organic material on the blade, including two large areas of wood with the grain running along its length. Not enough detail survives to be able to say whether these are the remains of a stiffener for the sheath, or are random. L.108mm. Metallurgy report. (Fig. 5.29)
RF 5186, Context 5193, Phase 4ii–5a.
- 2131 Cutting edge has slight S-shape. Random organic material on the blade, possible traces of horn on the tang. L.85mm
RF 5307, Context 3891, Phase 6ii.
- 2132 Blade curves at 90° near the tip (?paring knife). Cutting edge concave. Remains of a horn handle on the tang extends over the shoulder, in one place covered by leather (from sheath?); the latter may be creased, or have embossed decoration. Another area of leather on the blade. Random organic material on the detached flake. L.105mm
RF 5375, Context 5314, Phase 2–3a.
- 2133 Cutting edge has slight S-shape. Tang incomplete. Random organic material on the blade. L.112mm. Metallurgy report. (Fig. 5.29)
RF 5386, Context 5314, Phase 2–3a.
- 2134 Cutting edge straight before curving up at tip. Trace of a horn handle on the tang; random organic material on the blade. L.93mm (Fig. 5.29)
RF 5449, Context 3758, Phase 4ii.
- 2135 Cutting edge has slight S-shape. Remains of a horn handle

- on the tang; random organic material including bone on the blade. L.114mm (Fig. 5.29)
RF 5480, Context 3758, Phase 4ii.
- 2136 Cutting edge straight. Semicircular notch at back of cutting edge. Tang tip missing. Traces of a horn handle on the tang. Possible remains of leather on the blade. L.70mm (Fig. 5.29)
RF 5485, Context 3758, Phase 4ii.
- 2137 Cutting edge has slight S-shape. A groove inlaid with copper alloy wire runs along the top of both blade faces. Trace of a horn handle on the tang, with straight edge on the blade. Wood survives on the blade, but probably random. L.80mm (Fig. 5.29)
RF 5516, Context 5033, Phase 2–3a.
- 2138 Cutting edge straight before curving up at tip. Charcoal and random organic material present. L.83mm
RF 5682, Context 5139, Phase 5a.
- 2139 Cutting edge has slight S-shape. Tang tip missing. Slight traces of random organic material – roots? L.58mm
RF 5766, Context 3107, Phase 4ii.
- 2140 Blade end missing. Cutting edge has very slight S-shape. Random organic material and charcoal survives. L.82; blade: L.47mm
RF 5889, Context 5553, Phase 5b.
- 2141 Blade tip missing, cutting edge has slight S-shape. L.90mm
RF 5963, Context 3758, Phase 4ii.
- 2142 Cutting edge straight before curving up at tip. L.152mm (Fig. 5.29)
RF 6055, Context 5885, Phase 5a.
- 2143 Blade and tang tips missing. Possible trace of horn on the tang; random organic material elsewhere. L.114mm
RF 6073, Context 6080, Phase 3bv–4ii.
- 2144 Blade tip missing. Cutting edge has slight S-shape. Trace of a horn handle on the tang. Random organic material on the blade. L.106mm (Fig. 5.29)
RF 6135, Context 3758, Phase 4ii.
- 2145 Blade tip missing. Cutting edge straight. Remains of a horn handle on the tang ends before the shoulder; these are overlain on one side by a degraded leather sheath. Wood strip on one side at cutting edge, with the grain along the length of the knife. Unfortunately, there is not enough information to say whether this represents the remains of a stiffener for the sheath, or is random. L.102mm
RF 6204, Context 6136, Phase 3bv.
- 2146 Blade end missing. Extensive remains of a horn handle on the tang; random organic material and charcoal on the blade. L.100mm
RF 6237, Context 5503, Phase 4ii.
- 2147 Blade end missing. Charcoal and random organic material present. L.90mm
RF 6395, Context 6235, Phase 3bv.
- 2148 Cutting edge straight before curving up at the tip. L.103mm
RF 6857, Context 6300, Phase 6iii–7.
- 2149 Blade only. Cutting edge convex. L.54mm
RF 7140, Context 7123, Phase 6iii.
- 2150 In two pieces. Cutting edge straight before curving up at the tip. Possible trace of horn on the tang; leather from the sheath on the blade of the detached flake. L.112mm
RF 7434/5, Context 6803, Phase 5b–6i.
- 2151 Blade only, tip missing. Horizontal groove along top of both blade faces. Random organic material present. L.81mm
RF 7458, Context 7523, Phase 3bi–3bv.
- 2152 Cutting edge S-shaped. Traces of a horn handle on the tang. L.163mm (Fig. 5.29)
RF 7854, Context 6343, Phase 6ii–6iii.
- 2153 Blade tip missing. Cutting edge straight. Remains of a horn handle on the tang extends over the shoulder. L.123mm
RF 7860, Context 6343, Phase 6ii–6iii.
- 2154 Cutting edge S-shaped. Tang tip missing. Fibrous organic material at bottom of the blade – leather? L.89mm (Fig. 5.29)
RF 8104, Context 8090, Phase 5a–5b.
- 2155 Blade end missing. Fibrous random organic material present – some of it charred. L.88mm
RF 8195, Context 6886, Phase 5a.
- 2156 Blade and tang tips missing. Cutting edge has slight S-shape. L.89mm (Fig. 5.30)
RF 8213, Context 8153, Phase 5b.
- 2157 Blade tip missing. Tang largely missing. L.86mm
RF 8319, Context 3989, Phase 6iii.
- 2158 Incomplete blade only. L.38mm
RF 9041, Context 3989, Phase 6iii.
- 2159 Blade and tang tips missing. Cutting edge straight before curving up at the tip. Charcoal and amorphous material which may be organic. L.111mm
RF 9426, Unstratified.
- 2160 Cutting edge straight. Charcoal present. L.81mm
RF 9439, Unstratified.
- 2161 Blade and tang tips missing. Cutting edge has slight S-shape. L.55mm
RF 9492, Unstratified.
- 2162 Blade tip missing. Cutting edge has slight S-shape. A little random organic material. L.71mm
RF 9679, Unstratified.
- 2163 Blade only, tip missing. Cutting edge straight. Random organic material – ? roots – and charcoal. L.57mm
RF 9686, Unstratified.
- 2164 Blade and stub of tang. Cutting edge slightly convex. Random organic material. L.60mm
RF 10490, Context 1836, Phase 6ii–6iii.
- 2165 Cutting edge straight before curving up at the tip. A groove inlaid with twisted silver and copper wires runs along the top of both blade faces. Seen from the tang the wires on the right face are S-twisted and those on the left face are Z-twisted. Another groove runs above the inlaid groove on the right side. Tang incomplete. L.56; blade: L.42mm (Fig. 5.30)
RF 10581, Context 3417, Phase 5b–6i.
- 2166 Cutting edge straight before curving up at tip. Remains of a horn handle on the tang. L.131mm
RF 10933, Context 10036, Phase 4i–5a?
- 2167 Blade tip missing. Cutting edge has slight S-shape. Tang largely missing. Leather sheath on both sides of the blade,

- decorated along cutting edge with two incised lines. Also evidence of the construction, with a stitch and possible stitch-hole from the seam; there may be two layers of leather. The sheath overlaps the remains of a horn handle on the tang. L.53mm
RF 11132, Context 3718, Phase 1b–3a.
- 2168 Cutting edge has slight S-shape. Remains of a horn handle on the tang ends before the shoulder, and is overlain on one side by a degraded leather sheath. Wood strip on one side at cutting edge, with the grain along the length of the knife; not enough information to say whether this is the remains of a stiffener for the sheath, or is random. L.102mm
RF 11563, Context 6235, Phase 3bv.
- 2169 Blade end missing. Cutting edge S-shaped. Random organic material present – large area of wood. L.139mm
RF 11646, Context 11631, Phase 3biii.
- 2170 Blade and tang tips missing. Cutting edge straight. L.68mm
RF 11936, Unstratified.
- 2171 Cutting edge S-shaped. Remains of a horn handle on the tang; charcoal and random organic material on the blade. L.77mm. Metallurgy report. (FIG. 5.30)
RF 12066, Context 6312, Phase 5a.
- 2172 Cutting edge S-shaped. Tang bent upwards slightly, tip missing. Remains of a horn handle on the tang line stops short of the shoulder; area of leather sheath survives on the blade. L.107mm (FIG. 5.30)
RF 12111, Context 6491, Phase 5a.
- 2173 Blade tip missing. Cutting edge S-shaped. Remains of a horn handle on the tang extends over the shoulder; remains of a leather sheath on the blade, which overlaps the handle. L.141mm. (Pl. 5.2).
RF 12167, Context 3758, Phase 4ii.
- 2174 Cutting edge straight before curving up at the tip. Trace of a horn handle on the tang, extends over the shoulder. L.142mm
RF 12303, Unstratified.
- 2175 Cutting edge has slight S-shape. Blade back has notch cut into rear. L.87mm
RF 12313, Unstratified.
- 2176 Blade tip missing. Cutting edge is slightly convex. Charcoal present. L.69mm
RF 12326, Unstratified.
- 2177 Cutting edge straight before curving up at tip. Tang incomplete. L.94mm
RF 12360, Unstratified.
- 2178 Blade and tang tips missing. Cutting edge S-shaped. X-radiograph shows groove at top of one or both blade faces. Trace of a probable horn handle on the tang. L.80mm
RF 12376, Unstratified.
- 2179 Blade tip missing. Cutting edge straight before curving up at tip. Tang incomplete. L.68mm
RF 12422, Context 10772, Phase 2–4ii.
- 2180 Cutting edge convex. Tang incomplete. L.69mm
RF 12432, Context 10772, Phase 2–4ii.
- 2181 Blade tip bent over. Cutting edge straight. L.90mm
RF 12475, Unstratified.
- 2182 Cutting edge straight before curving up at the tip. Stub of tang. L.90mm
RF 12532, Unstratified.
- 2183 Blade only. L.58mm
RF 12543, Unstratified.
- 2184 Blade and stub of tang. Cutting edge convex. Charcoal present. L.80mm
RF 12612, Unstratified.
- 2185 Bent at 90° at junction of blade and tang. Cutting edge straight before curving up at the tip. Small amount of random organic material present. L.50mm
RF 12691, Unstratified.
- 2186 Cutting edge has slight S-shape. Possible trace of horn on the tang. L.61mm
RF 13076, Unstratified.
- 2187 Incomplete blade only. Charcoal survives. L.57mm
RF 13109, Unstratified.
- 2188 Blade bent at 45° in centre. Cutting edge straight before curving up at tip. L.111mm
RF 13261, Context 5983, Phase 3biv.
- 2189 Blade only. Cutting edge has slight S-shape. Notch cut into rear of back. Charcoal present. L.92mm
RF 13519, Unstratified.
- 2190 Cutting edge has slight S-shape. Random organic material present. L.103mm
RF 13531, Unstratified.
- 2191 End of blade only. L.43mm
RF 13672, Unstratified.
- 2192 Blade and tang tips missing. L.88mm
RF 13679, Unstratified.
- 2193 Blade and stub of tang. Cutting edge has slight S-shape. Random organic material and charcoal present. L.82mm
RF 13764, Unstratified.
- 2194 In two pieces and obscured by corrosion. Heavy soil deposit, some charcoal. L.156mm
RF 13795, Unstratified.
- 2195 Bent in middle of blade and at junction of blade and tang. Blade tip missing. Notch cut into back of blade. Cutting edge has slight S-shape. L.106mm
RF 13909, Unstratified.
- 2196 Blade only. Cutting edge convex. L.81mm
RF 13993, Context 707, Period 2.
- BLADE BACK FORM C2 (FIG. 5.30)
- 2197 Bent in centre. Blade tip missing. Cutting edge has slight S-shape. Patch of corrosion with fibrous appearance in places – probably random organic material. L.78mm
RF 326, Context 1, Topsoil.
- 2198 Blade and tang tips missing. Cutting edge straight before curving up at tip. Remains of a horn handle; fibrous organic on the blade – stems or threads. L.89mm
RF 3493, Context 3346, Period 2.
- 2199 Cutting edge straight. Organic traces on the tang, possibly horn. L.58mm
RF 3841, Context 3989, Phase 6iii.
- 2200 Cutting edge straight. Tang tip missing. L.59mm
RF 4333, Context 3107, Phase 4ii.
- 2201 Cutting edge straight before curving up at tip. Random organic material on the blade. Possible handle traces,

- including (?) possible fibrous organic packing. L.74mm
RF 4391, Context 3989, Phase 6iii.
- 2202 Cutting edge straight before curving up at tip. Remains of a horn handle on the tang, extends over the shoulder. L.141mm (Fig. 5.30)
RF 10400, Context 2861, Phase 2i–4ii.
- 2203 Cutting edge S-shaped. Groove runs along top of left blade face. Slight traces of horn on the tang extend over the shoulder. L.100mm (Fig. 5.30)
RF 12008, Context 11835, Phase 0.
- 2204 Cutting edge slopes up from the junction with tang and is then straight. Random organic material and charcoal present. L.80mm
RF 12346, Unstratified.
- BLADE BACK FORM C3 (Fig. 5.30)
- 2205 Tang bent downwards. Cutting edge has slight S-shape. Slight traces of horn handle on the tang. L.87mm. Metallurgy report. (Fig. 5.30)
RF 3613, Context 3610, Phase 6ii.
- 2206 Cutting edge S-shaped. Remains of a horn handle on the tang, possibly overlain by leather. Random organic material on the blade. L.136mm (Fig. 5.30)
RF 5892, Context 5860, Phase 5a.
- BACK FORM C OF INDETERMINATE SUB-GROUP (Fig. 5.30)
- 2207 Blade only, tip missing. Cutting edge straight before curving up at the tip. L.50mm
RF 83, Context 70, Phase 5a.
- 2208 Blade tip missing. Cutting edge has slight S-shape. L.77mm
RF 1027, Unstratified.
- 2209 Incomplete blade only. L.44mm
RF 1044, Unstratified.
- 2210 In two pieces. Cutting edge S-shaped. Tang incomplete. Trace of probable horn handle on the tang. L.81mm
RF 2701, Context 2664, Phase 3bi–3bv.
- 2211 Blade tip missing. Groove runs along the top of both blade faces. Tang incomplete. Remains of a horn handle, extends onto the blade. L.76mm
RF 3315, Context 3107, Phase 4ii.
- 2212 End of blade only. L.37mm
RF 3655, Context 3281, Period 2.
- 2213 End of blade only. L.45mm
RF 3664, Context 3541, Phase 3bv.
- 2214 Incomplete blade only. Fibrous organic material survives. L.47mm
RF 3836, Context 3989, Phase 6iii.
- 2215 Blade tip missing. Charcoal and random organic material present. L.60mm
RF 3842, Context 3989, Phase 6iii.
- 2216 End of blade. L.30mm
RF 4123, Context 3107, Phase 4ii.
- 2217 Blade end missing. Groove runs along top of left blade face. L.76mm. Metallurgy report. (Fig. 5.30)
RF 4332, Context 3107, Phase 4ii.
- 2218 Blade end and tang tip missing. L.63mm
RF 4335, Context 3107, Phase 4ii.
- 2219 End of blade only. Possible leather traces. L.31mm
RF 5700, Context 5653, Phase 3biv.
- 2220 End of blade only. Fibrous random organic material present. L.31mm
RF 5721, Context 5139, Phase 5a.
- 2221 In two pieces. Cutting edge has slight S-shape. Random organic material survives on both fragments. L.c.177mm
RF 6123/4, Context 3758, Phase 4ii.
- 2222 Blade only. Cutting edge slightly convex. Traces of an organic handle on the tang, possibly horn. Fibrous organic material on the blade, but not clear. L.94mm
RF 6833, Context 6803, Phase 5b–6i.
- 2223 End of blade only. Random organic traces. L.22mm
RF 6974, Context 1145, Phase 6iii.
- 2224 Obscured by corrosion. Blade tip missing. Heavy deposit of soil and charcoal; nothing directly associated with knife visible. L.98mm
RF 7881, Unstratified.
- 2225 Blade end missing. Cutting edge concave. Considerable remains of a horn handle on the tang, extends over the shoulder, and is possibly overlain by leather and traces of leather on the blade from a sheath which may have covered the whole knife. L.83mm
RF 9277, Context 3107, Phase 4ii.
- 2226 End of blade only. L.31mm
RF 12154, Context 8232, Phase 0.
- 2227 Blade only. L.35mm
RF 12647, Unstratified.
- BLADE BACK FORM D (Fig. 5.30)
- 2228 Bent at c.45° at junction of blade and tang. Cutting edge convex. Tang appears roughly formed by twisting. L.91mm (Fig. 5.30)
RF 2808, Context 51, Phase 4ii.
- 2229 Tang incomplete. Trace of probable horn handle. Possible leather on the blade. L.54mm
RF 4890, Context 4889, Phase 1a.
- 2230 Cutting edge has slight S-shape. Traces of a horn handle on the tang, with possible guard at the shoulder. Probably random organic material on the blade. L.76mm
RF 5665, Context 5659, Phase 5b–6i.
- 2231 Cutting edge straight. Tang tip missing. Random organic material, some charcoal. L.76mm
RF 8573, Unstratified.
- 2232 Cutting edge has slight S-shape. Groove runs along top of left blade face. L.101mm
RF 9443, Unstratified.
- 2233 Cutting edge S-shaped. Remains of a horn handle on the tang extends over the shoulder; there could be very degraded leather on the blade, and overlying the top of the handle. L.121mm (Fig. 5.30)
RF 11133, Context 5983, Phase 3biv.
- 2234 Cutting edge S-shaped. L.96mm. Metallurgy report. (Fig. 5.30)
RF 12170, Context 10305, Phase 3bii–3bv.
- 2235 Cutting edge straight before curving up at tip. Tang incomplete. Trace of probable horn handle on the tang. L.85mm
RF 12334, Unstratified.
- 2236 Cutting edge has slight S-shape. Groove runs along top of left blade face. Remains of a horn handle on the tang, and

- traces of leather sheath on the blade, with random organic material over it. L.101mm
RF 12766, Unstratified.
- Knives of indeterminate blade back form*
- 2237 Incomplete blade only. L.76mm
RF 350, Context 1, Topsoil.
- 2238 Incomplete blade and tang. Possible traces of horn on the tang, possible indication of straight edge. L.78mm
RF 355, Context 1, Topsoil.
- 2239 Blade fragment. L.38mm
RF 410, Context 407, Phase 2i–4ii.
- 2240 Incomplete blade only. L.75mm
RF 896, Unstratified.
- 2241 Incomplete blade and tang. L.54mm
RF 1008, Unstratified.
- 2242 Blade end missing and tang largely missing. L.61mm
RF 1009, Unstratified.
- 2243 Blade largely missing, tang tip missing. L.42mm
RF 1089, Unstratified.
- 2244 Incomplete blade and tang. L.50mm
RF 1420, Context 1283, Phase 6iii.
- 2245 Blade and tang both incomplete. Organic traces on the tang, probably horn. L.42mm
RF 1571, Unstratified.
- 2246 Blade fragment. L.22mm
RF 1620, Context 1454, Phase 6iii.
- 2247 Blade and tang both incomplete. No clear organic material, but possible hint of extent of the handle, just onto the blade. L.67mm
RF 1979, Unstratified.
- 2248 Blade fragment. L.21mm
RF 2269, Context 72, Phase 5a.
- 2249 Blade fragment. L.26mm
RF 2696, Context 2611, Phase 5a.
- 2250 In two pieces, end of blade missing. No clear organic material, but probable indication of extent of handle at the end of the tang, just onto the blade. L.54mm
RF 2749, Unstratified.
- 2251 Incomplete blade only. Probably random organic material on the tang. L.54mm.
RF 2868, Unstratified.
- 2252 Incomplete blade only. Three fine grooves run along the right face and may also exist on the left, but this is obscured by corrosion. L.75mm
RF 2916, Unstratified.
- 2253 Incomplete blade, tang tip missing. L.38mm
RF 3026, Unstratified.
- 2254 Blade and tang both incomplete. Possible horn handle, extends onto the blade. L.49mm
RF 3094, Context 2860, Phase 2i–4ii.
- 2255 In two pieces. Blade and tang both incomplete. L.49mm
RF 3203, Context 1126, Phase 3bi–3bv.
- 2256 Blade and tang both incomplete. Remains of a horn handle which does not appear to extend beyond the tang. L.42mm
RF 3296, Context 1731, Phase 3a–3bi–3bv.
- 2257 Incomplete blade and tang. L.50mm
RF 3312, Context 3107, Phase 4ii.
- 2258 Blade fragment. Charcoal and random organic material present. L.35mm
RF 4072, Context 3891, Phase 6ii.
- 2259 Blade and tang both incomplete. Random organic material and charcoal present. L.44mm
RF 4127, Context 3989, Phase 6iii.
- 2260 Blade and tang both incomplete. L.43mm
RF 6685, Context 6471, Phase 6ii.
- 2261 Blade fragment.
RF 6715, Context 6300, Phase 6iii–7.
- 2262 Blade incomplete. Possible organic remains on the tang, but these were not identifiable. L.68mm
RF 6999, Context 6300, Phase 6iii–7.
- 2263 End of blade. L.36mm
RF 7939, Context 6343, Phase 6ii–6iii.
- 2264 End of blade. L.25mm
RF 8034, Context 7817, Phase 6iii.
- 2265 Blade fragment. L.39mm
RF 8249, Context 3989, Phase 6iii.
- 2266 Incomplete blade and tang. Some organic material, but mainly random. L.50mm
RF 8303, Context 3989, Phase 6iii.
- 2267 End of blade. L.33mm
RF 8395, Context 3989, Phase 6iii.
- 2268 End of blade. Fibrous organic material present. L.43mm
RF 8513, Context 8091, Phase 5b.
- 2269 Blade fragment. L.26mm
RF 8593, Context 3989, Phase 6iii.
- 2270 Blade fragment (knife?). Random organic material present. L.51, W.32mm
RF 8919, Unstratified.
- 2271 Blade only. L.125mm
RF 9127, Unstratified.
- 2272 Blade fragment. L.31mm
RF 9323, Context 3107, Phase 4ii.
- 2273 Incomplete blade and tang. Possible organic material, but amorphous. L.56mm
RF 9344, Unstratified.
- 2274 Blade fragment. L.35mm
RF 9521, Context 3107, Phase 4ii.
2275. Blade fragment. L.28mm
RF 9801, Context 3989, Phase 6iii.
- 2276 End of blade. L.27mm
RF 9819, Context 3107, Phase 4ii.
- 2277 Incomplete blade and tang. L.74mm
RF 10956, Unstratified.
- 2278 Blade fragment. L.46mm
RF 11997, Unstratified.
- 2279 Blade fragment. Charcoal and random organic material present. L.42mm
RF 12801, Unstratified.
- 2280 Blade fragment. A little random organic material survives. L.18mm
RF 12589, Unstratified.

- 2281 Blade and tang both incomplete. Random organic material present. L.46mm
RF 12859, Unstratified.
- 2282 Damaged blade only. L.43mm
RF 13248, Unstratified.
- 2283 Blade and tang fragment. L.36mm
RF 13357, Unstratified.
- 2284 Incomplete blade only. L.38mm
RF 13524, Unstratified.
- 2285 Blade fragment. L.33mm
RF 13573, Unstratified.
- 2286 Incomplete blade and tang. Random organic material and charcoal present. L.68mm
RF 13683, Unstratified.
- 2287 Blade fragment. X-radiograph shows groove runs along top of one face. Random organic material present. L.32mm
RF 13765, Unstratified.
- 2288 Blade fragment. L.42mm
RF 13801, Unstratified.

TANG

- 2289 Mineralised horn handle survives.
RF 12547, Context 12207, Phase 5a–5b.

Paring knives (Fig. 5.30)

These knives have blades of back form C which, seen from the tang, are curved to the left at 90° in the centre.

- 2290 Blade incomplete. Stub of tang. L.71mm (Fig. 5.30)
RF 5312, Context 3891, Phase 6ii.
- 2291 Cutting edge concave. Trace of a horn handle on the tang extends over the shoulder. Wood on the blade, but probably random. Possible leather on the blade, but very degraded. L.110mm (Fig. 5.30)
RF 5320, Context 3891, Phase 6ii.
- 2292 Cutting edge S-shaped. No organic material on the tang. Area of wood on the blade, with grain running across – probably random. L.144mm
RF 7869, Unstratified.

Incomplete knife

- 2293 Unfinished knife or one from which part of the cutting edge has been removed. Back is roughly straight, notch cut into it near shoulder. On left face a chisel-mark above the cutting edge. Cutting edge survives for c. one-third of length of blade from rear. Blade then tapers to a pointed tip and has a sub-rectangular cross-section. Traces of random organic material present. L.145; blade: L.95, W.17, Th.5mm
RF 5299, Context 5088, Phase 2–3a.

Knife with iron tang (Fig. 5.30)

- 2294 It has a short angle-backed (form A) blade. Behind the blade is a short neck and then an iron tang of oval cross-section. L.121mm (Fig. 5.30)
RF 11042, Context 11105, Phase 5b.

Pivoting knives

- 2295 Incomplete. Surviving blade has angle back. L.67, W.20mm
RF 624, Context 617, Phase 6iii.
- 2296 Both blades backs curve down towards the tips. Larger

blade incomplete. Possible traces of a leather sheath. L.124mm
RF 3783, Unstratified.

- 2297 Fragment. Both blades largely missing. L.40, W.11mm
RF 7068, Context 7055, Phase 6ii–6iii.

Other blade fragments

- 2298 Broken at both ends. L.35, W.23, Th.6mm
RF 1209, Unstratified.
- 2299 Incomplete. Curved back and straight cutting edge. L.46, W.39, Th.12mm
RF 4609, Unstratified.
- 2300 Fragment. L.27, W.19, Th.7mm
RF 6642, Context 6489, Phase 6ii–6iii.

Flesh forks (Fig. 5.31)

- 2301 Tine and stub of tang. L.106mm
RF 55, Context 1, Topsoil.
- 2302 Spirally-twisted tine and stub of tang, tine tip curved over. L.87mm (Fig. 5.31)
RF 3835, Context 3989, Phase 6iii.
- 2303 Tanged with three tines, tips curved over. L.77, W.30mm (Fig. 5.31)
RF 4170, Context 3107, Phase 4ii.
- 2304 Consists of two curving tines and a tapering tang. L.103mm (Fig. 5.31)
RF 4249, Context 3107, Phase 4ii.
- 2305 Tine and tang stub, tine tip curved over. L.78mm
RF 5383, Context 5314, Phase 2–3a.
- 2306 Incomplete tine. L.46mm
RF 8553, Unstratified.
- 2307 Tine and tang stub, tine tip curved over. L.75mm
RF 9494, Unstratified.
- 2308 Tine and tang stub, tine tip curved over. L.45mm
RF 9848, Unstratified.

Skewer (Fig. 5.31)

- 2309 A tapering strip with a loop at the head, tip curved back on itself. Upper third has a rounded cross-section and lower two-thirds a rectangular cross-section. L.312mm (Fig. 5.31)
RF 6696, Context 5983, Phase 3biv.

Strike-a-Light

- 2310 A triangular plate with a small looped terminal at each end. L.100, W.22mm
RF 13551, Unstratified.

Spatulate tools (Fig. 5.31)

They all have spatulate ‘blades’ and ‘tangs’ of rounded cross-section.

- 2311 ‘Blade’ is now incomplete, but was pierced by a round hole at each end and a channel running between them. ‘Tang’ incomplete. L.100mm (Fig. 5.31)
RF 353, Context 1, Topsoil.
- 2312 ‘Blade’ pierced by a round hole at each end and a channel running between them. L.139mm (Fig. 5.31)
RF 4660, Context 4638, Period 2.

- 2313 'Blade' pierced near the head, non-ferrous rivet *in situ*, moulding at the base. Stem is balustroid. L.50mm
RF 9079, Unstratified.
- 2314 'Blade' fragment; it was similar to RF 4660. L.40mm
RF 10488, Context 1838, Phase 6ii–6iii.
- 2315 'Blade' has a slot in the centre with thin wavy strip inset. Moulding at the head of the shank which is balustroid. L.126mm
RF 12853, Unstratified.

Appendix 1 – Metallographic examination of knife blades

by David Starley

Fourteen knife blades were selected on a judgement basis and examined visually, and by X-radiography, before sampling. The location of samples was noted on drawings of the artefacts (FIG. 5.32). As far as possible, for each knife one sample was cut from the edge of the blade and a second from the back. The sections were mounted in thermo-setting phenolic resin and prepared using standard metallographic techniques: grinding on successively finer abrasive papers and then polishing with 1µm grade diamond-impregnated cloths. Each specimen was examined on a metallurgical microscope in both the 'as polished' (i.e. unetched) condition, and after etching in 2% nital (nitric acid and alcohol).

A Shimadzu micro-hardness tester with 0.2kg load was used to determine the hardness of different phases within the metallographic structure. Where uniform hardness readings were obtained, three values were averaged for each area. When readings were less consistent, a mean of five values was used. These values not only assist in determining the impurity content and heat treatment history of the artefact, but also provide a direct measure of the effectiveness of the cutting edge of the blade.

Traditionally, blacksmiths had three types of iron available: ferritic iron, phosphoric iron, and steel. All three types contain slag inclusions. The properties and basic microstructure of these alloys are described below.

- *Ferritic iron*: Pure iron without significant impurities. Relatively soft and easily worked, but liable to bend in use, and ineffective as a cutting edge. Recognised in an etched microstructure as plain white crystals.
- *Phosphoric iron*: Even trace levels of phosphorous of the order of 0.1 to 0.3% entering the iron during smelting may significantly harden the iron without disadvantageously affecting the toughness. In an etched microstructure, phosphoric iron can be recognised by a ghosting effect, in which ferrite grains have a 'watery' appearance, with bright areas which may be difficult to bring into sharp focus with the microscope.
- *Steel*: Iron containing small amounts of carbon, typically 0.2 to 1%. It has advantages in being both tougher and harder than iron. Additionally, and very importantly, it can be further hardened by appropriate heat treatment. Heating followed by quenching in water

gives considerable hardness, but may make the artefact brittle. This can be avoided by subsequently tempering the artefact by reheating, but to a lower temperature than that from which it was quenched. Alternatively, a less severe 'slack' quench can be used, typically cooling in a less thermally conductive medium such as oil.

As well as determining the alloys used and the heat treatments applied to them, metallography allows the construction of the knife to be studied. The main requirement of a blade is that it should have a very hard cutting edge, so that it can be sharpened and will hold the edge. Secondly, the blade should be tough enough to prevent it breaking in use. Hardness should not be achieved at the expense of brittleness, and a wholly *martensitic* blade is not ideal. A skilful smith can combine steel and iron in a number of ways, such that the edge of the blade is composed of steel and can be hardened, but the main body of the knife, the 'back', is of a low carbon alloy that is not prone to brittleness. Such a composite blade has the additional advantage that steel, which until the modern era was an expensive commodity, could be used more sparingly.

Sometimes an additional requirement of knives was that they should be particularly aesthetically pleasing. The use of dissimilar metals, when polished and lightly etched, can give a distinctive appearance to the surface of the blade. No truly pattern-welded knives, however, were identified at Flixborough but some of the other metal combinations may have given a distinctive, if subtle, effect.

The typology for metallographic structures of knives used was that originated by Tylecote and Gilmour (1986), and further developed by McDonnell and Ottaway (1992). Of relevance to this report are the following types.

- 0 all ferrite (or phosphoric iron), no steel cutting edge.
- 2a steel cutting edge scarf-welded to ferritic or phosphoric back.
- 2b steel cutting edge butt-welded to the iron back.
- 4 steel forms a sheath around an iron core.

The results of the metallographic examinations are represented visually in PLS 5.3–5.8, and are summarised in FIG. 5.34 (above).

Overview of metallographic results

Metallographic examination of the Flixborough knives showed that the smiths had access to the three main alloys: ferritic iron, phosphoric iron and steel. Detailed description of the results for each sample can be seen in the Flixborough ADS archive. Generally, the level of craftsmanship is very high, showing skill in combining iron and steel to make composite blades and of heat treating the steel to achieve hard and effective cutting edges. Only two blades did not have steel edges – nos 2046 and 2234 (RFs 2234 and 12170). The latter was clearly very heavily worn and it is possible that it once had a steel edge, and that it was eventually worn away by re-sharpening. Although

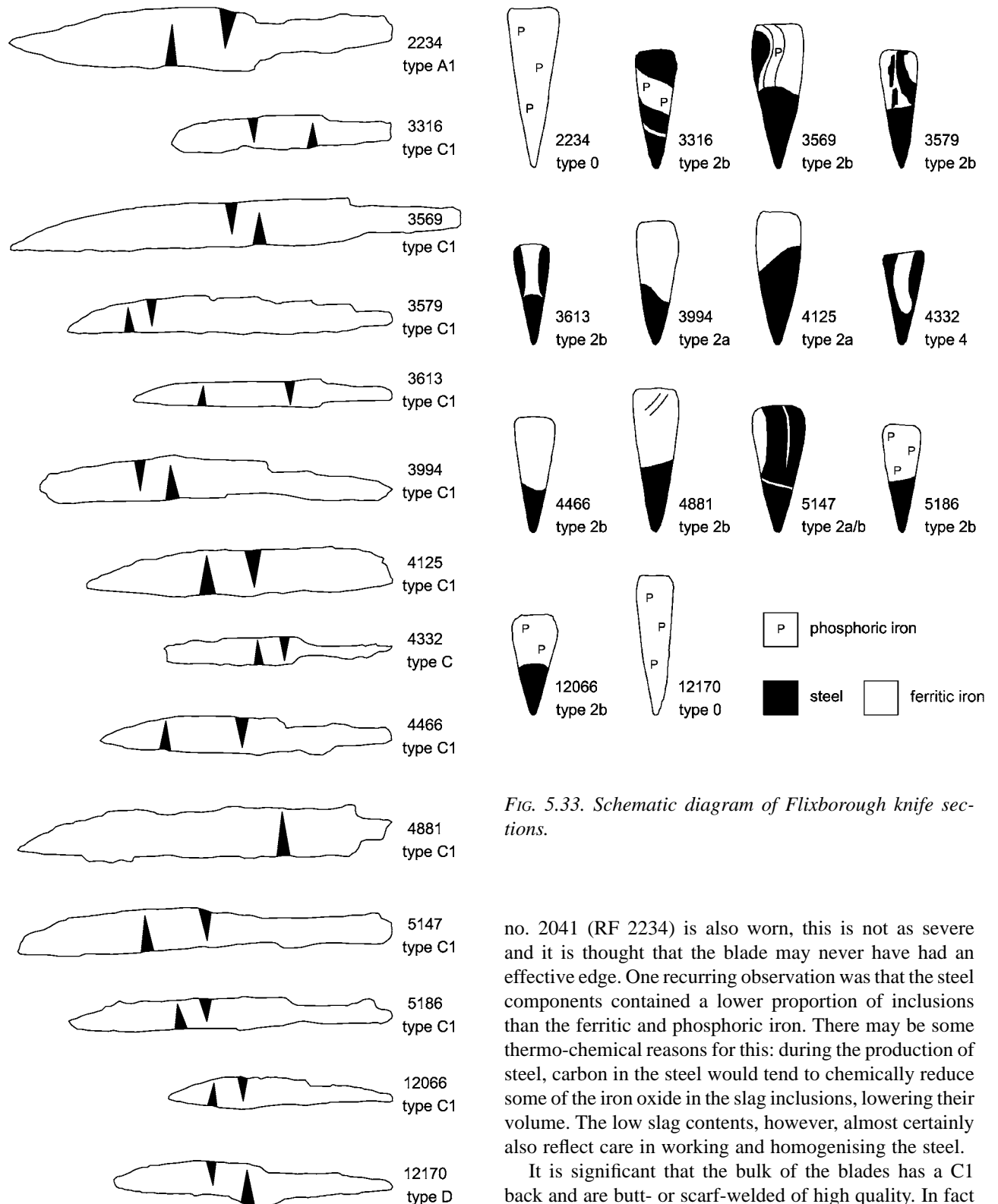


FIG. 5.32. Flixborough knives showing sample positions and back typologies.

FIG. 5.33. Schematic diagram of Flixborough knife sections.

no. 2041 (RF 2234) is also worn, this is not as severe and it is thought that the blade may never have had an effective edge. One recurring observation was that the steel components contained a lower proportion of inclusions than the ferritic and phosphoric iron. There may be some thermo-chemical reasons for this: during the production of steel, carbon in the steel would tend to chemically reduce some of the iron oxide in the slag inclusions, lowering their volume. The low slag contents, however, almost certainly also reflect care in working and homogenising the steel.

It is significant that the bulk of the blades has a C1 back and are butt- or scarf-welded of high quality. In fact there is a very close correlation between type C1 backs and butt-/scarf-welded edges. All 10 C1 knives have butt-/scarf-welded edges, the only other surviving butt-weld is the poorer quality, but similar, type C3 blade – no. 2041 (RF 2234). The three exceptional knives also have unusual structures: no. 2041 (RF 2234), with its angled back, has no steel; no. 2217 (RF 4332), a narrow tapered blade

RF No.	Cat. no.	AML sample Ref.	Back type	Blade type	Features	Hardness of edge $H_{v(0.2)}$
2234	2041	980039	A1	0		268
3316	2096	980040	C1	2b	Patterned back?	532
3569	2099	980041	C1	2b	Patterned back?	577
3579	2100	980042	C1	2b		578
3613	2205	980043	C3	2b	Poorer quality	379
3994	2112	980044	C1	2a		547
4125	2115	980045	C1	2a		567
4332	2217	980046	C	4		477
4466	2127	980047	C1	2b	Patterned back?	537
4881	2128	980048	C1	2b		532
5147	2129	980049	C1	2a/b		588
5186	2130	980050	C1	2b	Patterned back?	627
12066	2171	980051	C1	2b		650
12170	2234	980052	D	0		158

FIG. 5.34. Summary of metallographic examination of knife blades.

with a whittle tang, had a wrapped steel structure; and no. 2234 (RF 12170), with a rounded back, also contained no steel but it is possible that a former steel edge was lost by extensive sharpening.

One feature of most of the knives in this study was the existence of light etching lines, particularly where two components had been welded together. These are well known from other studies (e.g. Tylecote 1984), and past analysis has shown them to contain enriched levels of nickel or arsenic, which makes the metal more resistant to the etchant.

The construction of the knives can be compared with that of other assemblages. Material from Earlier Saxon sites on which similar studies have been carried out include Barrington, Cambridgeshire, and Empingham, Rutland. At the former site, knife construction was complex but steel was only a major part of the construction for 8 of the 17 knives examined (Gilmour and Salter 1998, 250–256). At Empingham, Weimer (1996) examined 12 knives which had a wide range of construction types, the most common being the type 4 steel-wrapped blade. Sites more contemporary with Flixborough have produced assemblages with similar balances of construction types. McDonnell (1987a, 1987b) examined 14 blades from *Hamwic* (Six Dials, Southampton). All were of steel, butt-welded to low carbon backs, with the exception of three. These three comprised an all-steel blade, an all-iron blade and one of indeterminate construction. Geographically nearer to Flixborough, McDonnell and Ottaway (1992) examined a range of artefacts from the Anglo-Scandinavian settlement at Coppergate, York. Most cutting tools contained steel edges and certainly, the earlier knives examined (mid 9th to early 10th century) were predominantly of the butt-welded type. Thus, whilst the knives from Flixborough are of high quality, the limited

studies from other sites show that the means of construction is typical of the period.

5.7 Bone and antler implements and utensils by Martin Foreman

Spoons and spatulate implements (FIG. 5.35; PL. 5.9)

The occupation deposits from Flixborough yielded a range of spoons and spatulae, of which the finest in terms of decoration and execution is spoon no. 2316 (RF 4135; FIG. 5.35; PL. 5.9). The leaf-shaped ‘knop’ terminal of spoon no. 2316 (RF 4135) has been compared to widely-used 8th-century designs, though this feature alone cannot date the object (Leahy 1991, 99–100). It might be seen as resembling either the leaf of plantain (*plantago lanceolata* L.) or the flower of henbane (?*Hyoscyamus reticulatus* L.), at least in so far as Later Anglo-Saxon manuscripts depicted these medicinal plants (Meaney 1981, 43–7). Leslie Webster kindly observes the form to be reminiscent of the leaf-shaped pickers on the ends of some Roman table implements, including spoons, which also generated versions in the early medieval period (cf. Wilson in Small *et al.* 1973, vol. 2, fig. 34, pls xxvi a, b; xlix, b). A similar spoon comes from a 9th-century site in Fore Street, Ipswich (Leahy *loc. cit.*). The tiny feature on the back rib recalls sculpted 9th-century animal heads from St Mary’s Church, Deerhurst, Glos. (Webster and Backhouse 1991, 185–8). The rounded bowl is unique among ‘spoons’ from Flixborough, though typical among Late Saxon spoons from Winchester, Hants. (Collis and Kjølbye-Biddle 1979). The object may accordingly fall towards the later part of the available mid-8th to early-9th-century date-range of its Phase 3bv context, 2722.

The other 'spoons' or 'spatulae' could all be double-ended implements. In metal, these may often be dated to the later Middle Saxon period, as from Southampton, Hants. (Keele and Roach Smith 1857, pl. 16, nos 3–5), Brandon, Suffolk (Webster and Backhouse 1991, 86, no. 66p; SFs 2323, 5485 and 4739), and Lurk Lane, Beverley, East Riding of Yorks. (A.R. Goodall 1991, 148, fig. 115 no. 616). A wooden spatula from a Middle or Late Saxon context at Skerne, East Riding of Yorks., is a rare survival representing many other such objects which will have perished on drier sites (Loveluck 2000, 234–5 and pl. 14; Hull and East Riding Museum, KINCM.58.1984). In no case would use with thin liquids seem credible for such 'spoons' – the bowls are too shallow. Heavy wear is often present, so a scraping use seems more likely, perhaps for honey or unguents. A pointed leaf-shaped form predominates for the bowls. This is seen as a feature of a later Roman spoon from Fishergate, York (Rogers 1993a, 1388, no. 5568). It recurs on an antler spoon from Lurk Lane, perhaps residual in a 10th- to 11th-century context, for which Scandinavian parallels are considered (Foreman 1991c, 185–6, fig. 128, no. 1125). The form more usually occurs in bone in England, particularly in Anglo-Scandinavian contexts (*ibid.*; MacGregor 1985, 182).

The earliest spatulate implement, no. 2317 (RF 10375; FIG. 5.35), comes from the refuse dump 6028, from Phase 3bii, dated to between the mid 8th and early 9th century. It retains both ends, and is robustly constructed with ribs to strengthen the spoon bowls. Bone fragment no. 2318 (RF 7439; FIG. 5.35) comes from the fill of foundation trench 7388 of building 24, from Phase 4i, which either implies its incorporation into the fill on demolition of the building, or disturbance of underlying refuse deposits. Implement no. 2319 (RF 5798; FIG. 5.35) comes from a dump of Phase 5b, 5553. A further object which appears to have served a similar function, no. 2320 (RF 10781; FIG. 5.35), is made from a pig fibula. This comes from a post-hole fill of Phase 4i–4ii, 10791. The early–mid 9th-century date of this context relates the object to most of the implements considered above. Similar objects made from pig fibulae come from 9th- to 11th-century deposits at Flaxengate, Lincoln (Mann 1982, 20, fig. 19, nos 144–5). Spatulae also come from Middle Saxon deposits at Shakenoak, Oxon., and, like this object, appear to be formed by the gentle expansion of the handle (Brodrick *et al.* 1972, 122, fig. 59, nos 71–2). Horse-bone spoons from Thetford are also similar in form, though more robust (Rogerson and Dallas 1984, 182, fig. 198, nos 88–90).

Undecorated points of scantily worked sheep-bone are common from Anglo-Scandinavian and later contexts, particularly in towns (e.g. Foreman 1991c, 187–8, fig. 130 nos 1145–52). Object no. 2321 (RF 12331; FIG. 5.35), however, is more carefully fashioned to form a scoop. Functions as apple corers or cheese scoops have been suggested, though the material appears too delicate to survive such use (MacGregor 1985, 180, fig. 97). Most such scoops, moreover, retain the distal end, rather than

the proximal end as here. This object comes from the fill of foundation trench 12245 from building 9, which was standing in the later stages of Phase 3b, between the mid 8th and early 9th century. This tends to associate it more closely with the implements considered above, perhaps serving a similar function with unguent. To conclude, lighter spoons and spatulae would appear to date to the Middle Saxon period. More robust examples could be residual, or might rather represent the development of the type in the early Anglo-Scandinavian period. Of the group, only spoon no. 2316 (RF 4135) is so finely finished to suggest anything other than day-to-day use.

Lid (FIG. 5.36)

The ring-and-dot used to decorate finely worked antler lid no. 2322 (RF 5246; FIG. 5.36) appears rarely on objects of bone and antler at Flixborough. It is a prominent decorative motif among the Frisian terp finds (Roes 1963). A cruciform arrangement is rarer; its occurrence in Frisia has been ascribed to Christian Frankish influence, and has been discussed in the light of the amuletic properties ascribed to antler (*ibid.*, 30, pl. 34, no. 11; 71–4; Meaney 1981, 139–42). The design of no. 2322 (RF 5246), with decoration extended between the arms of a cross motif, may relate this piece to the schemes decorating the lids of 'work boxes' (Meaney 1981, 185). These occur in later-7th-century graves, worn suspended from women's girdles. Three are known from Castledyke South, Barton-upon-Humber, in one case – late 7th-century Grave 183 – linked by an iron chain to an antler disc decorated with ring-and-dot (Drinkall and Foreman 1998, fig. 113, no. 9). Work boxes have been linked to the carrying of herbs and other materials, whose magical and curative value was highly regarded in Middle and Late Saxon times (Meaney 1981, 38–65, 184–9). The Flixborough lid appears to have been designed for suspension by its top loop, and presumably fitted a small container that was readily worn or carried. Fibrous organic material associated with the Flixborough lid may hint at the similar nature of its contents. The perforated handles of some Late Saxon combs have likewise been suggested to have carried either fragrant or prophylactic herbs (Riddler 1998), though this object is too large to be associated with combs found at Flixborough (this volume, Ch. 1.10). Its dating remains questionable. If derived from a variant type of work box, it should be residual in its Phase 6ii dump (3891). If related more closely to later types of pomander comb, the context would provide an apt date in the mid 10th century.

Mount (FIG. 5.36)

The flattened reverse and chamfered-end of mount no. 2324 (RF 5231; FIG. 5.36) suggest that it decorated a box or casket, as part of a more extensive scheme. It was attached by a domed rivet, and comes from early to mid 10th-century dump 4322 of Period 6. The early medieval use of such mounts is reviewed by MacGregor (1985, 197–200, fig. 107). Flixborough piece no. 2324 (RF 5231) represents

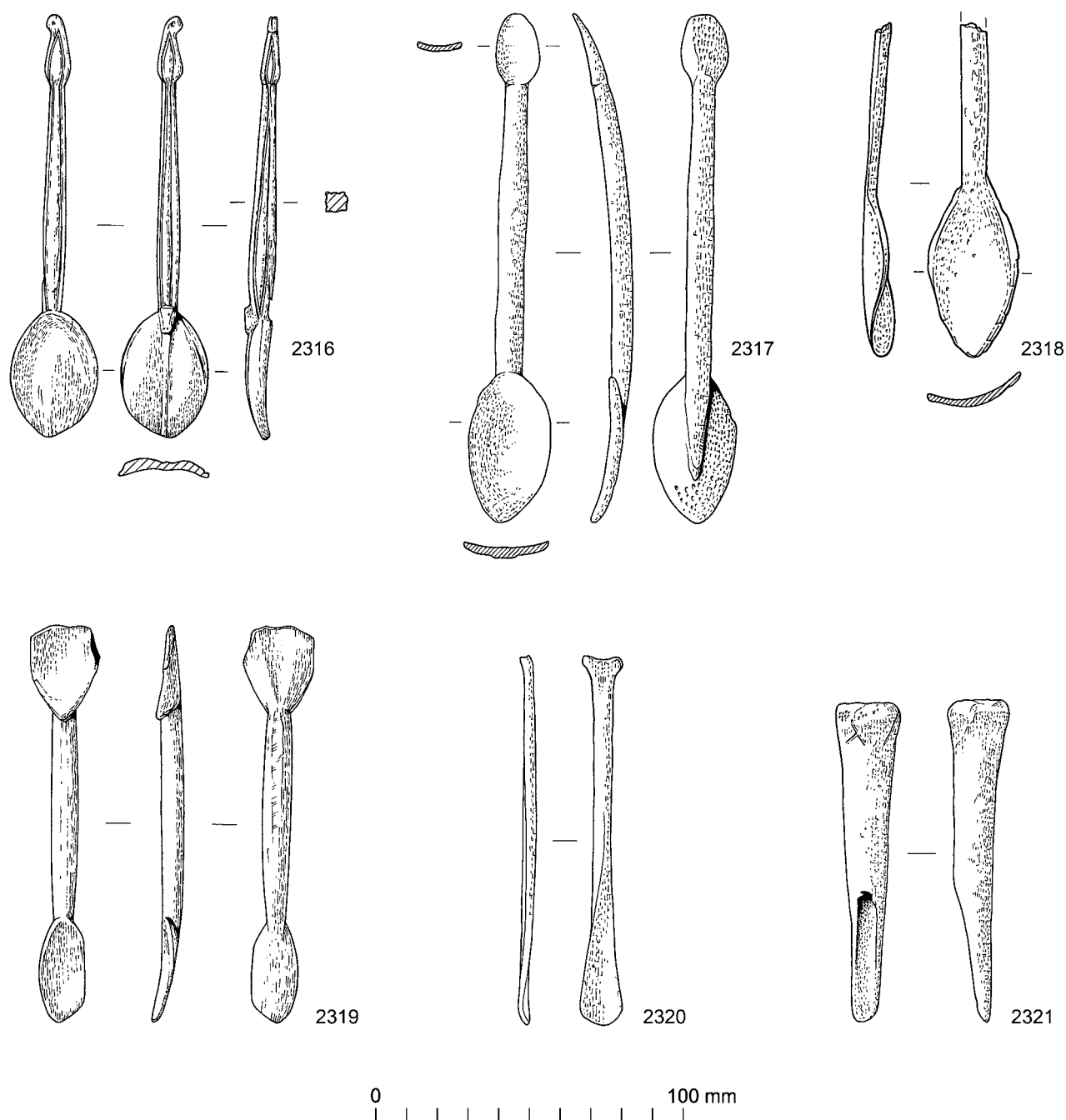


FIG. 5.35. Bone and antler spoons and spatulate objects. Scale 1:2.

the simplest form of such ornament; and this recurs on a 10th–12th-century bone mount from Flaxengate, Lincoln (Mann 1982, 18–19, fig. 16, no. 134). Comparable mounts from Coppergate, York were most commonly 11th century or later in date, though occasionally present in 10th-century contexts (MacGregor *et al.* 1999, 1954–9, fig. 915). The

quality of finishing on the Flixborough piece is striking, though the decoration is simple. Its interruption by the polishing or shaping of the edge of the mount might hint at its resetting or reuse. Double ring-and-dot is noted on a casket mount of similar form from Thetford (Rogerson and Dallas 1984, 182, fig. 199, no. 104).

Tooth

A well-worn tooth, no. 2325 (RF 3908), from late 7th–mid-8th-century Phase 2–3a pit-fill 3689 appears to have been suspended, for a long while to judge from its smoothing, by a nick in the upper enamel. A function as a small toggle might also be entertained. A pair of similar objects was found in medieval deposits at Eastgate, Beverley, together with other residual finds, and an amuletic use was considered (Foreman 1992, 167, fig. 84, nos 510–11; Meaney 1981). This has also been suspected in a few graves at the Castledyke cemetery, Barton-upon-Humber, where teeth or dentiform objects might have been carried by individuals wishing to ward off toothache (Drinkall and Foreman 1998, 289). Human teeth have also formed an occasional component of Early Anglo-Saxon grave assemblages elsewhere (Cook and Dacre 1985, 24; Meaney 1964, 41).

Other utilised bone

A trimmed pig femur head, no. 2326 (RF 9330), comes from the Phase 3bv dump 5617, dated to between the mid 8th and early 9th century. Casual knife-trimming gives its wider surface a dentilated appearance, and a flat base. The fragile nature of the bone forbids a mechanical function, so this treatment must decorate or distinguish the object. It is accordingly identified as a playing piece, albeit one of unlovely form. The size of the object tends to relate it to the plano-convex counters familiar from Romano-British and Anglo-Saxon contexts (MacGregor 1985, 132–4). The distinction of a piece would be a requirement of various board games. This may be compared with the castellated top of a small chalk object from Lurk Lane, Beverley, found in a 12th-century horizon (Foreman 1991a, 108, fig. 92, no. 75). Another pig femur head, no. 2327 (RF 6120), is identified as butchery waste.

A thin curving goose bone, no. 2329 (RF 3382), bears surface polish which initially suggested a use with textiles. It comes from an 8th-century occupation deposit of Phase 3bi. Penelope Walton Rogers examined this piece, but was unable to arrive at an identification of the object as any form of tool, but she kindly provided the following pertinent references. She suggests a possible use for such objects alongside other smoothers in the laundering of linen (cf. Noss 1965, 97–9, fig. 3). A further two fragments of flattened bone, no. 2330 (RF 14337), from a jawbone, and no. 2331 (RF 13276) from a cattle rib, bear jagged V-shaped notches forming ‘teeth’ along one edge. They come from dumps of Phases 4ii and 6ii. The conservator suggests these to be waste from bone-working, a category of material which – with the significant exception of small pins – is absent at Flixborough. Penelope Walton Rogers comments that these could represent the teeth of implements used either for the scutching of vegetable fibres or the carding of wool.

A flat tool of antler, no. 2332 (RF 11367), bearing three perforations at its knife-trimmed end, was perhaps used for working with or plying cord, though again it

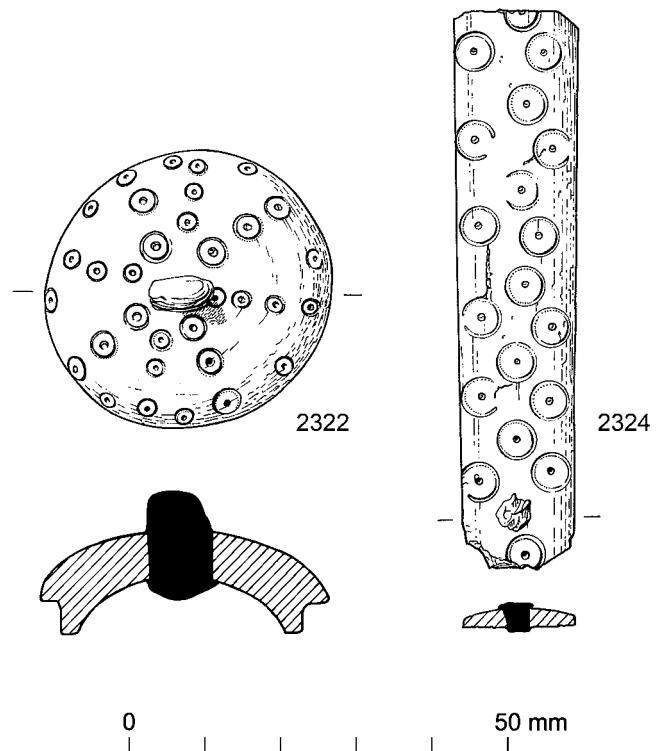


FIG. 5.36. Bone and antler lid and mount. Scale 1:1.

does not resemble known textile-working tools. It comes from a Phase 3b post-hole. The broken perforated end may originally have borne two blunt prongs, of which one survives. As well as losing its putative prong, the object has also split longitudinally across its two smaller holes. A function as a netting tool would perhaps be feasible, though a lack of glossing must again introduce doubt as to how much use this object saw.

Catalogue

Spoons and spatulate implements (FIG. 5.35; PL. 5.9)

2316 Spoon.

Material: Large mammal long-bone, possibly metapodial.

Form: Carved from a single piece of bone. A lightly tapering handle of sub-rectangular section bears deeply incised lines defining rounded ribs along each edge, and a blank lentoid field on each of its four sides. This scheme is repeated on the four sides of a leaf-shaped knob. At its end, a flat sub-circular terminal is offset, with a single inscribed dot on its flattened upper and lower surfaces. At the other end, on the back of the spoon, this scheme halts at a tapering rib which runs along the full length of a gently concavo-convex bowl, which swells gently on either side of the rib. The widest part of the rib (L.7.8mm) bears three tiny dots, perhaps suggesting an eye and a pair of nostrils of an animal head. On its upper surface, the bowl is separated from the handle by a well-defined shoulder. Wear on the side of the bowl, towards its tip, suggests

right-handed use. Polished or worn overall, particularly on the handle, and lightly abraded.

Size: Overall L.136.5mm, L. of bowl 39.5mm, Max. W. of bowl 28.2mm, D. of bowl c.5mm, Max. W. of handle 7.6mm, Max. Th. of handle 8.1mm, L. of knop c.22.0mm. (FIG. 5.35; PL. 5.9)

RF 4135, Context 2722, Phase 3bv.

2317 Double-ended spoon/spatula.

Material: Large mammal long-bone shaft.

Form: A knife-cut rounded handle, smoothed, with a leaf-shaped slightly concave spatula at one end, and a pointed leaf-shaped slightly concave spoon bowl at the other; both ends are shouldered. A narrow triangular rib has been left to strengthen the junction of handle and spoon bowl, running three-quarters of the way towards its tip. The slight asymmetry towards the tip of the spoon bowl may arise from right-handed wear, though the other side of the bowl appears slightly thinner, perhaps from use for scraping or by a left-handed person. Polished or worn, particularly on the handle. Now in two pieces, broken a little towards the spatulate end.

Size: Overall L.c.164mm, L. of bowl 49.1mm, Max. W. of bowl 26.8mm, Max. D. of bowl c.7mm, L. of spatulate end 22.7mm, Max. W. of spatulate end 14.7mm, Max. W. of handle 9.1mm, Max. Th. of handle 7.7mm. (FIG. 5.35)

RF 10375, Context 6028, Phase 3bii–3v.

2318 Spoon or implement fragment.

Material: ?Cattle or ?horse scapula.

Form: Leaf-shaped gently concave spoon bowl joined without interruption to a thin handle of sub-rectangular section; other end lost. Handle lightly worn or polished, as are the edges of the spoon bowl. The slightly asymmetrical form may suggest heavy left-handed wear.

Size: Overall L.106.6mm, L. of bowl c.55mm, Max. W. of bowl c.27.3mm, Max D. of bowl c.5.5mm, Max. W. of handle 7.8mm, Max. Th. of handle 3.4mm. (FIG. 5.35)

RF 7439, Context 7388, Phase 4i.

2319 Double-ended spoon/spatula.

Material: Cattle or horse metapodial.

Form: A knife-cut rounded handle, smoothed, with a slightly concave leaf-shaped spatula at one end, and a broken originally ?leaf-shaped slightly concave spoon bowl at the other, both separated from handle by a shoulder, that at the spoon bowl becomes pronounced. The latter bears a trace of a thin inscribed line which may formerly have delineated the hollow part of the spoon bowl. The spatulate end is heavily worn on one side, suggesting right-handed use. The spoon bowl is similarly worn on what appears to be its broken end, showing that right-handed use continued after the putative end of the spoon had been lost. Polished overall.

Size: Overall L.c.127.0mm, L. of bowl (now) 30.4mm, Max. W. of bowl (now) 22.2mm, Max. D. of bowl 8.2mm, L. of spatulate end 33.3mm, Max. W. of spatulate end 14.9mm, Max. W. of handle (close to mid-point) 8.5mm, Max. Th. of handle 7.8mm. (FIG. 5.35)

RF 5798, Context 5553, Phase 5b.

2320 Spatula.

Material: Right pig fibula.

Form: Proximal end of bone has been slightly modified to form a widened spatulate end. Distal end widens naturally,

and is knife-trimmed on upper and lower surfaces; light “chattering” scars on back of handle show this, too, to have been lightly worked. Lightly polished or worn, particularly on handle.

Size: Overall L.c.12.5mm, Max. W. of spatulate end 13.5mm, Max. W. of handle 5.9mm, Max. Th. (at mid-point of handle) 4.1mm. (FIG. 5.35)

RF 10781, Context 10791, Phase 4i–4ii.

2321 Scoop or point.

Material: Sheep metatarsal (ID confirmed by T. P. O'Connor),

Form: Shaft cut obliquely, producing a narrow scoop. Cut surfaces smoothed. Object worn overall, and abraded at proximal articular surface; this rather than drilling has probably produced a hole at the articular surface.

Size: Overall L.c.103mm, L. of scoop c.42.0mm, Max. W. c.22.0mm, Max. Th. c.20mm (both the latter at proximal end). (FIG. 5.35)

RF 12331, Context 12245, Phase 3a.

Miscellaneous objects (Fig. 5.36)

2322 ?Lid.

Material: Red deer antler beam.

Form: Sub-circular concavo-convex object with a central copper alloy loop placed centrally. A lipped lid seat on the underside suggests that the object capped a tubular container. A (?) split shank (?) passes from the loop through the top of the lid, and apparently through a small rectangular copper alloy plate, its end perhaps splaying to enable the latter to serve as a rove. Fibrous organic material is trapped in the loop on the top of the object, and survives adjacent to the copper alloy fitting on its underside. Upper surface originally polished, now lightly abraded.

Decoration: Twelve compass-drawn ring-and-dot (D.4.0mm) are arranged in a slightly irregular cruciform pattern on the top of the lid, with the copper alloy loop at its centre. Four rows of three smaller ring-and-dot (D.3.0mm) radiate from the centre, positioned between the arms of the cross. A further eight similar ring-and-dot lie round the edge of the lid, each one flanked by radiating arms.

Size: Max D.37.3mm, lid seat D.31.2mm, H.12.0mm, loop H (exposed) c.4.1mm, loop W.c.7.6mm, loop Th.c.3.4mm. (FIG. 5.36)

RF 5246, Context 3891, Phase 6ii.

2323. ?Cylindrical bead.

Material: Bird, smaller than domestic fowl, mid-shaft of tibiotarsus, with natural fractures top and bottom (T. P. O'Connor).

Form: Tiny bone cylinder, white colour, though not so fragile as to suggest this is burnt; possibly unworked.

Size: L.4.9mm, D.c.3.0mm, D. central perforation 2.5mm. RF 682, Context 617, Phase 6iii.

2324 Mount

Material: ?Cattle rib.

Form: Slightly tapered rectangular strip, broken at narrower end. Reverse is lightly smoothed. Wider end has angled corners, and is chamfered – possibly so as to achieve a butt joint? Other edges and display face polished overall. Iron rivet (D.3.0mm) with domed head (D.c.4mm) runs through strip at other end.

Decoration: Eighteen ring-and-dot (D. 5.0mm) distributed

- across a polished display face; regularly spaced along one long edge, and possibly in pairs angled from the other. A ring-and-dot is truncated by the chamfered edge at the wider end.
Size: L.72.2mm, W.11.3–9.8mm, Th.2.4mm. (FIG. 5.36)
RF 5231, Context 4322, Phase 3bi–4.
- 2325 Worked tooth.
Mammal, species not identified.
Form: Small heavily worn tooth, with a smoothed nick – possibly for a suspension cord?
Size: L.24.0mm, D.11.0mm.
RF 3908, Context 3689, Phase 2–3a.
- 2326 ?Gaming piece.
Material: Pig femur head.
Form: Trimmed femur head, flattened on upper and lower surfaces, with twelve knife-cut triangular notches (one lost through breakage) on its wider surface.
Size: Max. D.24.7mm, H.9.0mm.
RF 9330, Context 5617, Phase 3bv.
- 2327 Butchery waste.
Material: Immature pig femur head.
Form: Trimmed femur head, chopped but otherwise unworked. Sonia O'Connor comments this is probably butchery waste.
Size: Max. D.22.3mm, Max. H.9.3mm.
RF 6120, Context 3758, Phase 4ii.
- 2328 Button fragment.
Material: Large mammal long-bone.
Form: Turned button, sunken centre bearing two drilled holes.
Size: D.c.17mm, Max. Th.2.7mm.
RF 172, Context 1, Topsoil.
- 2329 Utilised fragment.
Material: goose furcula.
Form: Naturally formed, glossed overall, broken.
Size: L.c.72mm, Max. W.c.45mm.
RF 3382, Context 3331, Phase 3b.
- 2330 Worked bone fragment.
Material: Cattle mandible, ?naturally fractured.
Form: V-shaped cuts at edge produce two 'teeth', L.c.4mm. Other edges broken.
Size: L.55.0mm, Max. W.19.0mm, Th.5.2mm.
RF 14337, Context 5503, Phase 4ii.
- 2331 Worked bone fragment.
Material: Large mammal, probably cattle, split rib.
Form: V-shaped cuts at edge produce three 'teeth', L.c.4mm. Other edges broken.
Size: L.27.2, Max. W.9.7mm, Th.c.3mm.
RF 13276, Context 3891, Phase 6ii.
- 2332 ? Netting tool.
Material: Antler beam.
Form: Straight flat strip, broken at one end, with indented side and a blunt knife-cut prong at the other; second prong perhaps lost. Three perforations are aligned at the pronged end, and object has split longitudinally across the smaller ones (D.1.8mm and D.2.0mm) as far as the larger, ovoid, perforation, Max. L.4.6mm. Possibly lightly smoothed towards prong.
RF 11367, Context 6952, Phase 3bii.

5.8 Hones and sharpening stones

by Lisa M. Wastling, with contributions
by Geoff Gaunt

Nineteen hones were found, all of which were of sandstone. Their size and shape varied widely, though three broad categories could be identified: bar-shaped (nos 2335–6, 2338, 2340–3, 2350 and 2352; RFs 14264, 2758, 10917, 5441, 6835, 8096, 14054, 8731 and 50003); slab-like (nos 2333, 2337, 2339, 2345, and 2347–9; RFs 8346, 2132, 14265, 14284, 2193, 14266, and 31); and irregular (nos 2344, 2346 and 2351; RFs 14283, 1624, and 10921). The irregular hones are likely to be 'secondary' hones, that is re-used stones whose primary function was different, such as querns or building stone. Of the irregular hones, no. 2344 (RF 14283) was possibly a re-used quern fragment. One of the identified quern fragments, no. 2373 (RF 1786), had also seen secondary use as a hone (Wastling, in Chapter 6, below).

Two types of wear can be seen: transverse, made with a blade across a surface, and grooves resulting from the sharpening of points.

Nine hones display grooves – four bar-shaped, three irregular and two slab-like examples. This use may relate to activities such as textile-working, leather-working, and fishing, all of which required the maintenance of sharp points on artefacts such as needles, awls and hooks. The fact that some of the grooves are V-shaped, and some are U-shaped, indicates the differing point profiles of the objects sharpened. One hone (no. 2351; RF 10921) bears both types of grooves on adjacent faces.

One stone (no. 2334; RF 14286) bears a series of six longitudinal grooves, and has been smoothed on all surfaces, but does not show the characteristic transverse wear from sharpening blades. This has been tentatively classified as a sharpening stone, though for what material is unclear. The pestle (no. 3358; RF 5342) has also had additional use as a makeshift point sharpener, bearing two V-shaped grooves and striations on one side (see Wastling, Romano-British material in Ch. 14, below). Both of these objects possess lithologies too soft for the sharpening of metals.

No. 2340 (RF 5441) shows fine, uniform transverse wear, from careful use, and also has a shallow longitudinal groove and some scratches on one lateral face. It appears to be the wedge-shaped remnant of a treasured, well-used hone which has been worn so thin, it has finally broken (FIG. 5.37). Only one example was perforated (no. 2342; RF 8096), and had broken across the perforation; the main body of the hone probably continued in use. A phyllite hone from Flaxengate, Lincoln, had broken in this way and subsequently been re-drilled (Mann 1982, fig. 28, 259). A perforated sandstone hone from Ribe (Denmark) had also broken in the same way (Myrvoll 1991, fig. 4, D3093).

Four of the hones display a reddish-brown waxy looking deposit, probably resultant from sharpening blades using oil, wax, or fat as a whetting agent. This residue was

examined at $\times 20$ magnification, whereupon it appeared ferrous in nature. A sample was removed from no. 2346 (RF 1624), which also proved to be magnetic. This deposit appears to be an admixture of the whetting agent and minute fragments of metal which have become detached during honing.

The date range of the hones is from the 8th to the 12th–14th centuries. The majority were recovered from 9th- and 10th-century dumping phases, though they are likely to have been re-deposited, and were possibly used earlier than their phasing suggests. This would seem to be supported by the fact that no hones of Eidsborg Schist were present in the assemblage. The trade in this stone, originating from the Telemark area of Norway, underwent a period of expansion commencing in the early 10th century (*ibid.* 1991, 132). Its occurrence in a late 9th-century context at Flaxengate, Lincoln (Mann 1982, 30) possibly relates to Scandinavian settlement. At Fishergate, York, the sandstone hones were the only type used during the Anglian period, with the imported Norwegian material appearing during the late 10th century (Rogers 1993a, 1315). The assemblage make-up from Flixborough would seem to be consistent with this pattern.

A note on the geology of the hones

by Geoff Gaunt

One hone stone (no. 2340, RF 5441) has a lithology characteristic of a Lower Palaeozoic greywacke conforming to hone-petrographic group IIA or B of Ellis (1969), probably from the Scottish Southern Uplands or Cumbria. The rest are sandstones typical of Carboniferous and Jurassic sources. One (no. 2342, RF 8096) suggests opportunistic use of a Millstone-Grit erratic from the Middle Tyne area, and two others (nos 2344 and 2351, RFs 14283 and 10921) may be re-used Crinoid Grit quern fragments, but the lithologies of the remaining sandstone hones are too nondescript, i.e. without any distinctive aspects, to suggest other than the Coal Measures of West Yorkshire and South Yorkshire and the Middle Jurassic of north-eastern Yorkshire as the most likely sources. However, nine of these remaining items have lithologies (typified by no. 2349, RF 31) so precisely identical that they must have been derived from the same stratigraphical source, and from the same location or closely adjacent locations.

Catalogue (Fig. 5.37)

Lithological identifications are by Geoff Gaunt

2333 Hone fragment

Material: Sandstone, Coal Measures or Middle Jurassic.
Form: Irregular, slab-like, with both lateral, smoothed faces and one original edge extant. One face has more wear than the other, is slightly dished, and bears a hard waxy looking deposit on the surface. (Fig. 5.37).
Size: L.68mm, W.64mm, Th.22mm.
RF 8346, Context 8328, Phase 3a.

2334 Sharpening stone

Material: Limestone, basal part of Scunthorpe Mudstones.

Closely comparable to non-bioclastic part of padstone 3188.

Form: Sub-rectangular block, broken at both ends. One flat surface bears five, roughly parallel and evenly spaced, V-shaped longitudinal grooves and a sixth slightly offset. This seems to have been used for point sharpening, though the lithology would not be particularly useful for sharpening metals, being too soft. The reverse flat side bears a line of dark red pigment 3mm by 37mm, and another small dash of pigment. Not illustrated.

Size: L.122mm, W.100mm, Th.61mm.

RF 14286, Context 11663, Phase 3biii.

2335 Hone fragment

Material: Sandstone, Coal Measures or Middle Jurassic.
Form: Bar-shaped small personal hone, slightly tapered, with both ends broken. Rectangular in section. Smoothed on all unbroken surfaces. Not illustrated.

Size: L.27mm, Max. W.24mm, Th.8.5mm.

RF 14264, Context 221, Phase 2–4i.

2336 Hone fragment

Material: Sandstone, Coal Measures or Middle Jurassic.
Form: Bar-shaped, tapered, broken at its narrower end, flattened and smoothed at the other. Sub-rectangular in section, though chamfered at the corners towards the narrow end, presumably through wear. Not illustrated.

Size: L.40mm, W.27–30mm, Th.20–24mm.

RF 2758, Context 223, Phase 4ii.

2337 Hone fragment

Material: Sandstone, Coal Measures or Middle Jurassic.
Form: Slab-like with both lateral, slightly dished surfaces and one original edge extant. All are smoothed and bear a hard, reddish-brown waxy deposit in places. Not illustrated.

Size: L.100mm, W.83mm, Th.33mm.

RF 2132, Context 1650, Phase 5a.

2338 Hone fragment

Material: Sandstone, Coal Measures or Middle Jurassic.
Form: Bar-shaped, with one convex and one concave side. Both ends broken. Rectangular in section. Smoothed on all unbroken surfaces, most markedly along the sides. A small area on one of the lateral faces shows longitudinal striations from 'point sharpening'. (Fig. 5.37).

Size: L.101mm, Max. W.46mm, Max. Th.14mm.

RF 10917, Context 10870, Phase 5a–5b.

2339 Hone fragment

Material: Sandstone, Coal Measures or Middle Jurassic.
Form: Slab-like, tapered, broken at both ends, with a rectangular section. All original surfaces are smoothed. Not illustrated.

Size: L.43mm, W.58–70mm, Th.19mm.

RF 14265, Context 12057, Phase 5a–5b?

2340 Hone fragment.

Material: Sandstone, Lower Palaeozoic, probably from southern Scotland or Cumbria. Conforms to Ellis' hone-petrographic group IIA or B (Ellis 1969).

Form: Bar-shaped, worn thin, with one flat and one convex side, broken at one end and tapering towards a point (tip lost) at the other. Plano-convex in section. All surfaces except broken ends are smoothed by heavy wear and display fine slightly angled striations as a result of careful wear. The flat lateral surface also has a longitudinal groove

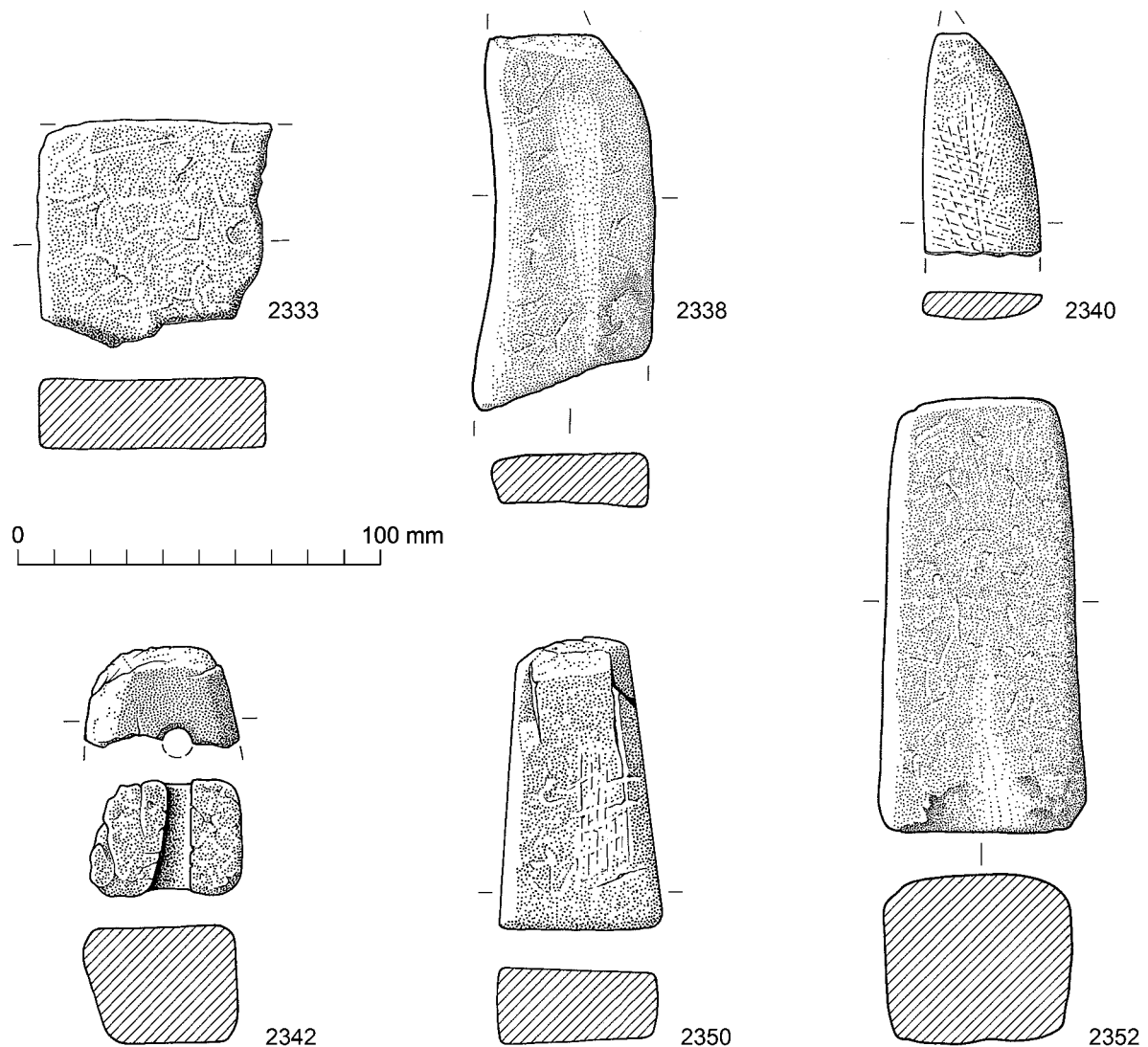


FIG. 5.37. Stone hones. Scale 1:2.

and striations in the centre from point sharpening (FIG. 5.37)

Size: L.60mm, Max. W.32mm, Max. Th.7mm.

RF 5441, Context 4195, Phase 5b–6i.

2341 Hone fragment.

Material: Sandstone, Coal Measures or Middle Jurassic.

Form: Bar-shaped, broken at one end, with a worn double chamfer at the other. Sub-rectangular in section, with edges lightly rounded by wear. All surfaces except the broken end are smoothed. Not illustrated.

Size: L.46mm, W.36mm, Th.20mm.

RF 6835, Context 6798, Phase 6i.

2342 Hone fragment

Material: Sandstone, probably Millstone Grit. Erratic.

Form: Top of bar-shaped, perforated hone, with a transverse perforation drilled from both sides, off-centre. Sub-rectangular in section. Fractured across the perforation and partly cracked, and blown with vesicular patches due to

intense heat, post-breakage. (FIG. 5.37)

Size: Surviving L.27mm, Max. W.42mm, Max. Th.32mm.

Perforation Diameter 4–10mm.

RF 8096, Context 7280, Phase 6ii.

2343 Hone fragment.

Material: Sandstone, probably Carboniferous (e.g. Wensleydale (formerly Yoredale) Formation or Coal Measures); or Middle Jurassic.

Form: Bar-shaped, broken at both ends, though one end has been used subsequently. Rectangular in section. The lateral surfaces are very smooth. Not illustrated.

Size: L.41mm, W.62mm, Max. Th.25mm.

RF 14054, Context 3891, Phase 6ii.

2344 Hone fragment.

Material: Sandstone, Upper Carboniferous or Middle Jurassic (if latter, probably Crinoid Grit).

Form: Fragment, of sub-rectangular section, with areas of smoothing on four faces; ends broken. Partly heat-reddened

and cracked, prior to use as a hone. Possibly a tertiary used quern fragment, with secondary use as a hearth base. One edge of the hone bears a hard dark reddish-brown waxy deposit. Not illustrated.

Size: L.62mm, W.62mm, Th.36mm.

RF 14283, Context 1841, Phase 6ii–6iii.

2345 Hone fragment.

Material: Sandstone, Coal Measures or Middle Jurassic.

Form: Slab-like, rectangular fragment with one rounded corner, other sides broken. Of flat, rectangular section. Smoothed on the two lateral faces, one of which bears three faint and several smaller diagonal grooves. Not illustrated.

Size: L.55mm, W.45mm, Th.12mm.

RF 14284, Context 1831, Phase 6ii–6iii.

2346 Hone fragment.

Material: Sandstone, Coal Measures or Middle Jurassic.

Form: Irregular block with one smooth face, lightly curved towards one edge. An adjacent flat face, of which little survives bears four point-sharpening grooves. Worked faces display a reddish-brown waxy deposit. Not illustrated.

Size: L.111mm, W.75mm, Th.45mm.

RF 1624, Context 1462, Phase 6iii.

2347 Hone fragment.

Material: Sandstone, Coal Measures or Middle Jurassic.

Form: Flat, ?slab-like, with a straight flat edge opposite a worn, double-chamfered edge; sides broken. Smoothed on all unbroken surfaces. One face bears the remainder of a hard dark reddish-brown waxy deposit. Not illustrated.

Size: L.67mm, W.42mm, Max. Th.14mm.

RF 2193, Context 2022, Phase 6iii.

2348 Hone fragment.

Material: Sandstone, Coal Measures or Middle Jurassic.

Form: Slab-like, irregular fragment with one flat original smooth edge and two smoothed lateral surfaces, other edges broken. A pair of grooves appears on each of the two wider surfaces, along with a few ?accidental, scratches. Not illustrated.

Size: L.80mm, W.64mm, Max. Th.17mm.

RF 14266, Context 534, Period 7.

2349 Hone.

Material: Sandstone, Coal Measures or Middle Jurassic.

Form: Slab-like, irregular with five sides; one side concave, and one corner broken. A V-shaped point sharpening groove (W.3.6mm) runs across one of the wider surfaces. Not illustrated.

Size: L.84mm, W.64mm, Max. Th.28mm.

RF 31, Context 1, Topsoil.

2350 Hone.

Material: Sandstone, Coal Measures or Middle Jurassic, ?heat-reddened.

Form: Bar-shaped, tapered, flat at its wider end, double-chamfered at the other. Rectangular in section. All surfaces are smoothed. Slightly dished surfaces on one lateral face. The other lateral face bears at least six longitudinal point-sharpening grooves, one deeper than the rest. (Fig. 5.37)

Size: L.80mm, W.29–43mm, Th.22mm.

RF 8371, Unstratified.

2351 Hone.

Material: Sandstone, Coal Measures or Middle Jurassic.

Form: Irregular, secondary hone, with five smoothed surfaces, two of which are dished. Of the other surfaces, one bears a V-shaped point-sharpening groove, and another bears two U-shaped grooves. Possibly a re-used quern fragment. Not illustrated.

Size: L.100mm, W.60mm, Th.46mm.

RF 10921, Unstratified.

2352 Hone.

Material: Sandstone, Coal Measures or Middle Jurassic (if latter, probably Crinoid Grit).

Form: Large, bar-shaped, tapering from a flat, broken end to a slightly narrower rounded end. Sub-rectangular in section. Smoothed overall, most markedly on the sides, which show transverse wear. One of the lateral surfaces bears the beginnings of a longitudinal point-sharpening groove. The broken end also appears to have been lightly smoothed. (Fig. 5.37)

Size: L.117mm, W.40–53mm, Th.35–45mm.

RF 50003, Unstratified.

5.9 Stone lamps

by Lisa M. Wastling

[For examples of iron light-holders, see section 5.1, above.]

Stone lamps were used to burn oil or tallow with a wick, probably of flax. As oil would have been an easy material to spill and, therefore, a fire risk, the weight of the stone would have aided stability. Lamps of this type have previously been referred to as cressets, though some use this term to represent hanging lamps only. To avoid confusion, the term cresset has not been used for the purposes of this report.

The six lamps recovered from the excavation all displayed some signs of either burning or sooting, usually around the rim and the upper exterior, where the wick rested. With the exception of no. 2357 (RF 422), all were of Hibaldestow Limestones (see Gaunt, Volume 1, Ch. 1), and are likely to have been made of re-used Roman building stone.

Three distinct types were represented (see Figs 5.38–5.39): cylindrical-type block lamps (nos 2353–6; RFs 11458/11502, 11511, 11516, 5986), a form with a pedestal-type base (no. 2357; RF 422), and an elaborate ribbed form (no. 2358; RF 14017).

Three were found in dumps of the mid to late 9th century (nos 2353–5; RF 11458/11502, 11511, 11516), one from a 10th-century deposit (no. 2356; RF 5986), and two were unstratified (nos 2357–8; RF 422, 14017).

No. 2353 (RF 11458/11502) is a double-ended sub-cylindrical lamp, bearing a deep reservoir at one end, and a shallow one at the other (Fig. 5.38). This was recovered from dump 3758 in Phase 4ii and context 11412 in Phase 5a; this is likely to be due to material from 3758 having been reworked in later dumps such as those in Phase 5a. This lamp was originally deposited in the mid-9th century in dump 3758. A similar lamp from Winchester was

recovered from a late 12th to mid-13th century deposit (Barclay and Biddle 1990, fig. 308a, 3545). No. 2354 (RF 11511) resembles an example from Cheddar of the late 10th to 12th century, with its sub-cylindrical exterior and sub-rectangular reservoir (Rahtz 1979, fig. 78, 12).

The most unusual forms are the two unstratified examples, nos 2357–8 (RFs 422 and 14017). No. 2357 (RF 422) is of interest for both its form and material. It has a pedestal-type base, with a slight indentation underneath, rising up to a possible globular or flared bowl, the upper body of which is missing (Fig. 5.39). The bottom of the reservoir displays some evidence of burning. There may have been a small projection at the side of the base, possibly to aid grip, as there is a rough area – though the decayed surface of the stone makes this difficult to ascertain. Though the base is narrow, it is a well-balanced object and stands well on a flat surface. Being less cumbersome than the block types, the form also enables it to be easily carried in the hand (see Egan 1998, fig. 98).

This lamp would have also been suitable for suspension, using an iron ring in the same way as spiked ceramic and glass lamps (*ibid.*, fig. 101). It is made of shelly limestone, probably from the south midlands or southern England, and quite possibly from one of two sources in Dorset, the Forest Marble and Cinder Bed.

No. 2358 (RF 14017) also seems very unusual in form (Fig. 5.39), and though the limestone is local, from the Hibaldstow Limestones (Gaunt, Volume 1, Ch. 1), it is finely oolitic and carefully carved. The author has been unable to find a parallel for this example.

It has been suggested that stone lamps may have often held an inner ceramic reservoir. At Winchester both pottery and stone lamps were found in contexts of the same date range (Barclay and Biddle 1990, 985). The stone lamps appear at Flixborough in the early to mid 9th century, whilst at Lincoln, Stamford ware lamps are found from the late 9th century onwards (Adams Gilmour 1988, 126). There were apparently no stone lamps from the Flaxengate (Lincoln) site, which produced many ceramic lamps, and, conversely, no lamp-specific forms were found within the ceramics assemblage at Flixborough, though some of the small bowls and vessels with internal carbonised residues may have functioned as such (Young and Vince, Ch. 12 and Blinkhorn, Ch.12.3.3). Both stone and pottery lamps were found at Cheddar, from the early to mid-10th century, though, unlike Winchester, the pedestal-type bases of these lamps seem unsuitable for use with the low, wide reservoirs of the stone examples.

Barclay and Biddle (1990, 985) suggested that the depression in the base of some of the stone lamps would have been of use in steadying a spiked ceramic lamp; but this form, and the tapered reservoir of lamps such as no. 2354 (RF 11511), would also have been ideal for anchoring a wick by the means of a suitable stone placed over the submerged end.

Four forms of artificial light were available during the late Saxon period in which the stone lamps were found:

firelight, rush-lights, oil lamps, and candles. Candles are likely to have been used mainly by the higher status households and the church (*ibid.*, 984). Unfortunately, both rush-lights and candles leave scant archaeological evidence, being consumed by burning and candles perhaps being used mainly with wooden holders, at this period. Three possible rush-light holders were present within the iron fittings (Ottaway, Ch. 5.1)

The comparative lack of evidence for ceramic oil lamps at Flixborough, by contrast with Flaxengate (Lincoln), may indicate that rush-lights, or indeed candles, were the main form of lighting used on the site. Whatever the form used, it was complemented by the use of well-made and elaborate forms of stone oil lamps.

It is likely that stone lamps developed alongside the ceramic types, both being used with the same fuels, though three of the stone lamps at Flixborough are slightly earlier than the influx of ceramic examples to Lincoln. Stone lamps appear to be relatively rare, in comparison with the ceramic types, with few sites excavated producing multiple examples.

Catalogue (Figs 5.38–5.39)

Lithological identifications are by Geoff Gaunt

2353 Double-ended block lamp

Material: Limestone, pale grey, oolitic, from the Hibaldstow Limestones.

Form: Heavy double-ended lamp. Sub-cylindrical with a shallow reservoir at one end, 20mm in depth, and a deeper one at the other of 54mm depth. Burnt and sooted around the rim, with secondary burning on one side, post initial breakage. Heat-shattered due to secondary burning. (Fig. 5.38)

Size: Ht.138mm, D.c.130mm

RF 11458 and 11502, Contexts 11412 and 3758, Phases 5a and 4ii.

2354 Block lamp

Material: Limestone, pale-brownish cream, oolitic, from the Hibaldstow Limestones.

Form: Cylindrical lamp. Fragment of slightly globular body with a flat, heavily smoothed base, (possibly the result of wear) and a tapered sub-rectangular reservoir. Internal sooting extends over a fracture surface on the rim and the adjacent body wall. Reddened internally. Some of the sooting appears to have happened post-breakage. (Fig. 5.38)

Size: D.c.160mm, Ht.89mm, Reservoir depth 55mm

RF 11511, Context 3758, Phase 4ii.

2355 Block lamp fragment

Material: Limestone, from the Hibaldstow Limestones.

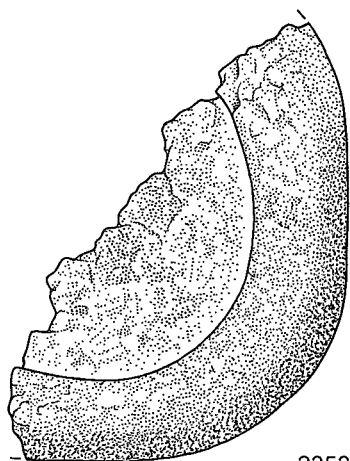
Form: Lamp with a tapered bowl and pecked exterior, which is heat-reddened along one side. The original shape was probably sub-rectangular with rounded corners. (Fig. 5.38)

Size: Ht.71mm, W.62mm, Th.53mm.

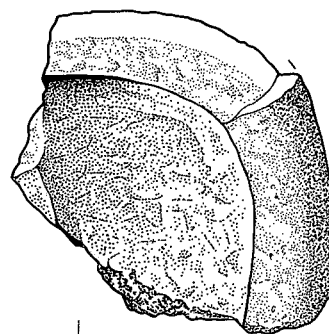
RF 11516, Context 3758, Phase 4ii.

2356 Block lamp

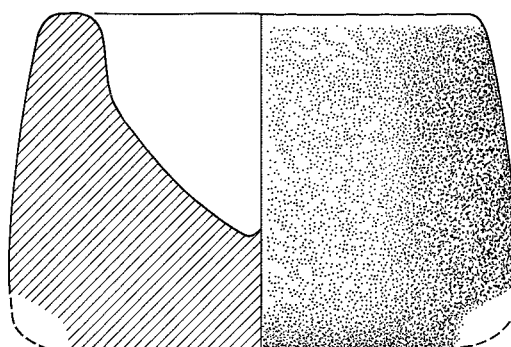
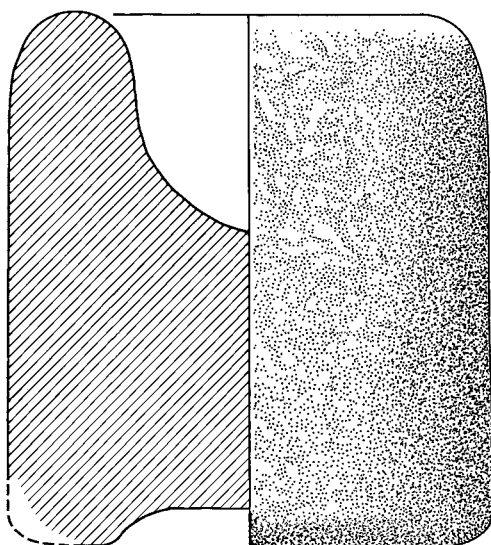
Material: Limestone, white, oolitic, from the Hibaldstow Limestones.



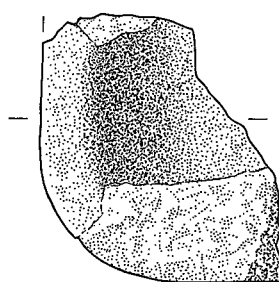
2353



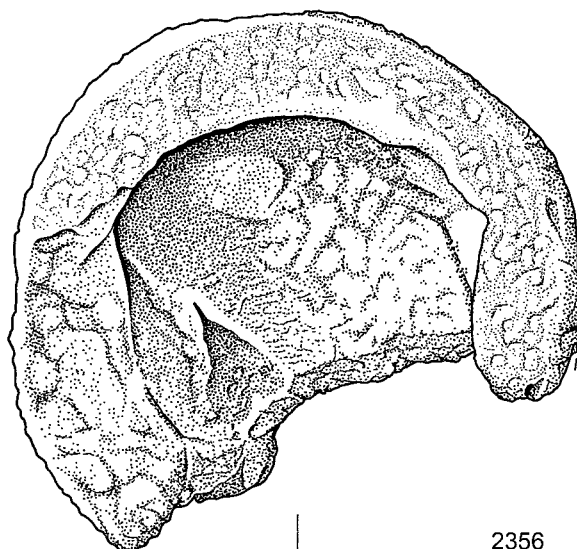
2354



0 100 mm



2355



2356

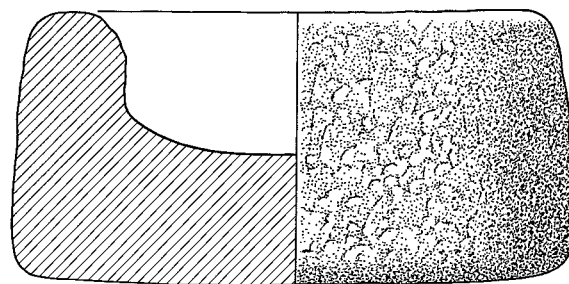
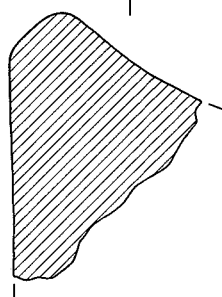


FIG. 5.38. Stone lamps. Scale 1:2.

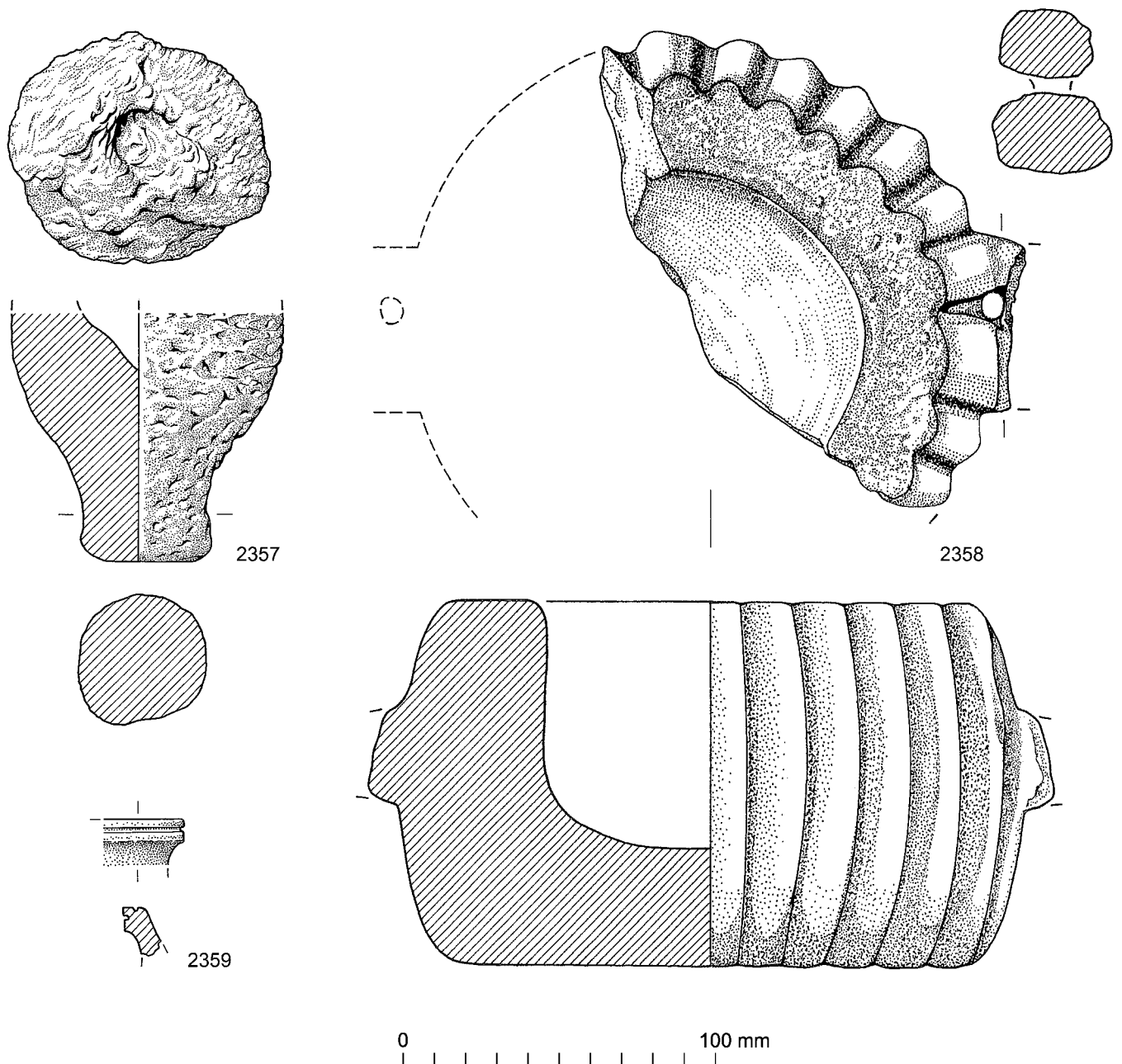


FIG. 5.39. Stone pedestal-type lamp and ribbed block lamp, and a possible carved chalk vessel.. Scale 1:2.

Form: Cylindrical, very slightly tapered towards the top, with a flat bottom, flat-topped rim and rounded bowl. Slightly sooted in two places, on the rim. (FIG. 5.38)
Size: D.152mm, Ht.67mm, Reservoir Depth 33mm
RF 5986, Context 5930, Phase 6i.

2357 Pedestal-type lamp

Material: Limestone, Mesozoic or Cenozoic, and if from Britain almost certainly Middle or Upper Jurassic, but not from north of the Cotswolds; conceivably from middle part of Middle Jurassic Forest Marble, or the Upper Jurassic Cinder Bed (in the Purbeck sequence), both in Dorset.

Form: Globular body, narrowing to a cylindrical pedestal with a flat base. Slightly burnt internally. Though the lamp can stand well, it would have been rather unstable without support. It was probably used suspended in the same way as ceramic spiked lamps, with a wall bracket, or steadied in a hollow in a table. (FIG. 5.39)

Size: Ht.80mm, Diam. of base 44mm, Max. diam. of body 78mm

RF 422, Context 421, surface of natural subsoil.

2358 Ribbed block lamp

Material: Limestone, greyish-cream, oolitic, from the

Hibaldstow Limestones.

Form: Globular with a flat base and flat-topped rim. Decorated with externally fluted ribs, and with a vertically perforated lug-handle. Another handle was probably set on the other side of the lamp, though this is lost. The central reservoir is vertically sided, with a rounded base. Internal reddening extends along its sides to the top edges, with sooting also apparent on the upper part of the sides. (FIG. 5.39)

Size: D.175mm, Ht.120mm; Reservoir Depth 90mm.
RF 14017, Unstratified.

5.10 A possible carved chalk vessel by Lisa M. Wastling

A fragment of a chalk vessel was recovered from a dark soil deposit in Period 6, containing material of the 10th century. This vessel was apparently circular, with a decorated flat-topped rim, with a flat leading edge. Small grooves on the exterior suggest that the vessel was lathe-turned.

Unfortunately the fragment is so small that neither its form nor diameter can be ascertained.

Catalogue (FIG. 5.39)

Lithological identification by Geoff Gaunt

2359 Carved fragment

Material: Very fine-grained white chalk. Chalk Group.

Form: Tiny fragment of carved chalk, resembling a vessel rim. Decorated with two incised lines, on top of and just below the rim. The small fragment size precludes measurement of the diameter. (FIG. 5.39)

Size: Ht.18mm, W.19mm, Th.10mm.

RF 14263, Context 6489, Phase 6iii.

6 Cultivation, Crop Processing and Food Procurement

Lisa M. Wastling and Patrick Ottaway

with contributions by Geoff Gaunt, Christopher Loveluck and Jonathan Parkhouse

This chapter looks at the evidence for artefacts associated with farming, hunting, fishing and fowling. It should be emphasised that what has chanced to survive has been heavily influenced by the soil conditions prevailing at the site, which did not favour the preservation of organic material, except in charred or mineralised form.

The only farm tools which have survived within the excavated areas are solitary examples of a plough share, a bill hook and a spade iron – although second examples of a bill hook and a spade-sheath or hoe were found within the hoard of woodworking tools, and have been presented as an integral whole in Ch. 7.2, below. Not only are the various wooden parts of ploughs, spades, and other agricultural tools missing from the site assemblage, but this whole category of material is heavily under-represented: although the precise number of agricultural tools in use at any one time is likely to have varied during the long life of this settlement, it is safe to assume that there would have been more than one plough in use during any one phase, and that many households within the settlement would have had access to a range of farming tools. Hence, the apparent absence of scythes, sickles, and other common farming and gardening tools is almost certainly illusory, and may relate more to the differential patterns of rubbish disposal prevailing at this site, than to what implements were in use.

Crop-processing on the site is represented by a range of hand querns, made both from sandstone and from imported lava; however, it should also be borne in mind that much of the flour used on the site, particularly in the later phases, is

likely to have been ground at a water-driven estate mill.

As is evident from the environmental evidence (see Dobney et al. in Volume 3), hunting, fishing and fowling helped to supplement the diet at the settlement. A range of lead and lead alloy weights, and a collection of iron fish-hooks clearly attest that fishing and fowling were practised at this settlement; but, once again, it should be remembered that the prevailing soil conditions have influenced the survival on this site of artefacts made from organic material for such pursuits: in general, whilst bone and antler objects have survived, objects from other materials (e.g. leather, rope or wicker) are under-represented, and, specific examples of hunting and fishing equipment in organic materials are absent from the archaeological record at the site. Hence, there may also have been woven basket-work fish traps and creels, and there certainly would have been an extensive range of nets and lines to accompany the various weights and hooks. Only limited quantities of equipment usually associated with hunting with dogs or hawks have chanced to survive, although this trend is similar to other Anglo-Saxon settlements, and comparison of quantities of such accoutrements with those of the later Middle Ages may be inappropriate. Jesses, gloves and lures for hawking may also have been made of organic material; the same can be said for the harness fittings for hunting dogs. Similarly, there are no examples of traps or snares surviving within the site assemblage, but eight arrowheads were recovered and could have been used for hunting, although they are discussed with the weapons and armour in Ch. 3.2 above.

6.1 Agricultural tools

by Patrick Ottaway

Plough share (FIG. 6.1)

No. 2360 (RF 7110) is a plough share which was found with the cauldron chain (no. 1777; RF 7110; see Ch. 5, above) in a post-hole of Phase 3biv–5b. It has a tapering blade which has an open socket at the top (FIG. 6.1). A plough share is mentioned as one of the objects required by the *Discriminating Reeve* in an Anglo-Saxon estate memorandum (Swanton 1975, 26). The object would have been used for the shoeing of a wooden ard, and would have sliced the soil in a horizontal plane, probably after it had been cut in a vertical plane by a coulter. However, although it is hard to be certain, no. 2360 (RF 7110) appears to show no sign of use or damage.

No. 2360 (RF 7110) is similar to both Roman and other Anglo-Saxon plough shares. Amongst the latter are those from late Anglo-Saxon contexts at St Neots (Addyman 1973, 94, 30) and Thetford (Goodall 1984, 81–2, 43). Another was apparently found in the Westley Waterless ironwork hoard (Fox 1923, 300), and fact that the Flixborough plough share was carefully buried with a

second large and valuable item, the chain, suggests that it too had been deliberately hoarded.

Bill hook

No. 2361 (RF 8702), found unstratified, may be identified as a bill hook, a tool for cutting branches while trimming bushes, hedges, trees and even vines as shown in an 11th-century calendar illustration (BL, Cotton, Tiberius, B.V, fol. 3v). The bill hook is also another of the tools referred to in the *Discriminating Reeve* (Swanton 1975, 26). No. 2361 (RF 8702) has an overall length of c.260mm, and one half consists of a powerful blade, of which the back is straight before curving down to meet a straight cutting edge. The other half is an open socket with a rivet-hole near the mouth. On no. 2361 (RF 8702) there are traces of the wooden handle, but only around the mouth of the socket. Whether this means the handle did not occupy the whole socket is not certain. Another almost-identical tool comes from the Flixborough hoard (no. 2465; RF 60019, see below), and one which appears very similar comes from the hoard of iron objects from Hurbuck, Co. Durham (Page 1905, 213–15). Otherwise, there are no comparable objects from other Anglo-Saxon contexts, although smaller tanged tools are known, which are classified variously as weed, pruning or reaping hooks.

Spade iron

No. 2362 (RF 13385; unstratified) is the incomplete sheathing from a wooden spade blade.

Catalogue

2360 Plough share (FIG. 6.1)

Narrowing 'spade-shaped' blade with slightly concave upper surface. Blade sides step in at the head to form an open socket. L. 290, W. 123mm (FIG. 6.1)

RF 7110, Context 7613, Phase 3biv–5b.

2361 Bill hook

Blade has a straight cutting edge and a convex back. Open socket with a nail-hole near the mouth. L.263; blade: L.130, W.48mm

RF 8702, Unstratified.

2362 Spade iron

Incomplete sheathing for wooden spade blade. L.85, W.51mm

RF 13385, Unstratified.

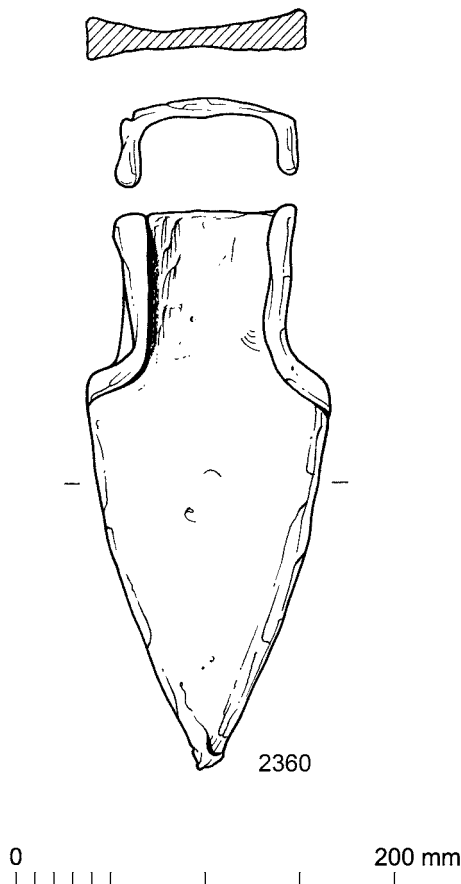


FIG. 6.1. Plough share. Scale 1:4.

6.2 Querns

by Lisa M. Wastling

(with a note on the geology of the sandstone querns by Geoff Gaunt, and a note on the lava querns by Christopher Loveluck)

A total of 240 quern fragments was recovered from the site comprising 229 Rhenish lava and 11 sandstone. The sandstone querns are discussed first and a short summary on the lava querns follows.

All 11 sandstone querns were represented by relatively small fragments, and it is unlikely that any were in their primary context. This quantity is in stark contrast to the number of imported Rhenish lava quern fragments, though many of the latter were very small in size. With the exception of one from a context phased 2i–4ii, all the stratified examples were derived from deposits of 9th-century or subsequent date. Seven were sandstones of Millstone-Grit-type from the Pennines, two of Crinoid Grit from the Middle Jurassic Scarborough Formation of north-east Yorkshire, and a single quern was of Spilsby-Sandstone-type from Lincolnshire (see catalogue below). One was not distinctive enough to be attributed to a definite source.

The nature of sandstone querns is such that they are often re-used as hearth bases and post-packing, for example, a large millstone was re-used as a hearth base in a 10th- to early 11th-century context at Lurk Lane, Beverley (Foreman 1991a, fig. 90, 53).

Six of the 11 fragments from Flixborough display signs of burning, and no. 2373 (RF 1786) has been re-used as a hone. That no. 2364 (RF 2844) was un-burnt and recovered from a pit fill suggests that it may have been discarded when broken.

Five fragments bear grinding surfaces, all of which display considerable wear. The three larger examples (nos 2364, and 2371–2: RFs 1409, 2635 and 2844; FIG. 6.2) are of lower stones (occasionally referred to as bed-stones). Only no. 2371 (RF 2635) has a dressed grinding surface bearing three parallel pecked grooves at an angle to the circumference. This suggests that the stone was harp-dressed, rather than radially-grooved.

The outer edge of no. 2372 (RF 1409) bears traces of vertical tooling (FIG. 6.2), probably as a result of manufacture rather than decoration.

The form of no. 2364 (RF 2844; FIG. 6.2) appears to be comparable to the complete lower stone from Fishergate, York (Rogers 1993a, fig. 640), though of smaller dimensions. This stone from York was found in a pit of the 11th to 12th century. The example from Flixborough is of earlier date, though the form of querns during the period appears to have changed little with time.

Though only three diameters could be ascertained, the upper range of the stones is considerably larger than those from Fishergate, York (*ibid.* 1329) and Flaxengate, Lincoln (Mann 1982, 55), yet they compare well to the four Anglo-Scandinavian Millstone-Grit querns from 6–8 Pavement, York (MacGregor 1982, 158). The 500mm diameter of stones nos 2372–3 (RFs 1409 and 1786) is at the threshold between the large stones driven by geared mechanisms, and the upper limit of those which are hand-driven; however, it is not possible to state which method was used.

Millstone-Grit sandstone is well-suited to the manufacture of quernstones, as it retains a rough milling surface and wears slowly (Hayes *et al.* 1980, 308). These properties may have encouraged the transportation of these querns over long distances, with the result that there has been

a well-established use of this stone for querns since the beehive querns of the Iron Age.

At Flixborough, though sandstone querns are few in number, almost all are from mid to late 9th-century and later phases. Given the importance of the Millstone-Grit sandstone quern industry, it appears unusual that so few were recovered from the excavation (Parkhouse 1997, 103); however, there was a similar lack of querns of Millstone-Grit sandstone at Fishergate, York until the late 10th century (Rogers 1993a, 1329). In addition to lava, querns of both Millstone-Grit sandstone and Spilsby-Sandstone-type were present amongst the small numbers of querns from Flaxengate, Lincoln (Mann 1982, 21–2), and those from the early Medieval manor at Goltho, to the north-east of Lincoln (Owen, 1987, 197). Neither of these sites produced querns of the Crinoid Grit of north-east Yorkshire.

The paucity of Millstone-Grit sandstone and more local types, and the corresponding dominance of lava querns, may be a reflection of a high-status site and its ability to acquire higher quality materials. Lava querns seem to have been more sought after, despite the long distance from the source, and the suitability of the more locally available Millstone-Grit sandstone.

A note on the geology of the sandstone querns

by Geoff Gaunt

Seven sandstone querns are lithologically of Millstone-Grit type, two are attributable with varying degrees of assurance to the Crinoid Grit, one is of Spilsby-Sandstone type, and one is of uncertain provenance. The following notes summarise the geological background and quern-usage of these three varieties of sandstone. More detailed accounts are included in a review by Gaunt (n.d.: 1994).

The characteristic partly coarse-grained sandstones in the Millstone-Grit succession of the Pennines were extensively used for making querns, and examples have been found as far south as Kent. Unfortunately, very few of these sandstones have any mutually exclusive lithological features, so that most relevant quern finds cannot be provenanced to any particular sandstone. Moreover, a few sandstones with closely comparable lithologies occur in the Coal Measures of Yorkshire and Derbyshire, and some of these have been used to make querns (Wright 1988). In order to include the possibility of such Coal Measures sources, therefore, the term Millstone-Grit type is used for querns with this characteristic lithology. The seven fragments from Flixborough could have been transported from Pennine sources down any river from the Swale to the Derbyshire Derwent (and thence the Trent), the shortest route being from the hills west of Sheffield down the Don to its pre-Vermuyden outlet into the Trent near Adlingfleet (Gaunt 2008). Fragments nos 2369, 2372 and 2373 contain rather more feldspar than is normal in most Millstone Grit-type sandstones, and could conceivably be from the same quernstone, quarried from a particularly feldspathic layer. Such layers do occur in the hills west of Sheffield (Stevenson and Gaunt 1971, 175–263), but they are present

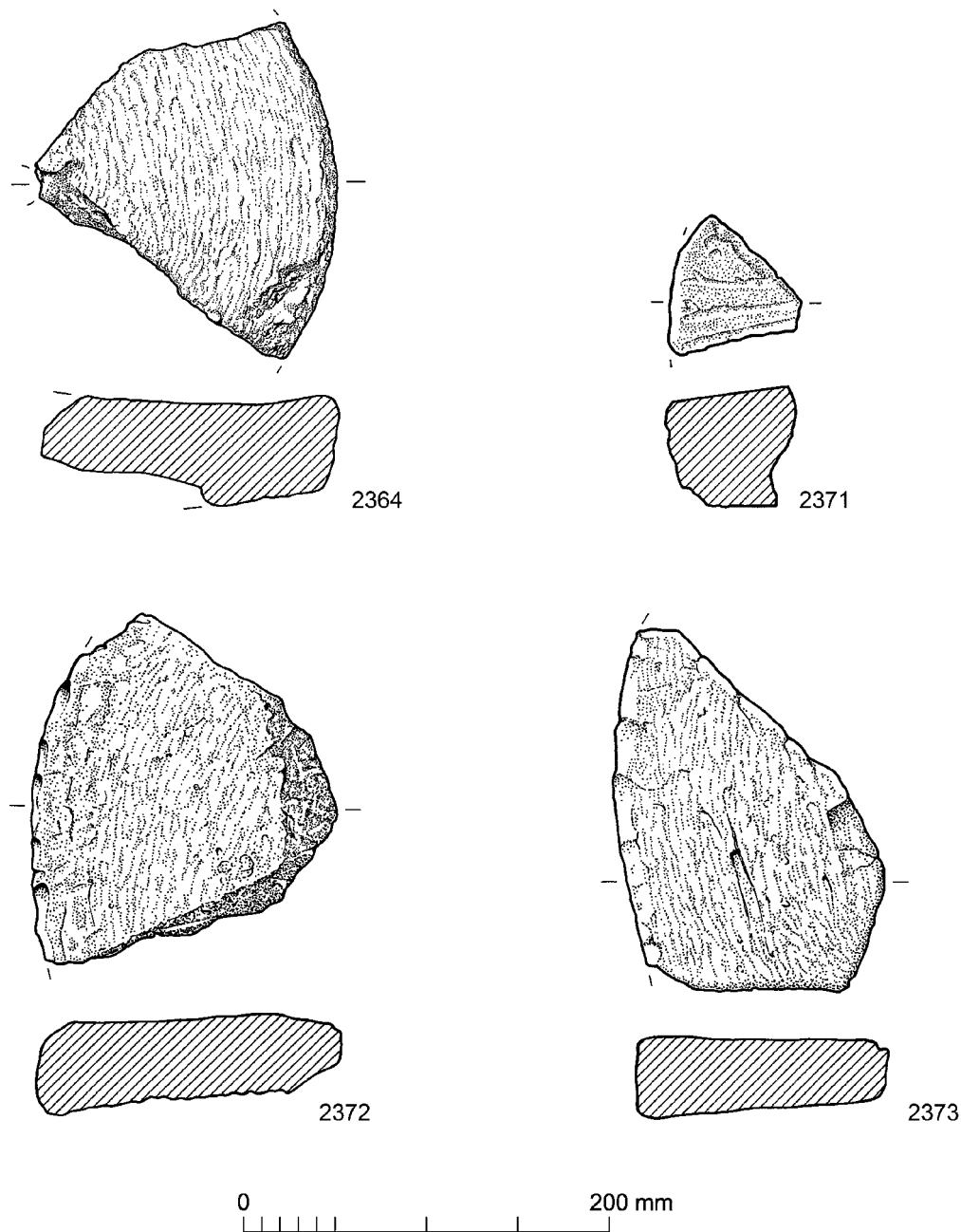


FIG. 6.2. Quern fragments. Scale 1:4.

also in some sandstones in the upper Calder and parts of the Aire and Wharfe valleys.

The Crinoid Grit is part of the Middle Jurassic Scarborough Formation of north-eastern Yorkshire. Its confirmed usage for querns includes several Iron Age beehive varieties (Hayes *et al.* 1980), a few fragments from a Roman site at Brough on Humber (Gaunt 2002), a fragment in an Anglian context at Fishergate in York (Gaunt 1993, 1329), and numerous fragments from Wharram Percy.

The Spilsby Sandstone spans the Upper Jurassic – Lower Cretaceous boundary in Lincolnshire from Grasby southwards (Gaunt *et al.* 1992, 67–70). Querns made from it have been found widely in Lincolnshire, and to a lesser extent as far south as Hertfordshire (Ingle 1989), and numerous examples are recorded from Winterton Roman villa (Gaunt in Goodburn, in prep.). Other occurrences include a single fragment from a Roman site at Brough on Humber, two fragments (one undoubted, the other probable) from Wharram Percy, and (probably) a whole quernstone from

Ripon (Gaunt, various unpublished reports). Unfortunately, a lithologically identical Upper Jurassic sandstone, the Elsham Sandstone, crops out around and south of the village of that name in northern Lincolnshire (Gaunt *et al.* 1992, 66). There is no evidence that it was used to make querns, but, in order to include that possibility, the term Spilsby-Sandstone type is used for querns with the appropriate lithology.

A note on the lava querns from Flixborough

by Christopher Loveluck, based on identifications by Jonathan Parkhouse

There were 229 recorded finds of lava quern fragments, derived ultimately from the Mayen area of Germany, recovered at Flixborough. The quern pieces were extremely fragmented and small, and one recorded find often included a number of fragments. Due to their condition, none of the lava quern fragments is illustrated or individually catalogued here (details can be interrogated from the ADS archive, and the excavation archive). The earliest lava fragments were deposited in Period 1 of the occupation sequence (Phase 1b), and fragments continued to be deposited, and re-deposited, in Periods 6 and 7. Although present in all phases from Phase 1b onwards, there are particular concentrations in the refuse used to fill the ditch in Phase 4ii, and also in the refuse deposits of Phase 6iii (Loveluck and Atkinson, Volume 1, Chs 5 and 7). Their greatest occurrence seems to reflect the nature of deposits – most are found in material derived from refuse dumps, rather than use and exchange contacts in particular phases. Although, given the quantities of residual material in the Phase 6iii ‘dark soils’, it is less certain if the lava quern fragments from these 10th-century deposits reflected use and exchange of the querns in the 10th century on the site. Distribution plots of the deposition of lava quern fragments by phase can be seen in the ADS archive. The significance of the lava querns for understanding exchange relations between the Flixborough settlement and its wider world is discussed in Volume 4 (Loveluck, Volume 4, Ch. 7).

Catalogue

Lithological identifications are by Geoff Gaunt

2363 (?) Quern fragment.

Material: Sandstone, Millstone-Grit type.

Form: Small fragment. No original edges. Burnt. Not illustrated.

Size: Max. L.34mm, Max. W.29mm, Max. Th.20mm.

RF 3210, Context 2027, from surface of natural subsoil.

2364 Quern fragment.

Material: Sandstone, Millstone-Grit type.

Form: Fragment from the edge of a lower stone, of c.350mm diameter, with a slightly convex grinding surface, rising towards the spindle hole. The upper surface is increasingly smoothed towards the outer edge as a result of wear. (Fig. 6.2).

Size: Max. L.180mm, Max. W.156mm, Th.53mm. Diameter of spindle hole 20mm

RF 2844, Context 221, Phase 2i–4ii.

2365 (?) Quern fragment.

Material: Sandstone, Spilsby-Sandstone type.

Form: Burnt fragment with no original edges. Not illustrated.

Size: Max. L.106mm, Max. W.96mm, Max. Th.68mm.

RF 3554, Context 3320, Phase 4i–4ii.

2366 (?) Quern fragment.

Material: Sandstone, Millstone-Grit type.

Form: Small fragment. Not illustrated.

Size: Max. L.50mm, Max. W.43mm, Max. Th.22mm.

RF 2817, Context 51, Phase 4ii.

2367 (?) Quern fragment.

Material: Sandstone, almost certainly Crinoid Grit.

Form: Small fragment Slightly burnt. Not illustrated.

Size: Max. L.61mm, Max. W.43mm, Th.31mm.

RF 9579, Context 5503, Phase 4ii.

2368 (?) Quern fragment.

Material: Sandstone, Millstone-Grit type.

Form: Small irregular fragment. No original edges. Not illustrated.

Size: Max. L.73mm, Max. W.35mm, Max. Th.38mm

RF 1885, Context 1728, Phase 5b.

2369 (?) Quern fragments.

Material: Sandstone, Millstone-Grit type.

Form: Six fragments, three of which join. Burnt and abraded. Not illustrated.

Size: Largest fragment L.68mm, W.55mm, Th.34mm.

RF 3223, Context 3217, Phase 5b.

2370 Quern fragment.

Material: Sandstone, probably Crinoid Grit.

Form: Two fragments, of the same quern, with a flat, worn grinding surface. Fragment A has part of the original perimeter edge. The grinding surface is burnt possibly indicating re-use as a hearth base. Not illustrated.

Size: A) Max. L.72mm, Max. W.46mm, Max. Th.29mm;

B) Max. L.49mm, Max. W.43mm, Max. Th.32mm.

RF 643, Context 535, Phase 6iii.

2371 Quern fragment.

Material: Sandstone, Upper Carboniferous (i.e. Millstone Grit and Coal Measures) or Middle Jurassic.

Form: (?) Lower stone fragment, from near the perimeter of the stone. Increasing in thickness towards the centre of the stone. Both the upper and lower surfaces are original. Bears 3 pecked grooves on the grinding surface and wear which increases towards the perimeter. Burnt. (Fig. 6.2).

Size: L.67mm, W.67mm, Th.60mm.

RF 2635, Context 2183, Phase 6iii.

2372 Quern or millstone fragment.

Material: Sandstone, Millstone-Grit type.

Form: Lower stone with a c. 500mm diameter. The edge bears traces of near-vertical grooves. The upper grinding surface is smoothed, with greater wear around the perimeter, where the two stones were in contact. (Fig. 6.2).

Size: D.c.500mm, Max.Th.46mm.

RF 1409, Context 1193, Phase 7.

2373 Quern or millstone fragment.

Material: Sandstone, Millstone-Grit type.

Form: Fragment from edge of a stone, of c.500mm diameter. Smoothed on both lateral surfaces, suggesting secondary use as a hone. One surface bears a shallow

'point sharpening groove'. (FIG. 6.2).

Size: Max. L.195mm, Max. W.132mm, D.c.500mm, Max. Th.42mm.

RF 1786, Context 1724, Phase 7.

6.3 Evidence for fishing and netting birds

by Lisa M. Wastling

Lead and lead alloy net and line weights (FIG. 6.3)

Three types of net weight were evident from the lead assemblage: namely, barrel-shaped, cylindrical, and looped weights. They were probably strung along the foot of nets to keep them taut, when fishing or bird netting.

The assemblage comprised 9 carefully produced 'barrel-shaped', 11 cylindrical and 5 looped examples. The first two types were made by either rolling lead around a cylindrical former, or occasionally straight onto the net, usually leaving a visible longitudinal seam. The looped type was made by bending a lead strip or rod around a line, and overlapping the ends. The cylindrical and looped types were probably produced on an *ad hoc* basis from scraps of lead sheet and strips.

The majority of barrel-shaped net weights were of long form, though two were squat (nos 2375 and 2382: RFs 1865 and 13935). In addition to the net weights, a single, unstratified net or line sinker, almost certainly used for fishing, was recovered (no. 2399; RF 1029). This was probably used in a similar way to those illustrated by Steane and Foreman (1988, fig. 15, 21–7).

The unchanging nature of net weights with time gives some difficulty in assessing the level of likely residuality of the material. Three lead barrel-shaped or cylindrical net weights were recovered from deposits dating to the 8th–9th centuries at Fishergate in York (Rogers 1993a, 1320), though there remains the possibility that some of the Flixborough examples may have been residual from the Iron Age, given the recovery of fired-clay sling-shot (see Ch. 14, this volume). Eighteen barrel-shaped net weights were excavated at Meare in the Somerset Levels (Coles 1987, 134–5). These are of possible Iron Age date, and, as they were found together, were probably attached to the same net or line. One of the 15th-century Blackfriars wrecks (no. 3) from the Thames, contained nearly 2,000 such weights in a concentrated area, leading to its interpretation as a fishing vessel (Marsden 1971, 9). That this type of weight was used

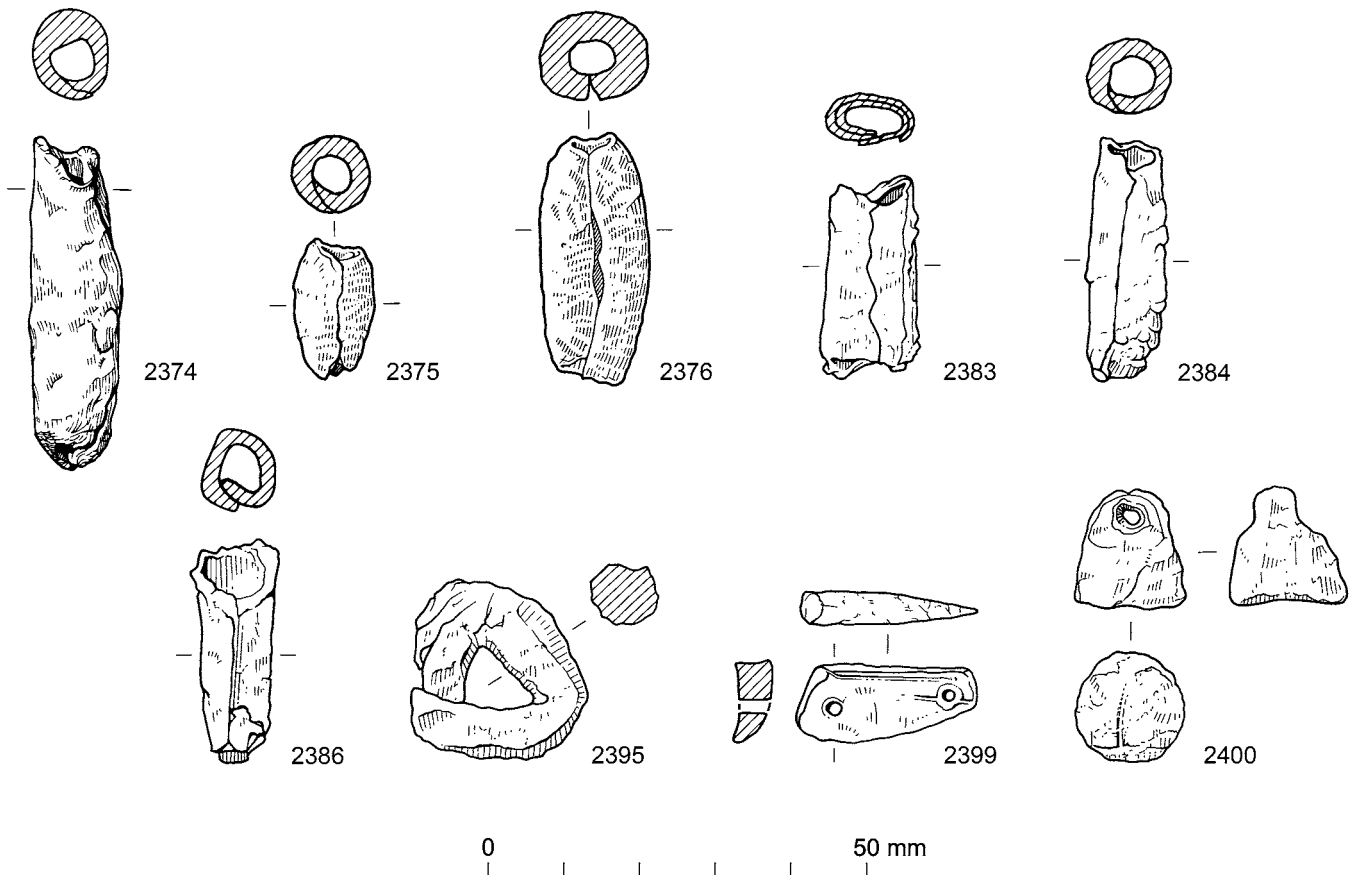


FIG. 6.3. Lead and lead alloy net and line weights. Scale 1:1.

for fishing is without doubt; however they may have had other uses, such as bird netting.

Given the proximity of the site to the Trent Valley wetlands, the association of these weights with wild-fowling seems just as likely as fishing upon the Trent itself.

Various different types of net could be used to trap birds, ranging from those attached to frames to be 'clapped' together, to strung nets to catch birds in flight; there were also nets stretched under water to trap diving birds, and tunnel nets into which birds were driven, although the material evidence for the actual methods used is slight.

The variety of methods used in the Late Saxon period is illustrated by the wild-fowler of Ælfric's *Colloquy* who states:

I trap birds in many ways; sometimes with nets; sometimes with snares; sometimes with lime, by whistling, with a hawk or with a trap. (Swanton 1975, 111).

A Flemish 15th-century illustration, given the title *Wildfowl around a nobleman's lake* (Landsberg 1996, 71), contains amongst other images of hunting birds, netting stretched out between two trees: in the centre is a small bush around which three birds in cages have been placed to act as a lure. Netting birds is likely to have been undertaken since prehistory, with little change in practice. Konrad Spindler (1994, 118–19) cites modern ethnographic parallels between the net carried by the Chalcolithic period 'Iceman', and those of Portuguese farm labourers used to trap small birds such as sparrows. In many parts of Europe, for example, Portugal and Italy, small birds still form part of the luxury diet, and were seen as a status food on the medieval table, to be eaten in addition to domestic and wild fowl.

Bird bones form a very significant proportion of the faunal remains assemblage from Flixborough, with both domestic fowl and wild species represented – for example geese, ducks, wading birds, crane and black grouse. The black grouse has been described as a bird which is particularly easy to catch with nets (Dobney *et al.*, Volume 3, 196, citing MacPherson 1897). Small birds were also present within the small vertebrate remains.

Other weights (Fig. 6.3)

Two other suspension weights may have been used, either as fishing weights or mensuration weights, and are in the form of flat-based cones: one has an integral loop at the apex (no. 2400; RF 12466), and the other an iron loop (no. 2401; RF 50011). Both are unstratified.

Cone-shaped weights of similar form from 15th-century London have been interpreted as line sinkers (Steane and Foreman 1988, fig. 10), though some of the illustrated examples appear to bear the basal hollows indicative of weight adjustment on other forms of weight.

The incomplete solid weight (no. 2402; RF 11976) may have been a fishing weight, or even a plumb-bob, if the incomplete end originally bore a suspension loop or perforation.

Catalogue (by Lisa M. Wastling)

Net weights

BARREL-SHAPED (Fig. 6.3)

2374 Net weight

Form: Barrel-shaped, tapered towards ends. Rolled sheet, one edge overlapping, with central longitudinal hole, D.3.5mm. Slightly splayed or broken at one end, encrusted. (Fig. 6.3)

Size: L.44mm, Max. D.14.5mm. Wt.24.2g.

RF 11226, Context 10772, Phase 2–4iii.

2375 Net weight

Form: Barrel-shaped, squat, with central longitudinal hole, D. 4mm. Rolled sheet, which was possibly pressed around a former, edges overlapped in the centre and butting at the ends. (Fig. 6.3)

Size: L.18.5mm, Max. D.10.5mm. Wt.7.8g.

RF 1865, Context 1838, Phase 6ii–6iii.

2376 Net weight

Form: Barrel-shaped, with central longitudinal hole, D.3mm. Rolled sheet, which was possibly pressed around a former, with butted edges. (Fig. 6.3)

Size: L.31mm, Max. D.13.5mm. Wt.22.8g.

RF 3855, Context 3989, Phase 6iii.

2377 Net weight

Form: Barrel-shaped, with central longitudinal hole, D.2.5mm. Rolled sheet, one end overlapped. Slightly flattened.

Size: 35.5mm, Max. D.11mm. Wt.13.7g.

RF 11999, Unstratified.

2378 Net weight

Form: Barrel-shaped, tapered at either end, with central longitudinal hole, D. 4mm. Rolled sheet, with edges overlapped.

Size: L.32mm, Max. D.11.5mm. Wt.15.9g.

RF 12783, Area M3, Unstratified.

2379 Net weight

Form: Barrel-shaped, slightly tapered towards ends, with central longitudinal hole, D.c.2mm. Rolled sheet, with edges slightly overlapped.

Size: L.49.5mm, Max. D.8.5mm. Wt.16.5g.

RF 13214, Unstratified.

2380 Net weight

Form: Barrel-shaped, slightly tapering towards ends, with central longitudinal hole, D.4mm. Rolled sheet, one end overlapped.

Size: L.33mm, Max. D.10mm. Wt.13g.

RF 13293, Unstratified.

2381 Net weight

Form: Barrel-shaped, tapered towards ends, with central longitudinal perforation, D.5mm. Rolled sheet, wrapped around twice, one edge overlapped.

Size: L.32.5mm, Max. D.14mm. Wt.23.9g.

RF 13452, Area C, Unstratified.

2382 Net weight

Form: Barrel-shaped, squat, with central longitudinal hole, D. 4mm. Rolled sheet, one edge overlapped.

Size: L.19.5mm, Max. D.9.5mm. Wt.6.9g.

RF 13935, Unstratified.

CYLINDRICAL (FIG. 6.3)

2383 Net weight

Form: Cylindrical, with central longitudinal hole. Rolled sheet, consisting of two thin layers, one edge overlapping. ?Pinched at the ends. Flattened. (FIG. 6.3)
Size: L.24.5mm, Max. W.12mm, Max. Th.7.5mm. Wt.7.8g.
RF 11313, Context 10772, Phase 2–4ii.

2384 Net weight

Form: Cylindrical, slightly tapered at ends, with central longitudinal hole, D.3.5mm. Rolled sheet, edges overlapped. (FIG. 6.3)
Size: L.31.5mm, Max. D.11mm. Wt.15.6g.
RF 13078, Context 10772, Phase 2–4ii.

2385 Net weight

Form: Cylindrical, rolled strip with central hole. Flattened slightly.
Size: L.13mm, W.12mm, Th.7.5mm. Wt.4g.
RF 12428, Context 10772, Phase 2–4ii.

2386 Net weight

Form: Cylindrical, slightly pinched at one end and slightly splayed or broken at the other, with central longitudinal hole, D.c.3.5mm. Rolled sheet, with one edge overlapping. (FIG. 6.3).
Size: L.27.5mm, Max. D.11mm. Wt.10.5g.
RF 6088, Context 3758, Phase 4ii.

2387 Net weight

Form: Cylindrical, with central longitudinal hole, D.3.5mm. Very thin rolled sheet, which was possibly pressed round a former, with one edge overlapping. Pinched at one end, ?cut at the other.
Size: L.22.5mm, Max. D.10mm. Wt.7.6g.
RF 7060, Context 7055, Phase 6ii–6iii.

2388 Net weight

Form: Cylindrical, of thin rolled sheet, edges possibly overlapped, with central longitudinal hole. Now flattened.
Size: L.25.5mm, Max. W.14.5mm, Max. Th.4.5mm. Wt.8.2g.
RF 7958, Context 6300, Phase 6iii–7.

2389 Net weight

Form: Cylindrical, with central longitudinal hole, D.3mm. Rolled sheet, one end overlapped, having been wrapped round twice. Flattened at one end.
Size: L.25mm, Max. D.12mm. Wt.15.9g.
RF 4114, Unstratified.

2390 Net weight

Form: Cylindrical, formed by a double layer of thin rolled lead sheet. Flattened.
Size: L.17.5mm, W.13mm, Th.6.5mm. Wt.8.5g.
RF 7877, Unstratified

2391 Net weight?

Form: Cylindrical, pinched at the ends, made from rolled sheet. Flattened.
Size: L.28mm, W.10.5mm, Max. Th.7mm. Wt.8.0g.
RF 8351, Quarry spoil heap, Unstratified.

2392 Net weight

Form: Cylindrical, with central longitudinal hole, D.c.5mm. Rolled sheet, with ends formerly butted, now up to 2mm apart. Flattened on one side. Possibly opened up for removal from the line.

Size: L.36.5mm, Max. D.10.5mm. Wt.16g.

RF 12357, Area M3, Unstratified.

2393 Net weight?

Form: Cylindrical. Formed from a triangular fragment of sheet, with cut edges, rolled to tubular form with central longitudinal hole, Max. D 4mm. Edges overlapped.
Size: L.19mm, Max. D.8.2mm. Wt.3.4g.
RF 13961, Unstratified.

LOOPED (FIG. 6.3)

2394 Net weight.

Form: Looped. Cast strip, forming a sub-triangular loop with overlapped ends.
Size: L.24mm, W.20mm, Th.10.5mm. Wt.11.5g.
RF 4119, Context 3107, Phase 4ii.

2395 Net weight?

Form: Looped. Cast rod, bent to form a continuous sub-triangular loop, with overlapped ends.
Size: L.23mm, W.22mm, Max. Th.8mm. Wt.21.6g. (FIG. 6.3).
RF 203, Context 207, Phase 5a–5b.

2396 Net weight

Form: Looped. Cast strip, rolled twice to form a sub-triangular loop with overlapped ends.
Size: L.21mm, W.15.5mm, Th.13mm. Wt.17.5g.
RF 6926, Context 6300, Phase 6iii–7.

2397 Net weight?

Form: Looped strip of sub-rectangular section, bent to form a loop with butted ends.
Size: D. of loop 12.5mm, W. of strip c.3.5mm, Th. of strip 2.5mm. Wt.2.4g.
RF 12924, Area M1, Unstratified.

2398 Net weight?

Form: Looped. Rod of rectangular section, bent to form an irregular loop with butted ends.
Size: L.21.5mm, Max. W.16mm, Th. of rod 4mm. Wt.5.8g.
RF 13122, Unstratified.

Line-sinker or net weight (FIG. 6.3)

2399 Line-sinker or net weight

Form: Irregular, of lead sheet, with perforations at either end, D. c.1.5–2.5mm, pressed through from opposite sides. (FIG. 6.3)
Size: L.23.5mm, Max. W.10mm, Max. Th.4.5mm. Wt.5.1g.
RF 1029, Unstratified.

Other weights (FIG. 6.3)

2400 Weight

Form: Cone-shaped cast weight, with integral suspension loop. Perforation (Max. D.3mm). (FIG. 6.3)
Size: D.14.5mm, Ht.15mm. Wt.15.8g.
RF 12466, Unstratified.

2401 Suspension weight

Form: Conical, flat-based casting with iron suspension loop (hole D. c.4mm) at apex.
Size: Max. D.18.5mm, Ht. of weight 25.5mm, Ht. of loop c.11mm. Overall Wt.38.2g.
RF 50011, Unstratified.

2402 Weight

Form: Barrel-shaped, solid, flattened oval in section. Appears broken at one end. May have been used as a fishing weight or plumb-bob, if the broken end bore a suspension loop or perforation.

Size: L.38.5mm, Max. D.12.5mm. Wt.19.6g.

RF 11976, Unstratified.

Iron fish hooks

by Patrick Ottaway

There are 18 small fish hooks (five unstratified), an assemblage for which there is no Anglo-Saxon parallel. The hooks are U-shaped; none is barbed, and the tangs are either pointed or wedge-shaped (Fig. 6.4). The length of the hooks varies, but they are mostly 15–25mm long, although nos 2411 (RF 9265; Phase 4ii) and 2415 (RF 12588; unstratified) are 30 and 33mm long respectively. No. 2405 (RF 1492; Phase 6iii) has a step between the hook and the tang, on which wood remains survive. While some of these hooks may have been used with a rod, they are more likely to have been set in some form of wooden lure which was trailed in the water (Andrew Jones pers. comm.).

These distinctive objects are quite different from other Anglo-Saxon objects identified as fish hooks, including seven Anglo-Scandinavian examples from 16–22 Coppergate, York (Ottaway 1992, 600–1). The York hooks are all 55mm or more in length, and four have barbed tips, and four have looped terminals. In addition, two hooks from Anglian contexts at 46–54 Fishergate, York, are both barbed; one is 25mm, and the other 49mm long (Rogers 1993a, 1317–9, fig. 637, 508–9). These York hooks are likely to have been used for rod and line fishing.

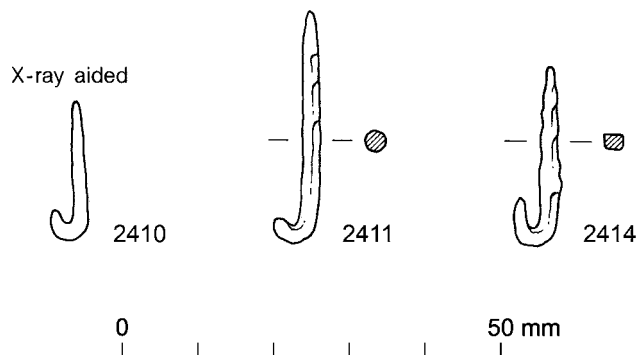


FIG. 6.4. Iron fish hooks. Scale 1:1.

Catalogue

All are U-shaped hooks which, if complete, have a tang with a pointed or wedge-shaped tip.

TANGS WITH POINTED TIP

2405 Step between hook and tang which has wood remains on it. L.16mm

RF 1492, Context 1455, Phase 6iii.

2406 L.21mm

RF 4253, Context 3107, Phase 4ii.

2407 L.21mm

RF 5969, Context 5930, Phase 6i.

2408 L.16mm

RF 7188, Context 7123, Phase 6iii.

2409 L.16mm

RF 7314, Context 2562, Phase 5b.

2410 L.19mm (Fig. 6.4)

RF 9072, Context 6300, Phase 6iii–7.

2411. L.30mm (Fig. 6.4)

RF 9265, Context 3107, Phase 4ii.

2412 L.18mm

RF 13134, Unstratified.

TANGS WITH WEDGE-SHAPED TIP

2413 L.21mm

RF 4388, Context 3989, Phase 6iii.

2414 L.23mm (Fig. 6.4)

RF 9877, Context 6300, Phase 6iii–7.

2415 L.33mm

RF 12588, Unstratified.

2416 L.23mm

RF 13219, Unstratified.

TANG TIP MISSING

2417 Incomplete hook. L.18mm

RF 418, Context 400, Phase 2i–4ii.

2418 L.17mm

RF 2314, Context 1835, Phase 6ii–6iii.

2419 L.20mm

RF 7127, Context 7123, Phase 6iii.

2420 L.15mm

RF 7815, Context 7817, Phase 6iii.

2421 L.17mm

RF 12813, Unstratified.

2422 Tang tip missing. L.28mm

RF 13693, Unstratified.

7 Woodworking, the Tool Hoard and its Lead Containers

Patrick Ottaway and Jane Cowgill

with contributions by Glynis Edwards[†] and Jacqui Watson

The excavations produced an interesting range of woodworking tools, including examples of axes, adzes, socketed chisels, rasps, wedges and drawknives. Whilst this is a far more extensive assemblage than is found on many settlement sites of this period, and it does serve to illustrate some of the types of tools in use in the settlement, it is also likely that this whole class of material is under-represented, given the length of the occupation sequence. Presumably, there would have been a much wider range of chisels and gouges in use than chanced to survive here.

In addition, in 1994 a major tool hoard contained in two large lead vessels was uncovered during extraction work at Flixborough quarry. This hoard comprised a bell (with its clapper), twelve woodworking tools, and two cultivation tools. The woodworking tool-kit helps to expand the range of tools known from the site. It comprised an axe, four T-shaped axes, an adze, a T-shaped adze, two shaves, and three spoon bits. The cultivation tools comprised a bill hook and a hoe or spade-sheath (see also Ch. 6, above); for examples of other bells from the site, see Ch. 3.4, above.

The lead vessels and the possible significance of the tool hoard are discussed here at length. In passing, it is also worth noting here that a lead suspension mount for a similar large lead vessel was found in the excavation, and is discussed separately in Ch. 5.5, above.

7.1 Woodworking tools

***by Patrick Ottaway with contributions by
Glynis Edwards[†] and Jacqui Watson***

Axe (FIG. 7.1; PL. 7.1)

No. 2423 (RF 12107; Period 2) is an axe head. It is symmetrical in cross-section, and has a distinctly formed socket for the handle, of which there are some apparently charred remains. The blade widens away from the socket, but to a greater degree at the rear than at the front, and the rear edge also angles outwards slightly as it approaches the cutting edge (FIG. 7.1; PL. 7.1). The proportion of length (160mm) to maximum width (85mm) is c.2:1 which is common enough for Anglo-Saxon axes. It is likely this axe was a carpenter's tools used for tree felling, and for cutting and splitting timbers. It probably had a beech handle.

Adze (FIG. 7.1; PL. 7.2)

No. 2425 (RF 11793; Phases 2–5a) is an adze, a tool which has the faces of the blade at 90° to the long axis of the handle. It was used for 'removing heavy waste, levelling, shaping, or trimming the surfaces of timber' (Salaman 1975, 23). The head of no. 2425 (RF 11793) is slightly burred, suggesting its use as a hammer. The handle had been held in place by small iron wedges which remain *in situ* in the socket. There appear to be no other Middle Anglo-Saxon adzes recorded from England, but two late Anglo-Saxon examples come from the 9th–10th century hoard found at Hurbuck, Co. Durham (Hodges 1905, 213–15; Wilson 1968, 143–4; 1976, 257, fig. 6.1c), two more from Thetford (I. H. Goodall 1984, 78–9, fig. 117, 11–2) and one from Skerne, East Yorkshire (Dent 1984; Loveluck 2000, fig. 11.8).

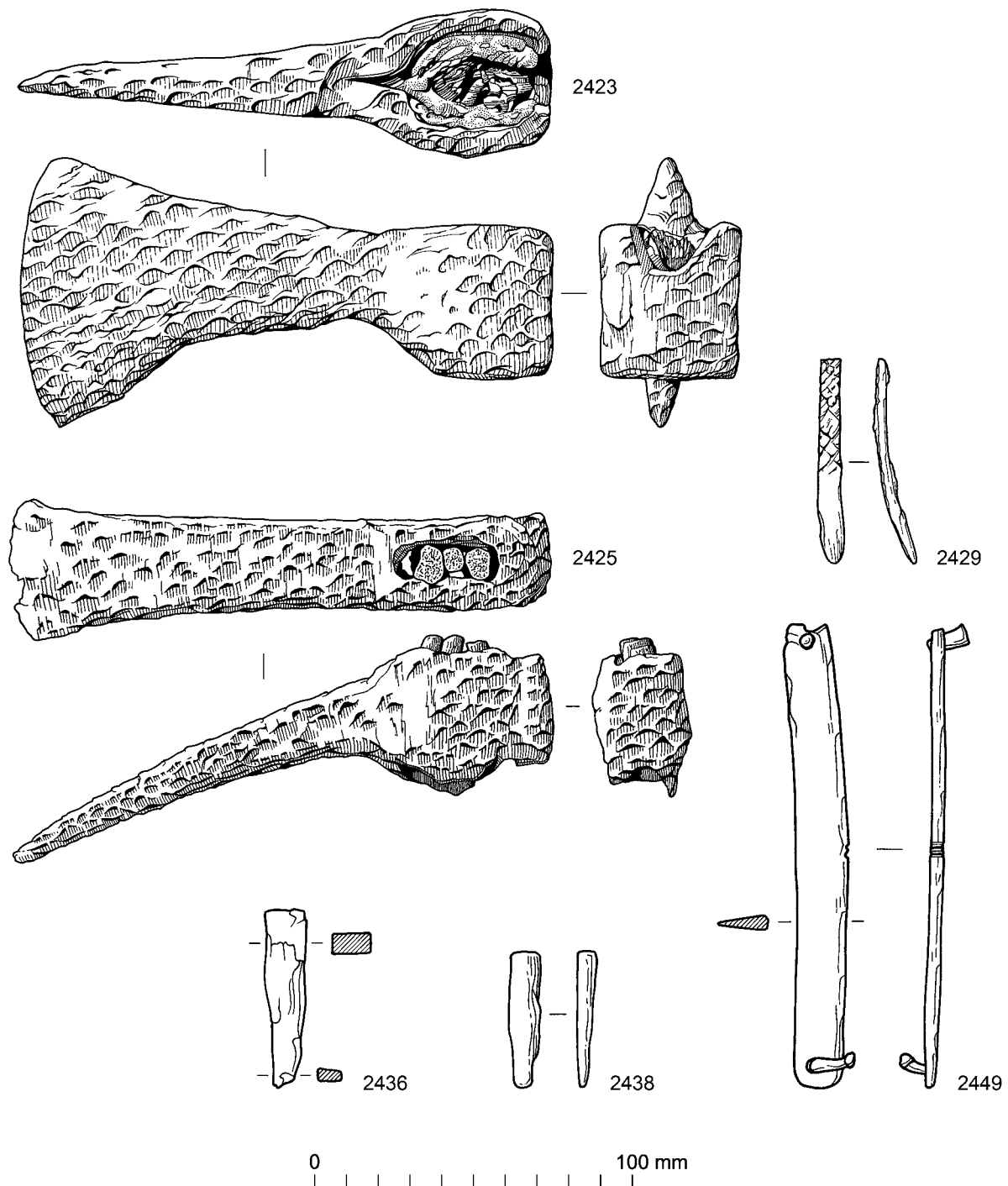


FIG. 7.1. Woodworking tools. Scale 1:2.

Socketed chisel

No. 2426 (RF 7850; unstratified) is a socketed chisel or slice. The blade widens away from the socket and is slightly curved. The function of these objects has been discussed by McGrail (1977) and Ottaway (1992, 530). Socketed chisels appear to be typical of the Anglo-Saxon period and do not

occur in contexts of any other. An object from a 6th-century grave at Soham, Cambs. (Lethbridge 1933, fig. 3) may be an early example, but two objects very similar to no. 2395 (RF 7850) come from Anglo-Scandinavian contexts at 16–22 Coppergate, York (Ottaway 1992, 529–31, fig. 205, 2258) and Skerne, East Yorkshire (Loveluck 2000, 231–7).

Rasps (Fig. 7.1)

There are three files or rasps which would have been used by woodworkers or bone workers. No. 2429 (RF 11216; Phases 2–5a) is complete (Fig. 7.1), while nos 2427–8 (RFs 9140 and 9772; both unstratified) are broken. They are, or were, tanged blades which have teeth at relatively wide intervals compared to metalworker's files, and this prevents them clogging up. No. 2427 (RF 9140) has teeth at 6–8mm intervals, and no. 2428 (RF 9772) at 4mm intervals. On no. 2429 (RF 11216) the teeth are cross-cut. No other contemporary examples are known from Britain, but Petersen (1951, 495, 534, fig. 271) refers to a number from Viking-Age graves in Scandinavia.

Wedges (Fig. 7.1)

There are 18 probable wedges (seven unstratified). The larger examples were probably used for splitting timbers and the smaller, perhaps, for holding wooden tool handles in place as can be seen on the adze (no. 2425; RF 11793) described above, and on the adze from the Flixborough hoard (see below). The first group includes no. 2432 (RF 6201; Phase 4ii), 97mm in length and now curved as a result of use, and no. 2445 (RF 12091; unstratified), 60mm in length, which has a head burred from use. Smaller wedges include no. 2430 (RF 2780; Phase 5a), no. 2434 (RF 7938; Phase 5b–6i) and no. 2437 (RF 8914; Phase 6iii) which are 38mm, 33mm and 26mm in length respectively.

Drawknives (Fig. 7.1)

Flixborough has produced three drawknives of a distinctive Anglo-Saxon form: no. 2449 (RF 5789; Phase 4ii), and no. 2448 (RF 3741) and RF 14239 (both unstratified). These are sturdy, flat blades, at their thickest in the centre, which are pierced at each end, and have a straight cutting edges and convex backs. The back of no. 2449 (RF 5789) is unusual in having chamfered edges and two notches cut in the centre (Fig. 7.1). Nails survive in the holes of nos 2448–9 (RFs 3741 and 5789) which would have fixed the blades to the wooden handles. The form of the handles is unknown, but they probably projected from the blades in such a way as to allow them to be used for trimming, chamfering and rounding timber.

Drawknives of the form under discussion are unknown outside the Anglo-Saxon period, but within it there is a wide range of sizes, although no. 2448 (RF 3741) with a length of 205mm is one of the longest recorded. The type may have its origin in the early Anglo-Saxon period and there is an example from Sutton Courtenay, Berks. (Leeds 1923, pl. 27, fig. 1 L). Middle Anglo-Saxon examples come, *inter alia*, from Burrow Hill, Butley, Suffolk (Fenwick 1984, 40, fig. 4), Riby, Lincs. (Ottaway 1994, 251–2, 257, illus. 14, 22) and Thwing, East Yorks. (I73–5, Ottaway unpublished a). There are also Anglo-Scandinavian examples from York (Ottaway 1992, 589, 2982) and Repton, Derby. (unpublished, excavated by M. Biddle and B. Kjølbye-Biddle, sf3331 and sf5708). It may be noted that drawknife blades with a tang at each end,

of the form that was usual in medieval times, are hardly known in Anglo-Saxon contexts, although an example comes from Sandtun, Kent (Wilson 1968, 148).

Catalogue*Axes (Fig. 7.1; Pl. 7.1)*

2423 Symmetrical in cross-section. The top of the head is flat. In cross-section the socket is pinched at the base. The blade widens away from the head at the front and rear, but at the rear it also angles outwards slightly from a point c.45mm from the cutting edge. Charred wood in the socket, and random organic material on surface. Probably *Fagus* sp. (beech). [SEM B799]. L.160; blade: W.85; socket: W.43mm (Fig. 7.1; Pl. 7.1)

RF 12107, Context 6492, Period 2.

2424 Fragment of axe blade L.52, W.28, T.10mm
RF 12940, Unstratified.

Adze (Fig. 7.1; Pl. 7.2)

2425 The faces of the head have markedly convex sides, and its top is slightly burred. The blade is slightly curved and widens slightly towards the cutting edge. Handle, of which some trace survives, was secured in the socket by three wedges. Traces of wood in socket, random organic material on surface. L.173; blade W.43mm (Fig. 7.1; Pl. 7.2).
RF 11793, Context 10772, Phase 2–4ii.

Socketed chisel

2426 Blade slightly curved and widens away from base of socket, and has convex cutting edge. Socket has nail-hole. L.145; blade: W.55mm
RF 7850, Unstratified.

Rasps (Fig. 7.1)

2427 Blade only, with teeth at 6–8mm intervals. L.86, W.13mm
RF 9140, Unstratified.

2428 Incomplete blade with teeth at c.4mm intervals. L.49, W.13mm
RF 9772, Unstratified.

2429 Slightly curved, short tang and blade, now incomplete, with cross-cut teeth on both faces. L.66, W.8mm (Fig. 7.1).
RF 11216, Context 10772, Phase 2i–4ii.

Wedges (Fig. 7.1)

2430 L.38, W.11mm
RF 2780, Context 2773, Phase 5a.

2431 L.49, W.10mm
RF 4400, Context 3891, Phase 6ii.

2432 Curved. L.97mm
RF 6201, Context 5503, Phase 4ii.

2433 Tip only. L.23, W.11mm
RF 7491, Unstratified.

2434 Obscured by corrosion. Head slightly burred. L.33, W.11mm
RF 7938, Context 6344, Phase 5b–6i.

2435 L.41, W.15mm
RF 7941, Context 6344, Phase 5b–6i.

2436 Tip missing. L. 49, W. 13mm (Fig. 7.1).
RF 8251, Context 3989, Phase 6iii.

2437 Obscured by corrosion. Head slightly burred. L.26, W.9mm
RF 8914, Context 3989, Phase 6iii.

- 2438 Tapers from centre to tip. L.43, W.9mm (Fig. 7.1).
RF 8983, Context 3107, Phase 4ii.
- 2439 Head cut off. L.61, W.22mm
RF 9065, Unstratified.
- 2440 Obscured by corrosion. L.54, W.20mm
RF 9130, Unstratified.
- 2441 Slightly curved. L.43, W.13mm
RF 9139, Unstratified.
- 2442 Tip missing. L.48, W.11mm
RF 9264, Unstratified.
- 2443 Head slightly burred. L.29, W.14mm
RF 9779, Unstratified.
- 2444 Incomplete. L.30, W.9mm
RF 10430, Context 1891, Phase 6ii–6iii.
- 2445 Head slightly burred. L.60, W.15mm
RF 12091, Context 6498, Phase 6ii–6iii.
- 2446 Head hacked off. L.56, W.24mm
RF 12977, Unstratified.
- 2447 L.59, W.12mm
RF 13673, Unstratified.

Drawknives (Fig. 7.1)

- 2448 Cutting edge slightly concave, and back convex. Both holes have nails *in situ*. Charcoal and random organic material present. L.205, W.15mm
RF 3741, Unstratified.
- 2449 Cutting edge concave and back convex. The back is chamfered along both edges and two notches are cut into its centre. Both holes have nails *in situ*, with their heads projecting from opposite faces of the blade. L.145, W.15mm (Fig. 7.1).
RF 5789, Context 3758, Phase 4ii.

7.2 The Flixborough tool hoard

by Patrick Ottaway

A hoard of iron objects contained in two large lead vessels (see Cowgill below), one inside the other, was discovered in 1994 during quarrying to the west of the main excavation site (Loveluck, Volume 1, Ch. 1 and Fig. 1.8). The objects consisted of a bell, 12 carpenter's tools and two cultivation tools. The objects are discussed in this order, followed by a note on the iron vessel suspension fittings, and a discussion of the objects as a group. The lead vessels are then discussed in detail by Jane Cowgill.

Bell (Fig. 7.5)

The bell (no. 2450; RF 60001) with its clapper (no. 2451; RF 60002) exemplifies the usual method of bell construction in the Anglo-Saxon and equivalent periods (Bourke 1980, 52–4). The case was made from a single sheet of iron folded over in the centre to give a seam on each side. This was soldered with the copper alloy brazing metal which also covered the entire exterior surface of object. On occasions, the seams of bells are also nailed and there is a nail in one of the seams of no. 2450 (RF 60001). Before folding, two holes were punched in the head of the case,

and after folding, a ring was set into them to serve as a handle and to suspend the clapper. On no. 2450 (RF 60001) an additional short strip has been brazed to the base of the case, to secure one of the seams.

The most remarkable feature of no. 2450 (RF 60001) is the pair of incised eight-armed crosses, one on each face. On one face the cross is in the centre, and this is more clearly formed than the cross on the other face, which is near the top of the case. In both cases, it is clear that the Greek cross (+) was incised first, and the other arms were added afterwards. These crosses appear to echo the six-armed cross motif on the larger lead tank, and may suggest some direct link between the manufacture and deposition of the bell (see below).

As noted in the discussion of bell fragments from the excavation (see Ch. 3.4, above), bells of the type described here have a long history, and occur in many different sizes. Large bells of a similar size to no. 2450 (RF 60001) are, however, rare in archaeological contexts, although it may be noted that a large bell, similar to no. 2450 (RF 60001), comes from a late 9th-century context adjacent to the Anglo-Saxon church at Repton, Derby. (unpublished, excavated by M. Biddle and B. Kjølbye-Biddle, sf3812).¹

In his discussion of early Christian bells from Ireland, Bourke (1993, 40) notes that bells have been used to regulate the canonical hours since as early as the 6th century, and may also have been used to punctuate the liturgy for the benefit of that part of a congregation unable to fit inside small early churches. Bourke goes on to note that the lives of Irish saints, including that of St Patrick, are full of stories of miracles worked by bells. Although it may be presumed that bells in early Christian Ireland and Anglo-Saxon England were also hung around the necks of cattle and sheep, the presence of the incised crosses on the Flixborough bell would appear to give it a sacred significance. There is no close parallel for this feature on any other English bell. In Ireland bronze bells, usually of mid 8th- to mid 10th-century date, may on occasions bear a cross motif (Bourke 1980, 55–7). In addition, the bronze-coated iron bell of Irish origin in the British Museum, known as the Bell of St Cuilleann, has an elaborate Celtic cross incised into it (Smith 1923a, 141–2, pl. 13). The shrine in which that bell is now housed is dated to the 11th century.

Axe (Fig. 7.5)

No. 2452 (RF 60010) is a robust axe with an asymmetrical cross-section, one face appearing vertical, while the other slants to meet it. This suggests a specialised use for chopping or trimming timbers with a downward action (Ypey 1981). In addition, the socket of this axe does not appear distinct when the object is seen in cross-section, and the top is flat and burred, as if to suggest it was either used as a hammer or to receive hammer blows. The ratio of length (185mm) to maximum width (57mm) is 3.24:1, indicating that it has a relatively narrow blade compared,

for example, to the axe recovered during the Flixborough excavation (see no. 2423, RF 12107, above).

T-shaped axes (Figs 7.6–7.7)

The hoard produced four T-shaped axes (nos 2453–6; RFs 60006–8, and 60012), each of which consists of an elongated blade attached by means of a distinct neck to the socketed head. The head of no. 2456 (RF 60012) is not complete, and no. 2457 (RF 60013) is a fragment of head which probably belonged to it, although the two do not now fit together. The handles of such axes would usually have been set more or less parallel to the blade, as can be seen on a late Anglo-Saxon example from London with a surviving oak handle held in place by an iron wedge (Pritchard 1991, 135, fig. 3.14, 26). However, the sockets of nos 2455–6 (RFs 60008 and 60012) from Flixborough are bent, such that the handle would have been at a slight angle to the line of the blade. Nos 2453 and 2456 (RFs 60006 and 60012) are symmetrical in cross-section while, like axe no. 2452 (RF 60010; see above), nos 2454–5 (RFs 60007–8) are asymmetrical, making them suitable for chopping. No. 2453 (RF 60006) may also be distinguished from the others in having a more slender blade. The top of the head of no. 2455 (RF 60008) is relatively flat, but the tops of no. 2453 (RF 60006) and no. 2454 (RF 60007) are rounded. These Flixborough axes have a range of sizes, with blades from 126–200mm in length. In each case the blades have straight ends which are turned up slightly at the top corners (not as pronounced on no. 2453, RF 60006, as on the others), a distinctive feature which may suggest that they were made as a set. In addition, they all have evidence for a weld line between the blade and the base of the neck. The impression of their being a set is supported by the variation in weight, as well as size, which correlate closely as shown in FIG. 7.2.

The T-shaped axe was used for a variety of tasks, depending, to some extent presumably, on the form and size of the blade. Examples can be seen in the *Bayeux Tapestry* being used for boat building (Stenton 1957, fig. 38), and in the 11th-century *Caedmon Manuscript* being wielded by Abraham building an altar (Oxford, Bodleian, Junius II, p.87).

In archaeological literature the term ‘T-shaped axe’ covers tools of a number of different sizes and blade forms found in Anglo-Saxon contexts, but there is no clear evidence for typological development. The date of origin of the tool is uncertain, although it does not appear

to have existed in the Roman period. An example from an Anglo-Saxon grave at Hauxton, Cambs. (Fox 1923, 259, pl. 36, 11) appears to resemble the Flixborough axes quite closely. However, an axe from a grave at Sarre, Kent is rather different, in having a relatively short blade with a pronounced convex cutting edge (Brent 1866, pl. 11, 39.1; Wilson 1968, 144). A similar axe of the Middle Anglo-Saxon period comes from *Hamwic* (SOU24.22 unpublished, excavated by Southampton City Council), but in this and the Sarre case, it is possible that the blade form, as now seen, is a result of wear. Late Anglo-Saxon T-shaped axes often have narrow elongated blades, as seen on the larger specimen in the Hurbuck hoard (Hodges 1905, 213–15; Wilson 1976, fig. 6.1h – incorrectly captioned), although the other axe from Hurbuck and that from the Crayke hoard (Sheppard 1939, 278, 280, 17) appear to have or to have had the proportions of the Flixborough axes. In addition, two axes from the Thames recorded by Wheeler (1927, fig. 8, 4–5), dated on no very good evidence to the 9th century, (and designated Type 2), are again similar.

Adze (Fig. 7.7)

No. 2458 (RF 60011) is an adze for trimming timber, very similar in form and size to no. 2425 (RF 11793) from the excavation (see Ch. 7.1, above), although its blade has a greater maximum width. In addition, the blade of no. 2458 (RF 60011) widens towards the cutting edge, more on the right side (seen from the handle), than on the left, which would have made it a bit unbalanced. The handle was held in the socket by iron wedges of which two survive. As noted, there appear to be no other adzes recorded from Middle Anglo-Saxon contexts in England, but late Anglo-Saxon examples come from the Hurbuck hoard (Hodges 1905, 213–15; Wilson 1976b, 257, fig. 6.1c), Thetford (I. H. Goodall 1984, 78–9, 11–2) and from Skerne, East Yorkshire (Dent 1984; Loveluck 2000, 230–31).

T-shaped adze (Fig. 7.7)

No. 2459 (RF 60009) is a T-shaped adze, with a blade similar to that of the T-shaped axes, in having the distinctive upturned corners. The top of the head is thickened to form a distinct projection which could have been used as a hammer. There is a small notch in the base of the socket, which may have aided the insertion of a wedge to hold the handle. This is an unusual object and the only comparable item from an Anglo-Saxon context in England comes from

Cat. no.	RF	Grammes	Length blade
2455	60008	794	195
2456	60012 (incomplete)	700	200
2453	60006	628	181
2454	60007	546	160

FIG. 7.2. Flixborough hoard: T-shaped axes, weight and blade length.

the Hurbuck hoard (Hodges 1905, 213–15; Wilson 1976b, 257, fig. 1f), although Scandinavian Viking-Age examples are published by Petersen (1951, 233, 519, fig. 120).

Shaves (FIG. 7.8)

There are two shaves (no 2460–1; RFs 60004–5). A shave had a similar function to a drawknife, but the blade is curved into a U-shape, and it was used for shaping wooden vessel staves for buckets, barrels etc. (Salaman 1975, 180).

No. 2460 (RF 60004) is larger than no. 2461 (RF 60005), but otherwise they are very similar to one another. The blades are, as is usually, although not exclusively, the case, at $c.45^\circ$ to the tangs, on which traces of the wooden handles survive. Shaves have a long history, beginning in the Roman period and continuing more or less to the present day. However, the only other Anglo-Saxon/Anglo-Scandinavian example known is from 16–22 Coppergate, York (Ottaway 1992, 531–2, 2259), on which the blade is set at 90° to the tangs.

Spoon bits (FIG. 7.9)

There are three spoon bits (nos 2462–4; RFs 60016–18), from augers used for boring and enlarging holes in wood. Originally, they would have had transverse wooden handles, which gave the complete object a T-shape. The Flixborough examples are of the standard basic form which has remained little changed from the Roman period to the present day. The tangs, however, are leaf-shaped, and do not have the pronounced shoulders at the base which is much more common in the Anglo-Saxon period. The blades are, as is usual, of U-shaped cross-section and have rounded tips.

The three spoon bits may be considered as a set or part of a set, such that all carpenters would have, as they vary in length (268–388mm) and in width (22–32mm) and depth (8–17mm) of blade. Another set, in this case of six spoon augers, was found in the Mästermyr tool chest from Gotland, Sweden (Arwidsson and Berg 1983, pls 13 and 28). There are other examples of many different sizes from Anglo-Saxon/Anglo-Scandinavian contexts in Britain, but at 388mm no. 2462 (RF 60016) is amongst the largest known (Ottaway 1992, 532–6). It may also be noted that spoon augers have been found in the Anglo-Saxon tool hoards at Hurbuck (Hodges 1905, 213–15; Wilson 1976b, 258–9, fig. 6.2b), Westley Waterless, Cambs. (Fox 1923, 300; Wilson 1968; 1976, 258–9, fig. 6.2a), and St Saviourgate, York (unpublished, excavated by MAP).

Bill hook (FIG. 7.9)

No. 2465 (RF 60019) is a bill hook, used for trimming branches and the like, almost identical in both form and size to no. 2361 (RF 8702), found unstratified on the excavation (see Ch. 6.1). The only difference between the two objects is that there are wood remains of the handle throughout the socket of no. 2465 (RF 60019), as opposed to just at the mouth on no. 2361 (RF 8702), although whether this

means their handles were set in different ways is not clear. As noted above, the only comparable objects to the two Flixborough bill hooks come from the ironwork hoards at Stidriggs, Dumfriesshire, and Hurbuck (Page 1905, 213–15). The object from Westley Waterless, referred to by Fox (1923, 300) as a ‘bill’, is probably the spoon bit.

Hoe or spade sheath (FIG. 7.9)

No. 2466 (RF 60003) is a curious object for which there is no ready parallel, but it probably served as the sheath for a wooden hoe or narrow spade blade. It exists as two plates, $c.125\text{mm}$ long, welded together at one end. Each plate narrows away from the weld to a rounded head. The object is pierced twice for attachment to wood by two nails which remain *in situ*.

Vessel suspension fittings (FIG. 7.10)

The larger lead tub had a pair of vessel suspension fittings attached to it, while two others (nos 2467–8) were found loose in the smaller vessel. They each exist as a ring, which is pinched at one point to form a small hook which was set into the vessel rim. Similar fittings were found used as handles on a wooden chest re-used as a coffin in the Anglo-Scandinavian cemetery at York Minster (Kjølbye-Biddle 1995, 515–16, M1646).

Discussion

As will be apparent from the discussion of the individual objects, it is difficult to give an exact date to the Flixborough hoard on typological grounds, although it should be placed in an 8th–10th century bracket. Further inferences on date may, however, be drawn from the character of the hoard and its context within the overall development of the Flixborough site.

The hoard may be compared with a small group of ironwork hoards (sometimes also including items in other materials) of probable 9th–10th century date from Britain. This comparison will reveal that the Flixborough hoard fits neatly into the pattern of hoarding in some ways, but that it also has some peculiar aspects. In addition, it is instructive to compare Flixborough, and the British hoards, with some of the hoards of Viking-Age date from Scandinavia.

A hoard may be defined as a group of artefacts, considered at the time of their assembly to be in some way of unusual value, which was deliberately buried or otherwise concealed. This might have taken place to allow the material to be kept safe and then recovered, perhaps after a time of danger had passed. In other cases, there may have been no intention to recover the hoard, and burial or concealment was part of some form of ritual offering associated with religious practice. In this latter case, hoards have some similarity in their inspiration to grave furnishing. The question of whether a particular hoard was intended for recovery or not will often be unclear, especially if the context in which it was found was not well recorded. However, comparative analysis of the contents of a hoard can provide useful indications as to the intentions of its creators. In FIG. 7.3

Site name	Tools	Other	Container
Crayke, N.Yorks.	15	14	none
Stidriggs, Dumfriesshire	14	7	lead tank
Flixborough	14	1	2 lead tanks
Hurbuck, Co. Durham	14	5	none recorded
Westley Waterless, Cambs.	3	2+	2 lead tanks
York, St Saviourgate	8	22	iron cauldron and lead tank

FIG. 7.3. British 9th–10th century ironwork hoards: approximate numbers of tools and other iron objects, and type of container, if any.

Site name	Tools	Other	Container
Ålebaek	10	4	none recorded
Dejbjerg	8	0	chest?
Halleby Å	5	2	none recorded
Mästermyr	44	20+	chest
Tjele	16	4+	chest?
Veksø	29	13	chest?

FIG. 7.4. Scandinavian Viking-Age hoards (all Denmark, except Mästermyr, Gotland): approximate numbers of tools and other iron objects (excluding chest fittings), and type of container, if any.

details of the British hoards to be considered here are given, and in FIG. 7.4 details of the Scandinavian hoards.²

The Flixborough hoard consists of 15 iron objects (not counting the vessel suspension fittings): a bell, 12 carpenter's tools, and two tools associated with cultivation. The carpenter's tools are all large items suitable for use in construction, but this is not a full tool kit in any sense.

In containing carpenter's tools, Flixborough has affinities with all the British hoards, but is similar only to Stidriggs in having little else. In addition to the tools, the Stidriggs hoard had, like Flixborough, a bill hook and a unique object, probably an eel fork or salmon leister. Hurbuck had four axes (two of which are T-shaped) and two spoon bits, and also like Stidriggs and Flixborough, a bill hook (Hodges 1905, 213–15; Wilson 1976b, 257–9, fig. 6.1a,g,h; fig. 6.2b). In addition it had a seax, a sword, three scythes, a ferrule, a ring and a probable staple. Westley Waterless had 'a bill [probably the spoon bit], spearhead with split socket, plough share, punch, hasps and other fragments of iron' (Fox 1923, 300). York, St Saviourgate (unpublished, excavated by MAP) has a spoon auger bit and two drawknives, but also had four leatherworker's awls and a knife. In addition, York, unlike any of the other British hoards, except Westley Waterless, had structural fittings, c.20 in number, including a stapled hasp, and also some iron bars, which gives it an affinity possibly to the Westley Waterless hoard with its 'fragments', but certainly to the Crayke hoard which produced a number of pieces of scrap iron (Sheppard 1939). In addition Crayke

produced two carpenter's tools in the shape of a gouge and a T-shaped axe, but also smith's punches and knives, as well as a seax, a horse bit, a wall hook.

When the contents of the Scandinavian hoards in FIG. 7.4 are reviewed, one finds there is a heavy emphasis on carpenter's and smith's tools. The small hoards from Dejbjerg (Hansen 1988–9) and Halleby Å (Engberg and Buchwald 1995, 71, fig. 11) were divided between carpenter's and smith's tools, with no other contents. The hoards from Ålebaek (Engberg and Buchwald 1995, 74, fig. 13) and Tjele (Leth-Larsen 1984) contained largely smith's tools, but the former also had two bits of sword and a spearhead, and the latter also had an axe and a helmet. Veksø had no fewer than 11 spoon auger bits and a shave representing carpenter's tools, and sickles, bill hooks and a coulter representing agriculture, as well as a few other items (Engberg and Buchwald 1995). Mästermyr is the largest and most diverse of the Scandinavian hoards (Arwidsson and Berg 1983). It contained a varied range of the tools of a carpenter and a metalworker, along with three bells, some keys and lock parts, and unusual items like a griddle and a fire grid. In addition, like the York and Crayke hoards, it contained scrap iron.

Having briefly summarised the contents of the British and Scandinavian hoards, we may review the containers in which they were buried. The Flixborough, Stidriggs, Westley Waterless and York hoards are similar, in that they were buried in lead tanks. The Flixborough hoard was buried in one lead tank inside a second. The Stidriggs and

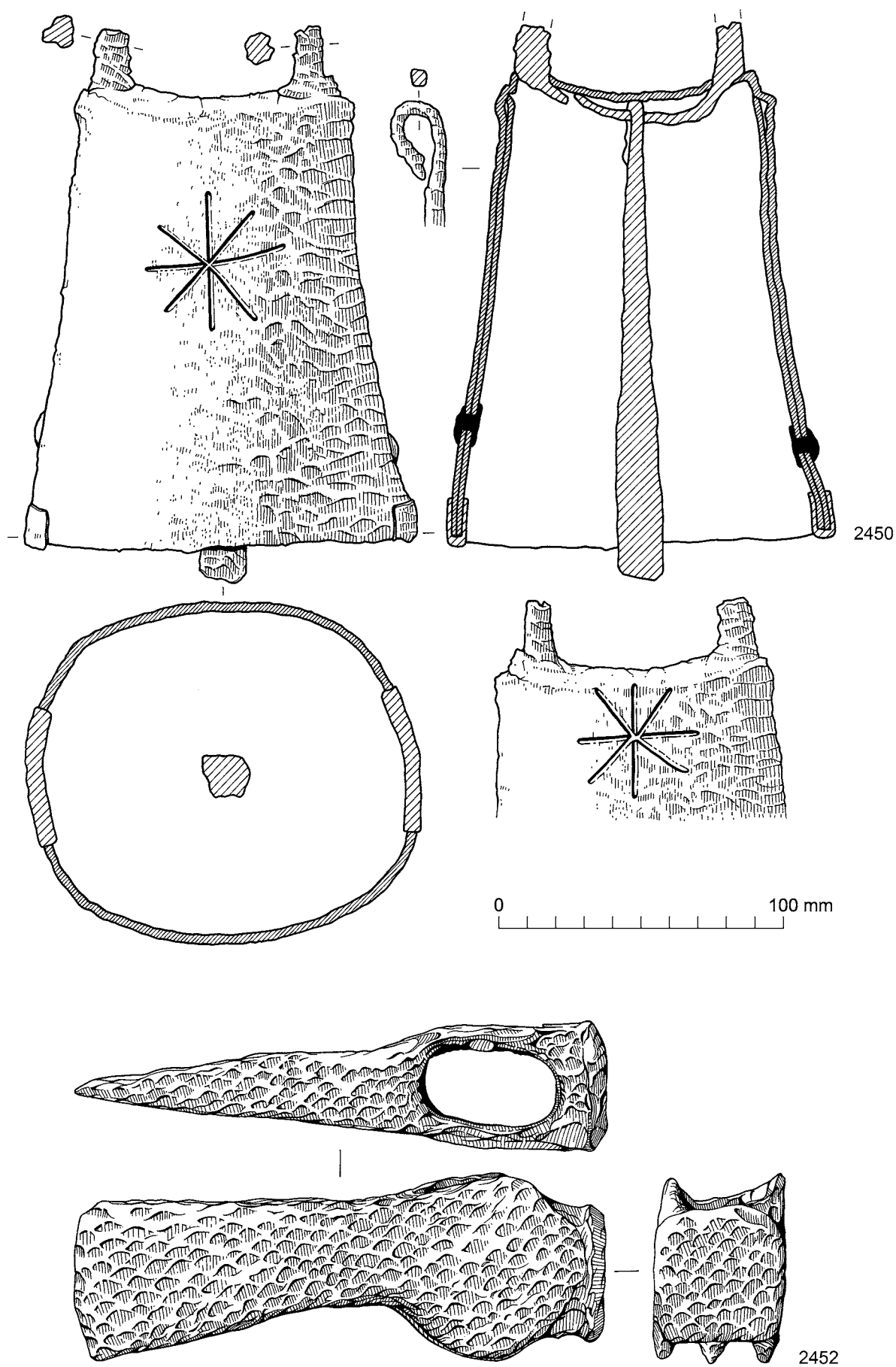


FIG. 7.5. Flixborough tool hoard: bell and axe. Scale 1:2.

Westley Waterless hoards were buried in a single lead tank. The York hoard was in an iron cauldron inside a lead tank, both containers being buried in a rubbish pit. However, the Crayke hoard apparently had no container, and, if the Hurbuck hoard had a container, it is not recorded. By contrast, if any evidence has survived, the Scandinavian hoards appear to have been buried in wooden chests, although only Mästermyr produced the chest itself, rather than just its fittings.

The data on containers may lead us to some conclusions about the circumstances in which these hoards were buried. Taking the Scandinavian hoards first, the Mästermyr hoard appears to have been the property of a travelling craftsman working in both wood and metal, the chest containing his tools and some scrap metal. The Ålebaek and Tjele hoards appear to have been specifically smiths' hoards. Veksø is thought to have been the property of a farmer, who may have been a craftsman as well. Although in no sense complete tool kits, the Dejbjerg and Halleby Å hoards are thought to have belonged to craftsmen in metal and wood. In the case of Mästermyr the material was readily portable in its chest, and this would have been the case with the other hoards, if kept in a chest. There seems no good reason to doubt that the persons depositing the Scandinavian hoards intended to recover their property. Similar conclusions cannot be so easily reached about the British hoards. Although it may serve well enough for storage in a fixed location, a lead tank is not as easy to carry around as a wooden chest. Having said this, it seems likely that the York hoard with its heterogeneous content, largely of low value items, was a smith's stock of scrap concealed with every intention of recovery. The Crayke hoard, found below what Sheppard (1939, 279) suggests was the debris of a burnt building, may have been abandoned by a smith in his workshop, following a fire. Westley Waterless may have been, as Fox puts it, 'the stock-in-trade' of 'a small worker in iron', although the lead tub (*ibid.*, pl. 35) might seem a more expensive item than a 'small worker' would usually have at his disposal.

One of the most striking aspects of the Flixborough hoard, and one which has not yet been mentioned in this discussion, is the Greek cross over an X monogram to be seen incised on the iron bell. The nature of the motif appears to take us into the area of Christian ritual, in which, as noted above, bells had a number of roles. The monogram recalls the I over X monogram on the outer lead tank which may also be of Christian significance (see Ch. 7.3, below). It should also be noted that a similar, though not identical six-armed cross motif is present on a lug from another lead vessel from the site – no. 2037: see FIG. 5.10 and Ch. 5.5, above). This inference of a link between the container and one of the objects in the hoard cannot be drawn from any of the other hoards referred to above. The implication of Christian ritual associations may also carry over to the tools themselves. Jesus Christ is, after all, known in the Bible as a carpenter (*St Mark 6.3*) and the son of a carpenter (*St Matthew 13.55*). If the bill hook and sheath are left aside, there are twelve carpenter's tools: four T-shaped axes, three

spoon bits, two adzes, two shaves and one ordinary axe. It does not seem unreasonable to suggest that they symbolise the twelve apostles.

If the analysis in the previous paragraph is correct, it may be suggested, returning to the question of why hoards were concealed, that unlike most, if not all, of the others referred to in this discussion, the Flixborough hoard was buried without any intention to recover it. The context in which this occurred is, perhaps, that the tools were deposited after use in construction of a sacred building because further use would defile them, and, therefore, anyone using them. A candidate for such a building is, perhaps, the probable church, Building 1a in Phase 3a, dated to the early–mid 8th century.

Burial of iron tools for ritual purposes in an Anglo-Saxon context is not unknown, and there are numerous Anglo-Saxon graves which have produced tools of various types. The most remarkable example, however, is probably the grave from Tattershall Thorpe, in which at least six smiths' tools, a bell and some scrap items were found (Hinton 1993; 2000). In spite of the inclusion of the bell, this grave was presumably not Christian. A ritual context for burial of metalwork in a Christian context can, however, be given to the Anglian helmet from 16–22 Coppergate, York, with its overtly Christian inscription, which was found in a pit along with an iron weft-beater (Binns *et al.* 1990; Tweddle 1992).

Finally, we should note another probable instance of hoarding at Flixborough itself, in the apparently deliberate burial of the cauldron chain (no. 1777; RF 7107) and plough share (no. 2360; RF 7110) in a small pit of Phase 3biv–5b. Whether these items were concealed for later recovery, or as a ritual offering is, however, not clear.

Remains of wooden tool handles

by Jacqui Watson

The tools from the hoard, had wooden handles, and, as with material from the rest of the site, few could be identified. None of the axes had the remains of any organic material that could be identified, but two (nos 2454–5; RFs 60007, 60008) seemed to have a part granular, part laminated material that may have been resin. The adze (no. 2458; RF 60011) had a fruitwood handle, probably apple, pear or hawthorn. The iron bill hook (no. 2465) had the remains of willow or poplar in the socket, which is likely to be what it was mounted on. Of the two spokeshaves, only one handle could be identified as ash on no. 2460 (RF 60004), its other handle being of a different species. Possibly this tool had been repaired at some point?

Notes

- 1 The writer is also aware that an example of a large bell has recently been found on a high Pennine site at Asby Windermere, Cumbria; however, as the full details of this find and its context had not been published at the time that this volume was going to press, this bell has not been included in this discussion.

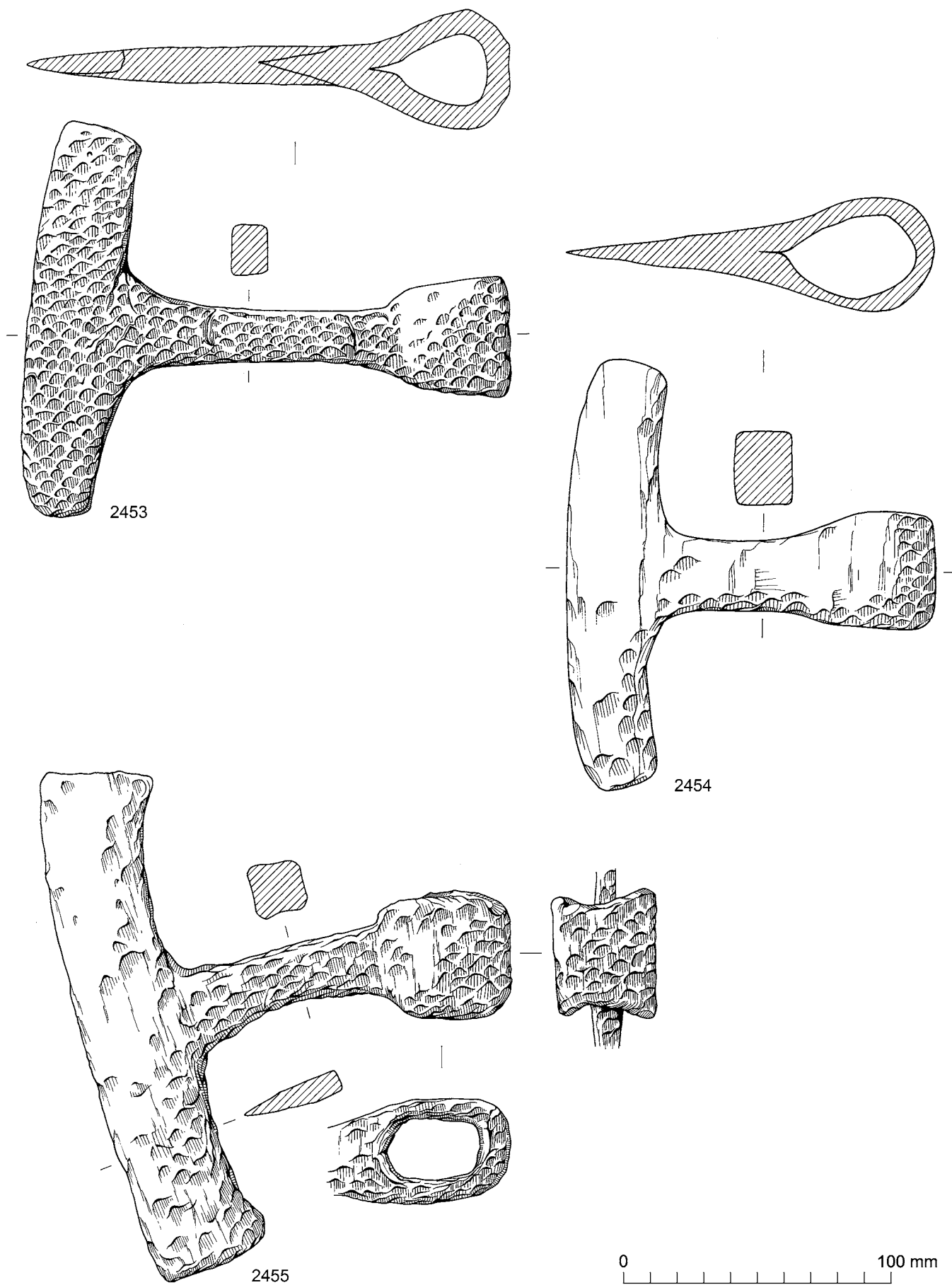


Fig. 7.6. Flixborough tool hoard: T-shaped axes. Scale 1:2.

- 2 A Late Anglo-Saxon hoard of ironwork from Bishopstone, Sussex, was found after this discussion was completed; it will be published by Gabor Thomas and Patrick Ottaway.

Catalogue of the Flixborough hoard (Figs 7.5–7.10)

Bell (Fig. 7.5)

2450 The case is complete, but the handle ring is fragmentary. The case seams are largely held together by brazing metal, but near the base of both seams is a nail. An additional strip was brazed onto the base of the case to cover one of the seams. This may have continued around other parts of the base of the case, but it is no longer present. On both faces there is an incised eight-pointed star (a Greek cross over an X). On one face, it is in the centre and more clearly formed than on the other face, where it is near the top. In each case, the Greek cross was formed first, and the arms of the X added afterwards. L.160, W.138mm. (Fig. 7.5). RF 60001, Unstratified.

2451 Bell clapper (presumably for no. 2450, RF 60001). At the head is a loop, and at the base it has been folded over to thicken it. L.67mm
RF 60002, Unstratified.

Woodworking tools

AXE (Fig. 7.5)

2452 Asymmetrical cross-section. The faces of the head have convex sides, and the top is flat and slightly burred. In cross-section, the socket is oval. The blade widens slightly to the cutting edge. L.185; blade: W.57mm. Wt.1082g. (Fig. 7.5).
RF 60010, Unstratified.

T-SHAPED AXES (Figs 7.6–7.7)

2453 The head has a rounded top, and the neck has a sub-rectangular cross-section. In cross-section, the socket is pear-shaped. X-radiograph suggests a weld at the junction of neck and blade. Blade top turns up slightly at each end. This axe has a few fragments of plant stems in the socket. The axe was probably not hafted when buried. L.181; socket: L.40mm; blade: L.145, W.36mm. Wt.628g. (Fig. 7.6).
RF 60006, Unstratified.

2454 As no. 2453 (RF 60006), but in cross-section the socket only narrows slightly towards the base, where it appears pinched. This axe has mineral-preserved organic material on the inside of the socket: this could possibly be some type of resin, but it is too granular to recognise the structure. Half a plant stem is also preserved on one part of the blade. SEM B802 ?resin L. 140; socket: L.42; blade: L.160, W.37mm. Wt.546g. (Fig. 7.6).
RF 60007, Unstratified.

2455 Asymmetrical cross-section. Head has a flat top, and is bent back slightly on the neck. In cross-section, the socket is almost rectangular, but at the base there is a clear groove, which arises from the way the axe was formed by folding over the top of the neck to make the socket: a weld can be clearly seen running down from the groove to the neck side. The neck edges are bevelled. On X-radiograph, another weld line can be seen running from the base of the socket to one side of the neck. Blade top turns up slightly at each end. This axe has miscellaneous plant stems on the outside of the socket and blade. There is mineral-preserved

organic material lining the socket, which has a laminated structure rather like horn, but might be a resin, and is 2.4mm thick at the point, with the remains of an original surface. SEM B803. L.164; socket: L.44; blade: L.195, W.45mm. Wt.794g. (Fig. 7.6).
RF 60008, Unstratified.

2456 The head is incomplete. The neck edges are bevelled below the socket. X-radiograph suggests a weld at the junction of neck and blade. Blade top turns up slightly at each end; cutting edge is convex. Fragments of wood are preserved in the socket, but not well enough preserved to identify. There also appears to be some other organic material between the wood and iron, rather like no. 2455 (RF 60008). L.126; blade: L.200, W.46mm. Wt.700g. (Fig. 7.7).
RF 60012, Unstratified.

AXE HEAD

2457 Incomplete axe head with upper half of socket. It probably belonged to no. 2456 (RF 60012), but does not now fit. Fragments of wood are preserved in the socket, but not well enough preserved to identify. There also appears to be some other organic material between the wood and iron, rather like no. 2455 (RF 60008). L.50, W.41mm.
RF 60013, Unstratified.

ADZE (Fig. 7.7)

2458 Faces of the head have convex sides, and its top is flat. In cross-section, the socket is D-shaped, with the flat side at the top. The blade is slightly curved and widens towards the cutting edge, more on the right side (seen from the handle) than the other. The handle was held in the socket by wedges, of which two survive. The mineral-preserved wood in the socket is probably one of the Pomoideae family, such as *Malus* sp. (Apple), *Pirus* sp. (Pear), or *Crataegus* sp. (Hawthorn). Miscellaneous plant stems on the outside of the socket. L.175; blade: W.76mm. Wt.612g. (Fig. 7.7).
RF 60011, Unstratified.

T-SHAPED ADZE (Fig. 7.7)

2459 The head projects slightly above the socket and has a flat top. The faces of the head have convex sides. In cross-section, the socket has straight sides, a convex top and a base with a small slot in the centre. Blade and neck are slightly curved in face view. Blade top turns up slightly at each end. L.145; blade: L.190, W.41mm. Wt.392g. (Fig. 7.7).
RF 60009, Unstratified.

SHAVES (Fig. 7.8)

2460 Semicircular blade set at c. 45° to tangs, one of which is incomplete. Both tangs bear wood remains. Blade: Width across: 160, W.33mm; tangs: L.125mm. (Fig. 7.8).
RF 60004, Unstratified.

2461 As no. 2460 (RF 60004). Blade: Width across: 122, W.27mm; tangs: L.125mm (Fig. 7.8).
RF 60005, Unstratified.

SPOON AUGERS (Fig. 7.9)

2462 Tang leaf-shaped, with a wedge-shaped tip. Shank has a sub-rectangular cross-section. Blade leaf-shaped, with rounded tip. L.388; Blade: L.76, W.32, depth: 17mm. Wt.590g. (Fig. 7.9).
RF 60016, Unstratified.

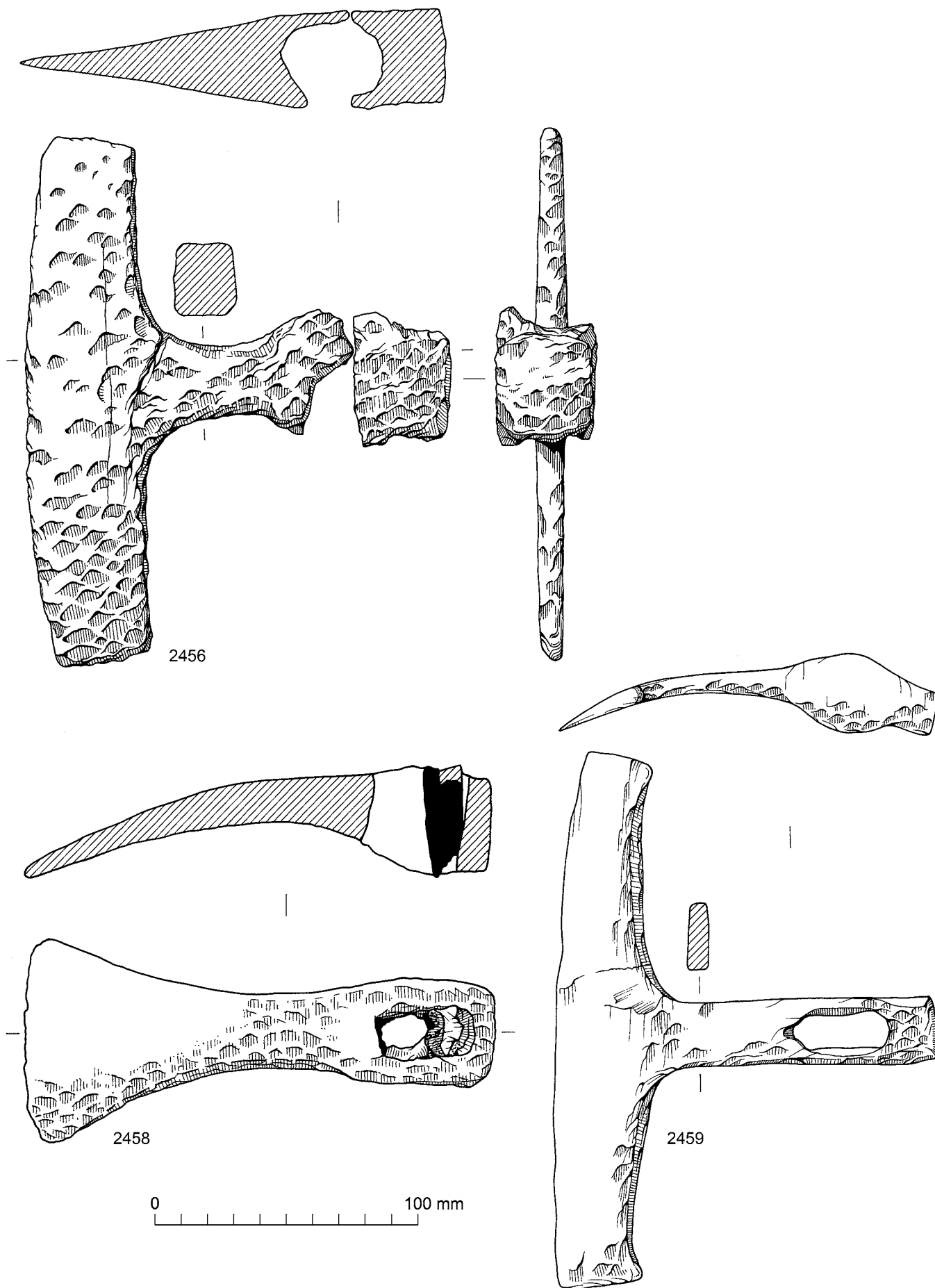


FIG. 7.7. Flixborough tool hoard: T-shaped axe, adze, and a T-shaped adze. Scale 1:2.

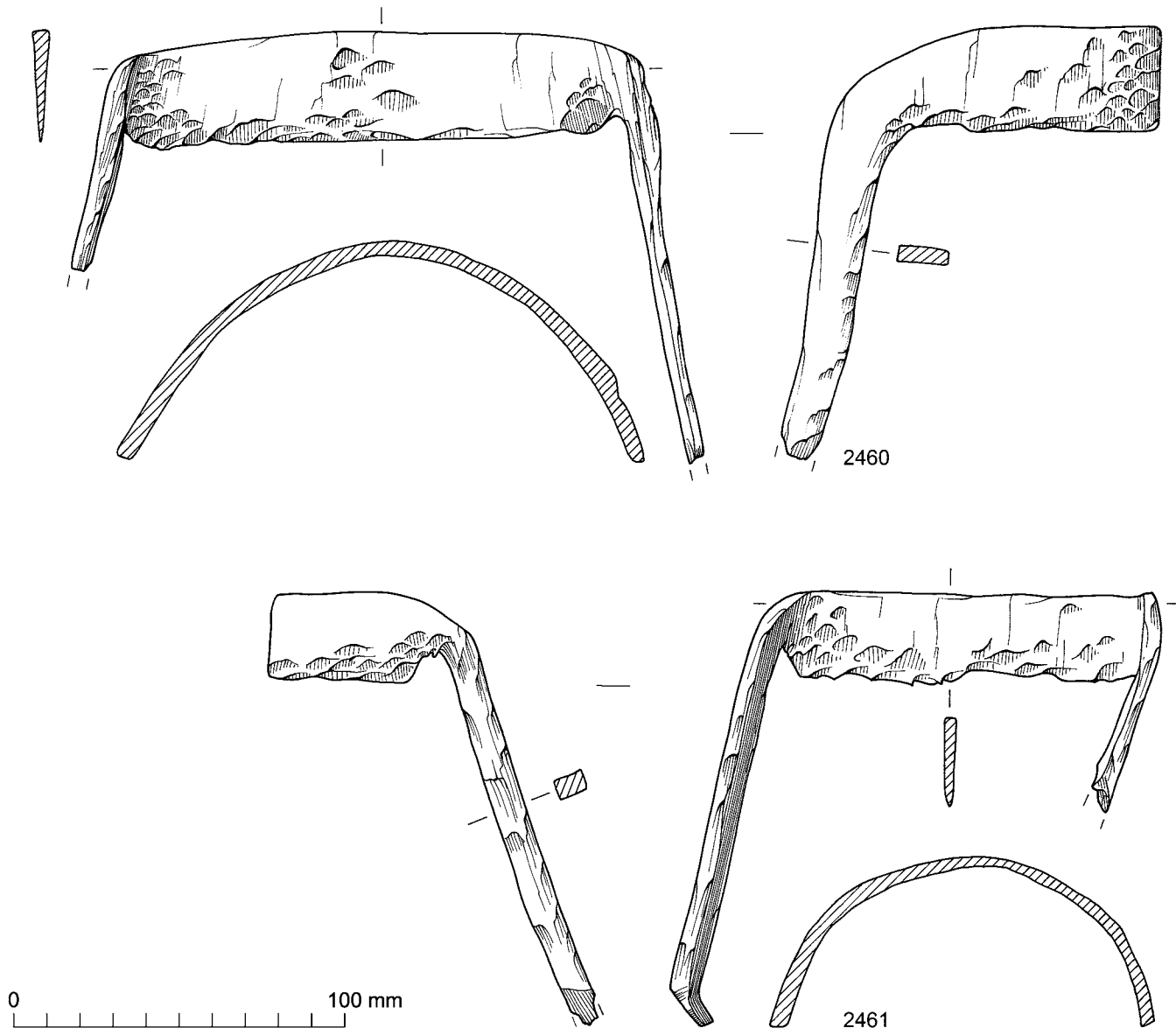


FIG. 7.8. Flixborough tool hoard: shaves. Scale 1:2.

2463 As no. 2462 (RF 60016). L.346; blade: L.63, W.22, depth: 11mm. Wt. 310g. (FIG. 7.9).
RF 60017, Unstratified.

2464 As no. 2462 (RF 60016). L.268; blade: L.71, W.28, depth: 8mm. Weight: 230g. (FIG. 7.9).
RF 60018, Unstratified.

BILL HOOK (FIG. 7.9)

2465 Blade has a straight cutting edge and a convex back. Open socket with a nail-hole near the mouth. The mineral-preserved wood in the socket is probably *Salix* sp. (Willow) or *Populus* sp. (Poplar), and the edge of the hafting is clearly visible. On the outside of the socket is a fragment of wood with wide rays: this could be the remains of one of the other handles in the hoard. SEM B805 L.260; blade: W.49, Th.10mm Wt.440g. (FIG. 7.9).
RF 60019, Unstratified.

HOE BLADE (FIG. 7.9)

2466 Two plates welded together at one end to create an object which would have been the sheathing for a narrow wooden blade. Each plate narrows away from the weld to a rounded head. The object is pierced twice, for attachment to the wood, by two nails. L.125, W.101mm. (FIG. 7.9).
RF 60003, Unstratified.

ATTACHMENT RINGS (FIG. 7.10)

2467 Roughly pear-shaped loop which at one point is pinched out, and curved over into a small loop. L. 133, W.100, Th.13mm. (FIG. 7.10).
RF 60014, Unstratified.

2468 As no. 2467 (RF 60014). L.145, W.97, Th.13mm. (FIG. 7.10).
RF 60015, Unstratified.

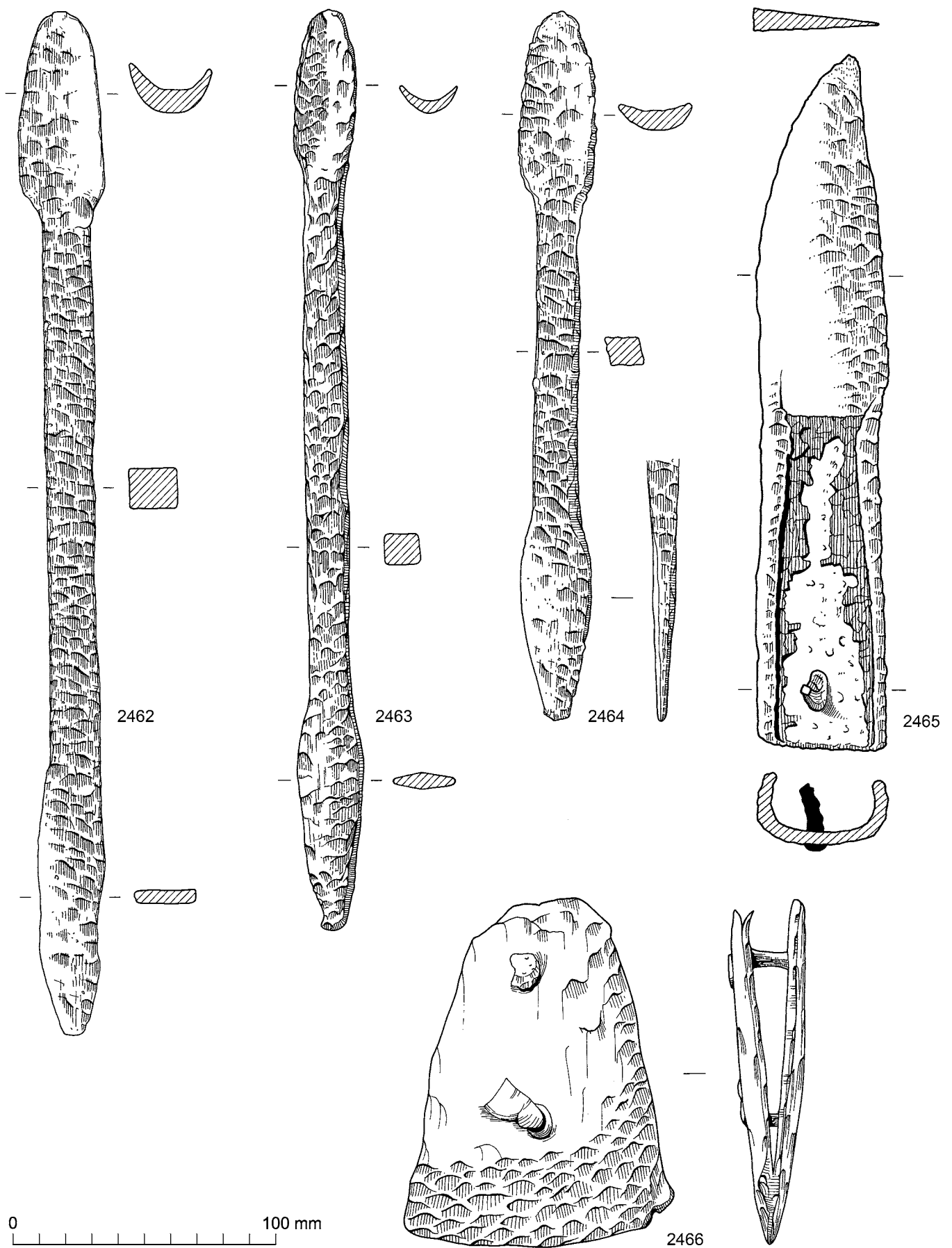


FIG. 7.9. Flixborough tool hoard: spoon augers, bill hook, and hoe blade. Scale 1:2.

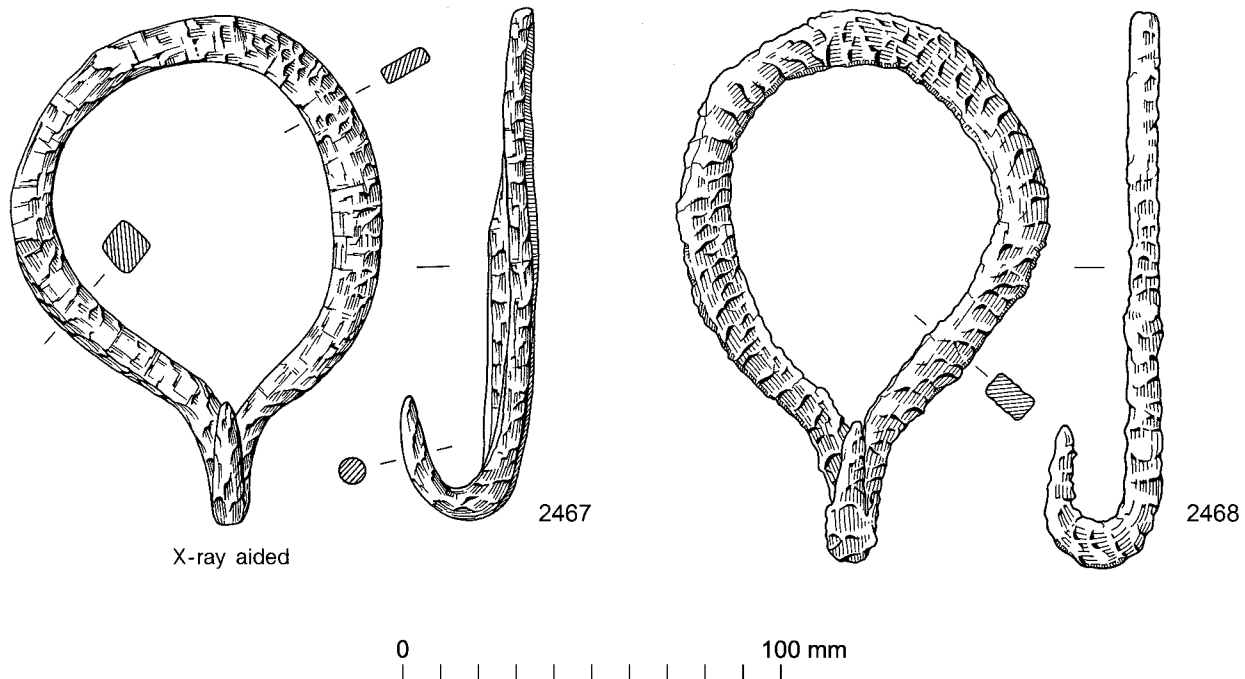


FIG. 7.10. Flixborough tool hoard: attachment rings. Scale 1:2.

7.3 The lead vessels housing the Flixborough tool hoard

by Jane Cowgill

Description of the vessels

(FIGS 7.13–7.15 and PLS 7.3–7.10)

The large cylindrical vessels, with flat bases and vertical walls, were made from lead sheet cast on a fairly coarse but level sand bed, but the casters evidently had a problem with casting such large sheets, as flaws are evident on both vessels. The walls of the larger vessel (no. 2469, RF 60021; FIG. 7.13) are made from two equal-sized sheets with a circular base plate, while the smaller vessel (no. 2470, RF 60020; FIG. 7.15) is constructed from a single side sheet with the additional base plate. Both have two iron rings attached close to the rim, which were unlikely to have been able to support the weight of the vessel, even when empty. The vessels may have been capable of containing a liquid, although there are two small round holes cut into the wall of the smaller vessel, c.25mm and 120mm above the base, which were made after the walls had been cast. It is unlikely that both represent accidental damage. These holes would allow the vessel to contain only c.3 litres, or 15 litres for the higher one, of liquid.

Lead is traditionally worked with wooden tools, often made from box wood, and a wooden tool is likely to have been used to welt (shape) the triangular-everted rim on both vessels from one edge of the sheet. The rough pock-

marked side of each sheet with the sand impressions was used for the external surface of the vessels, and these show no signs of burnishing or polishing. It is likely that the wall sheets were bent around a former (wooden?), which would then have been turned upside down to allow the base to be attached.

Here the similarity between the two vessels ends, mainly for constructional reasons, as the larger vessel required greater rigidity to support itself.

Description of no. 2469 (RF 60021;

FIGS 7.13–7.14 and PLS 7.3–7.8).

The larger of the two vessels is c.0.32m high with a basal diameter of c.0.52m. The internal measurements give a height of c.0.3m and a diameter of c.0.515m, and therefore a capacity of approximately 62.5 litres. The two side pieces were cast separately, and opposing ends of both sheets show signs of problems occurring during the casting, with the last pours of the molten lead being clearly visible. On one side, the weak points were obviously deemed to be serious enough to put in a reinforcing plug just below the rim, even though no hole through the sheet actually existed. On both sheets, the internal surface just below the rim is uneven and lumpy, probably a result of welting the rim.

The side seams are butt joints, with thick strips of lead applied over the outside of the seams to seal the joint and make the vessel more ridged, but it is uncertain how these ribs were attached. On one side, this applied rib has been neatly tucked under the basal ring while on the other it is

much more carelessly finished, plus two additional thin strips of lead have been added to either side of the main rib. It was considered as to whether this latter rib was a repair or replacement (the attached iron loop is also different), but it is very unlikely that such an important structural element as a rib could be removed and replaced without seriously damaging, distorting, or even destroying the vessel.

The ribs broaden out to form a triangular lug where they join the vessel rim, and here the iron fittings that hold the iron rings are attached. On one side, both ends of the staple are set into the rib, while, on the other, only one end of the hook is secured making the ring removable. The slightly squared-circular iron rings are of slightly different sizes, the biggest is 85–89mm across and is attached to the staple, while the smaller ring, with a diameter of 75mm, is held in place by the hook (PL. 7.6). The fittings and larger ring must have been placed in the molten lead when the ribs were being cast, to ensure that they were securely attached. Rings of uneven size have also been noted on the Kenilworth vessel (Guy 1991), which, although published as Romano-British, has a number of similarities with the Anglo-Saxon vessels. There is no parallel for the hook, the majority of vessels where the iron fittings have survived have staples set into the lugs, onto which the rings are attached, as at Riby, Lincolnshire (Cowgill 1994).

The ribs were only roughly finished with a knife or chisel, and are irregular in appearance (PL. 7.4, detail). In places, five sequential irregular trims can be discerned. Wooden tools may also have been used to shape the ribs and base. The rim, likewise, near the lugs has been trimmed with a knife, leaving a jagged edge, that was not removed, and has somehow survived (PL. 7.5). Attached onto the lugs and rim are two horizontal, roughly diamond-shaped pieces of lead, 5–6mm thick, which were probably designed to reinforce these parts of the rim, but they could also have been considered decorative. They may have been cast as a single thick piece that was then cut into two.

The circular base is made from a single cast sheet, and the multiple pourings of lead required to make it are clearly visible (PL. 7.6). The exact relationship of the sides to the base is unclear, because a basal ring has been applied over the join; but it is likely that the side walls sit directly on the edge of the base. The basal ring is made from a single thick squared strip of lead, which has been unevenly 'smeared' up the side walls, and some of these edges are delicate, and not attached, and would have been easily broken off or bent if the sides had been rubbed in any way. The basal ring has also been knife- or chisel-trimmed, and again the occasional jagged edge is noticeable (PL. 7.7). There is no evidence for any wear or polishing of the base.

A single template, pressed into the casting sand just below the rim, was used to create all the lines decorating the sides of the tank (PL. 7.8). Where the casting is poor the design fades, but otherwise the outline and pattern are clear. No parallel is known to the author for the template, either as an object type, or as a motif on another object. On one sheet, there are a number of approximate zigzags,

while on the other side there are a series of vertical lines and a six-pointed star (FIG. 7.14). The sequence of these strokes seems to have some significance, particularly if the design on the template is also considered. The sequence on the side of the vessel runs I I I I * I I (rib) \ / \ / \ / \ / (rib), and on the template running from top to bottom I I I I X I I. In each case, there are four 'normal' lines, followed by an interruption and then two more lines, whether vertical, diagonal, or horizontal. The sequence is in reverse order when the diagonals were employed, but it is easy to retrograde a design when producing a mould. The number of motifs in each sequence is seven, but how the lines should be read, however, is far from clear, and at present no great significance can be offered, although it is felt that the sequence must have some meaning, and is probably not coincidental.

No. 2470 (RF 60020: FIG. 7.15 and PLs 7.3 and 7.9)

The smaller vessel is c.0.23m high, has a diameter of c.0.408m, with corresponding internal measurements 0.22m and 0.402m, and was therefore capable of holding 27.65 litres. Its manner of construction is much simpler than the larger vessel, and there are no refinements, such as decoration or an applied basal ring. The lead walls are thinner and its condition is generally worse, having crumpled and corroded through in a number of places. The difference in appearance and survival suggests that the lead composition may be different, which, if true, would imply that they were made from different 'batches', or alloys of lead, possibly from different sources.

The single side sheet has again been cast on fairly coarse sand before being folded round to form the sides. The seam was created by simply overlapping the rough untrimmed edges of the sheet sides. This was sealed by the application of a roughly-made rib, which flares out to form the lug housing the iron staple, which was again cast within it. The remains of an iron ring survive on this side (FIG. 7.15). On the opposing side, no rib has been applied to make the vessel symmetrical, only a very roughly-made triangular lug has been attached, in which was fixed the iron staple and ring (FIG. 7.15, PL. 7.9). This lug is smaller than the other, and it is possible that this complete ring was smaller than its now fragmentary counterpart. Both the rib and the triangular lug have been roughly trimmed with a knife to produce an irregular section along their lengths.

The base is of more simple construction than the larger vessel. The sides have simply been bent under at the base, and the circular base-plate placed inside and attached onto it, producing what may have been a water-tight seam. The join is fairly neat, but again in places could have easily been tidied up, if a better finish was felt to be important.

Conclusion

It seems surprising that so little attempt was made in the finishing of these vessels, lead being such a soft metal. It would have taken little time or effort to remove some of the jagged edges, dribbles and burrs that survive on the

rim, ribs and base. The overall impression is of vessels that have been crudely produced by someone inexperienced in the working of lead, and it is evident that the vessels were clearly not intended for display. There are no noticeable signs to indicate what the vessels were used for, and no suggestions of wear. The survival of loose flows on the ribs, and various jagged edges on both the rim and bases, that could easily have been knocked off (although lead is quite plastic), suggest limited use or movement of the vessels. Whether they were capable of holding a liquid, is also debatable.

Discussion

Distribution

A cluster of excavated sites that have yielded very similar vessels is beginning to emerge in northern Lincolnshire, just to the south of the Humber Estuary. A single example was found in 1991 at Riby, some 29km to the east; it was complete, but partially folded, and had been buried in the 8th century in a shallow ditch (Cowgill 1994). In 2004 a further three were found at Bottesford, only about 7km to the south of the excavated Flixborough site (Cowgill forthcoming). These consist of two bases and the walls of a third vessel, that had been crudely cut and torn off the rest of the vessel and carefully folded in half, probably to ease their transport and storage. They are likely to have had the status of scrap metal when they were buried together in a large deep ditch, again in the mid-late 8th century. Neither the Riby nor the Bottesford vessels had any form of decoration. A fragment from Roxby, only 5km to the east, is the only metal-detected find of a vessel to have been shown to North Lincolnshire Museum, and no others have been reported under the Portable Antiquities Scheme (pers. comm. K. Leahy). [It should be noted that, in addition to the two vessels containing the tool hoard, there was also a lug from a third such vessel found on another part of the site; see Ch. 5.5 above, FIG. 5.10, no. 2037.] This brings to a total the remains of at least eight vessels from this small area.

Further examples of similarly constructed vessels have been found in the eastern counties in southern England. A single complete elaborately decorated vessel containing a tool hoard was found at Westerley Waterless, Cambridgeshire, prior to 1879 (Hughes 1880). At Willingham, also in Cambridgeshire, a pair was found, and like the Flixborough examples, the smaller was inside the larger and only the large example is decorated. The smaller vessel is in a poor condition, with about two-thirds of the wall and rim missing (pers. comm. R. Bartlett, Harlow Museum). Both the Westerley Waterless and Willingham vessels have pendant triangles forming a significant element of the decorative design, and in the case of the latter, these are separated by vertical triangular panels. The detail of the decoration suggests that these vessels were well-finished, but this is not the case, and the motifs on the Westerley Waterless vessel (seen by the author) are poorly produced. The vessel from Kenilworth,

Warwickshire, is the most inland example so far to have been recovered. It was found 'badly distorted and broken up in Antiquity', with parts cut or torn away. It is decorated with simple lines using a cable template (Guy 1991). A number of stray finds that have been published as Roman lead tanks, judging by their method of construction, are probably actually Anglo-Saxon in date – for example, the Kenilworth vessel. Various dates have been suggested for these vessels, based on the style of the decoration, but there seems to be a general consensus that they are all probably 'Anglo-Saxon'.

There are some further single finds of cylindrical vessels that are sometimes compared to the Anglo-Saxon vessels; an example is from Maidstone (pers. comm. R. Bartlett), with another in Folkestone in Kent (Weaver 1909), and one that is now lost from Felixstow, Suffolk (*ibid.*). These all appear to have more complex and naturalistic motifs, and may therefore be later in date, and the descriptions of the objects suggest that they may have been more carefully finished. There is also a group of smaller and later lead 'cauldrons' that have been found north of the Humber in Yorkshire. These include three from Garton-on-the-Wolds that were found with Anglo-Scandinavian bone objects and iron 'tools' (pers. comm. P. Makey), one from Saint Saviourgate, York (pers. comm. I. Panter), and a recent find at Skipsea Grange with an associated iron tripod and the iron blade edge from a wooden spade (pers. comm. R. Seager Smith). All these vessels are similar in shape, and perhaps construction, but differ significantly from those from the south of the Humber. Likewise the Whithorn lead vessel (Nicholson 1997, 390) and the very badly preserved one from Stidriggs, Dumfriesshire, which also contained a tool hoard with similarities to that from Flixborough, appear to have been constructed by very different means, and again both may be later in date.¹

Survival

A key question is how common were these vessels? Lead is easily recycled, and would have had some value at this date. It was probably intended for the two Flixborough vessels, containing the tools and bells, to be recovered. They had not been damaged in any way (although some of the tools had been buried without their hafts), and were probably hastily buried in a pit dug into the sand. There was no domestic refuse with them, and the pit into which they were placed could not be defined, suggesting that it was probably backfilled immediately after the vessels and tools were placed within it. One possibility is that, as a response to a threat, the less portable valuables of a community were buried in a recognizable place with the full intention of recovery. The value of the lead, combined with that of the edged tools, solely on the grounds of metal content would have been considerable. Weaponry and other smaller more portable items could have been carried. The lead vessels are certainly very heavy and large, and therefore difficult to transport without a vehicle, and the tools are also heavy and cumbersome, but would have been very valuable, if

skillfully forged. This is just one possible scenario, but it is probable that they constitute a placed deposit, and there was full intention for recovery. The Riby vessel is a bit more uncertain (Cowgill 1994). When discovered, it appeared to have been partially folded, but how much this was due to the pressure of the soil above is uncertain. It had not been damaged before burial, and therefore it is possible that the lead could have been straightened out and the vessel form reinstated, if it had been re-excavated shortly after burial. This was found in the base of a terminal of a shallow ditch, and the intention of recovery is again a distinct possibility. The remains of the three Bottesford vessels, on the other hand, were buried or 'banked' as lead scrap (Cowgill forthcoming). Indeed, they may not even have been used as vessels at Bottesford, and may have been traded or exchanged as a known weight of metal by an occupant or the occupants of the settlement. This is evidence for the trading, bartering or exchange of lead scrap as a commodity. Again, being buried in a ditch terminal, probably placed together, an intention for recovery was likely. Being so large, they would have been easily retrievable, and it may have been considered an inconvenience to bury them within a structure. These all may be viewed as unintended losses, leaving us to muse as to how many were successfully recovered and eventually recycled, an unanswerable question.

If we assume that the Riby, Flixborough and Bottesford vessels were buried around the 8th–9th centuries, with the intention of recovery, how many would have survived buried in the intervening centuries, undiscovered until the period of Antiquarian interest, when the first examples were recorded and reported. The excavated vessels, with the exception of the large example from Flixborough, are all undecorated, but it is very noticeable that all the stray finds are decorated, and some quite elaborately so. The only vessel with minimal decoration, similar to the large one from Flixborough, is that from Kenilworth (Guy 1991), but its circumstances of discovery are not reported. What is probably certain is that the Riby and Flixborough, and, most certainly, the Bottesford vessels would not have survived the scrap-metal merchants, even if found today, if they had not been found on archaeological excavations. They do not look 'old', and unless the finder was particularly inquisitive, would appear to be of little interest or value except for their metal content. It is therefore possible that these vessels were much more commonly employed than is thought, at least in the eastern counties of England. Rumours of further finds circulate, for example one from Horncastle (pers. comm. K. Leahy), and another from Norfolk, reportedly thrown into a quarry (pers. comm. T. Pestell), but none of these vessels has been successfully tracked down to be recorded.

The presence of tool hoards in some vessels, something that would have been of great interest to Antiquarians, may have encouraged reporting, or at least will have aroused interest in the local community. The extremely poorly preserved Stidriggs vessel would almost certainly have

not entered the archaeological record, if it were not for the tools. The association of lead vessels with tool hoards may therefore be exaggerated by the level of interest they generated, and the mere fact that they, and not the plain and undecorated isolated vessels, were reported. Hoards are not exclusively associated with lead vessels. In 2002, a disturbed assemblage of tools was found by a metal-detectorist in Torksey, Lincolnshire, with the remains of a number of large iron bowls (pers. comm. T. Cadbury).

Function

There are no noticeable signs to indicate what the vessels were used for, and little signs of wear from their use. Sometimes they are compared to and seen as a continuum of the 4th-century Romano-British tanks that have been well publicised by Guy (Guy 1981: 1989: 1991), and their function further discussed by Watts (Watts 1988). This has led to the suggestion that they were used for a Christian ritual, possibly for the foot-washing rite in the baptismal ceremony (Watts 1988, 217–18; Guy 1991, 108), because of the presence of the chi-rho and alpha-omega motifs that occur prominently on some of the Roman examples. Lead was also commonly used to line later fonts placed within established churches, and, as a result, some authors have also suggested that they belong within this tradition. This is very unlikely to be the case. The Romano-British tanks are generally much larger (often they could contain over 200 litres of liquid), are significantly more robust, well-made and well-finished, and all were almost certainly watertight. The Anglo-Saxon vessels are not only poorly and unskilfully constructed, but badly finished, and hardly fitting for a central role in an important Christian ritual (assuming fonts were required). The Church would have ensured that skilled and knowledgeable lead workers made fonts, and surely they would have been highly decorated, or at least more confidently and appropriately embellished. It is also hard to imagine such an important symbol of Christianity being cut and torn apart, and then folded for scrap, in such an unceremonious way as the Bottesford vessels.

The appearance of all the vessels is one of the main hurdles in interpreting their function. It cannot be repeated enough how poorly finished they are. Even the decorated vessel from Westerley Waterless, with the elaborate hanging triangle motif, has not been trimmed or 'finished'. It, like the Humberside examples, has crudely trimmed ribs, that are as a result very irregular, even though they are a very visible element. There are flows of molten lead that are unattached to the walls, some have jagged edges where the knife has not cleanly trimmed the lead – even on rims; the whole effect is that of an unfinished object. Although it is tempting to suggest they were, surely so many would not have survived in such a condition, and both the Flixborough and Westerley Waterless examples would not have been buried containing tool hoards. Although lead is a flexible metal, it is difficult to envisage how some of these spalls and jagged edges survived the vessel use, unless it functioned only intermittently and for short

Name	External diam.	External ht.	Internal diam.	Internal ht.	Vol. litres	Vol. gallons	Vol. bushels	Wt. (kg)
Flixborough	0.52	0.32	0.515	0.30	62.5	13.7	1.7	
Riby ^{1.}	0.515	0.285	c. 0.51	c. 0.28	57.2	12.6	1.6	18.46
Kenilworth \$ ^{2.}	0.50+	0.24	c. 0.50	0.23	45.2	9.9	1.2	
Westerley Waterless ^{3.}	0.445	0.26	0.42	0.26	36	7.9	0.99	
Willingham ^{4.}	0.44	0.21	0.42*	0.20*	27.7	6	0.75	
Flixborough	0.408	0.23	0.402	0.22	27.6	6	0.75	
Bottesford# ^{5.}	0.325	0.34	0.30	0.34	24	5.3	0.66	12
Willingham ^{4.}	0.27	0.145	0.225*	0.14*	5.6	1.2	0.15	

* Measurements taken from drawings produced by Caroline Rochester, Harlow Museum©

\$ Complete diameter not known. # Wall height incomplete.

^{1.} Cowgill 1994, ^{2.} Guy 1991, ^{3.} Hughes 1880, ^{4.} R. Barlett pers. comm. ^{5.} Cowgill forthcoming.

FIG. 7.11. The dimensions and volumes of the Anglo-Saxon lead vessels.

periods of time. The bases are also problematic, as lead is such a soft metal and easily burnishes and dents, therefore some indication of wear would be anticipated. There is no indication that they have been moved, let alone dragged (given their weight), tipped up to empty the contents, or indeed have contained any great weight for any length of time. When (and if) they were emptied, a ladle or scoop must have been used. The large examples are so heavy, they can barely be described as portable. The conclusion to this discussion must be that they were not for display, but served some other function.

The volume of the vessels may be significant in understanding their original function. The measurements are as close as possible to true, but because of the condition of the vessels, there will be some unavoidable level of inaccuracy. Where possible, both the internal and external measurements were recorded, but this was not possible on the vessel from Riby, because the top was too folded or collapsed over the base. The volumes from the two bases from Bottesford can not be estimated, and only a minimum can be given for the walls, because its height is incomplete, some presumably remaining attached to the base (Cowgill forthcoming). The diameter of the Kenilworth vessel is also uncertain (Guy 1991). The results are given in FIG. 7.11. For the larger vessels, only minor discrepancies in the measurements are needed to give significant differences in volume. The height and diameter around each vessel vary, some of which will be due to compression and distortion during burial. It was therefore deemed to be valid to allow a fairly wide range of variance between the vessels when considering their volumes, particularly the larger examples.

The volumes in the table above are given in both metric and Imperial Standard (for equivalents see FIG. 7.12) – the latter, because both dry and liquid measurements are based on barley grains taken from the centre of a ripe ear. The small vessel from Flixborough, when full, would appear to hold approximately one half of the contents of

1 litre	= 1.7598 pints
4 gills	= 1 pint
8 pints	= 1 gallon
2 gallons	= 1 peck
4 pecks	= 1 bushel
70,000 barley grains	= 1 gallon
7,000 barley grains	= 1 pound
1 pound	= 0.4536kg

FIG. 7.12. Imperial dry and liquid measurements (source: Barker 1950).

the large vessel, while the capacity of the latter is quite close to that of the Riby vessel. The volume of the large vessel from Willingham is similar to the small example from Flixborough, while the small vessel found within it would have held almost exactly a fifth of its contents. The fact that the volumes of both pairs seem to have a direct relationship suggests that these vessels may have functioned as some type of measure. The volume of the well-preserved vessel from Westerley Waterless has also been estimated, to see if it also fitted the pattern, which it may do (FIG. 7.11).

It is possible to mathematically suggest various possible volumes that were originally used to create the size of these vessels, for example 0.6 gallons can be multiplied up to match some of the suggested volumes. This is, however, probably trying to impose a spurious level of accuracy on the original height and diameter measurements. Although the exact volumes and weights systems used in the Mid to Late Anglo-Saxon period are not known, and were unlikely to have been standardized between kingdoms (pers. comm. C. Loveluck), the similarity of these volumes seems more than coincidental.

Although the dimensions of the vessels vary, all

have a basin shape, although the walls from Bottesford are unusually high when compared to its diameter. A perplexing question is the role of the iron rings or handles. They probably would not have supported the weight of the vessels, because of the suspected weakness in the loops with which they were attached to the ribs. The two rings on each vessel probably differ in size, and the smaller ring on no. 2469 (RF 60021) appears to have been removable. If the purpose of the rings was not for suspension, Guy has suggested that the examples on the Romano-British tanks may have held a lid in place (Guy 1981, 273).

The Anglo-Saxon vessels were designed to be free-standing vessels, and not as a lead lining for containers made in another material. Both the thick ribs and basal ring form structural elements to help support and strengthen them, and the decoration is always on the exterior surface, never on the shiny inner face. Although they do not appear to have had a display role, being made of lead, one might have expected that these vessels would have been made to hold a liquid; however, it is uncertain that this was always the case. The Riby vessel certainly would never have been capable of holding a liquid, because the seam between the sides and base was too poorly constructed (Cowgill 1994). The smaller Flixborough vessel also has holes cut through its wall, some 25mm and 120mm above the base. It would have been easy to make these vessels water-tight during construction, if that had been deemed important. A crimped seam is easily achieved with such a soft metal, would have avoided the need for welding the lead sheets together, and probably would have achieved a tidier result. Again the reason is unclear, was it a lack of understanding of the properties of lead, an inability to work the metal – perhaps due to being more familiar with working iron (Cowgill forthcoming) – or simply because there was no need for the vessels to hold liquids? Although there is no evidence for a lining, and no method for attaching one made in, for example leather, it may have been possible to seal the bases with a sealant such as wax, thereby making them to some degree water-tight.²

If they were not water-tight, the other possibility is that they were intended for dry goods, such as grain and legumes and were storage vessels. They would have kept their contents dry and let little moisture in, assuming they had a lid, perhaps wooden, possibly held in place on the Riby and Flixborough examples by the use of a pole fed through the rings attached to the top of the ribs. This would also make them rodent-proof. Most of the vessels (except the small Flixborough example) are raised at least 10mm off the ground by the basal ring, again helping to keep the contents dry. The lack of wear suggests lack of movement, and suggests that they were housed in a permanent location.

If, as proposed, they were measures, they may have been used to store the seed required to sow the following year's harvest, a very valuable asset for any rural community, particularly as seed selection over many generations may have ensured their seed was particularly suitable for their

soil and local climate. The different measures could relate to different crops (barley, wheat, peas *etc.*), and the amount of arable grown by different farmsteads and settlements. At Butser Ancient Farm, for example, a one acre (0.4 hectare) arable field is sown with half a hundredweight (5.6 gallons, 25.4kg) of grain seed, which gives good plant density and a yield of c.1 ton of grain (1016kg) (pers. comm. C. Shaw). This is fairly close to the suggested volume of the small Flixborough vessel and the large example from Willingham, especially if they had an inset fitted wooden lid. The amount required would of course be dependent on Anglo-Saxon methods of land measurement and field size. By following this line of discussion the obvious conclusion would be that these vessels were very common, and that lead was cheaply and easily available as a metal. This is highly unlikely to have been a reality in the 8th century, when the secular aristocracy or Roman Church had a tight control over the lead industry, because of their prodigious demand for sheet metal (Loveluck 1995, and Cowgill forthcoming). However, perhaps it should not be dismissed altogether. Ceramic containers could and probably were used for storing the seed required for small seeded species such as the alliums and brassicas, but wooden chests, and perhaps casks (the latter requiring skilled and trained craftsmen, perhaps mainly based in major trading centres) would have been the main alternative options for storing large seeded varieties, such as grains.

An alternative dry goods use would be for the storage or collection of renders, or for bartering known measurements. The suggested lack of movement of the vessels and their non-display function may be important in this context. The vessels are most likely to have been used by the render acceptors, rather than the settlements or farmsteads giving; however, if these vessels had been transported on carts to collect the dues, more damage and wear would be expected. Also if they were being repeatedly filled and emptied, some of the droplets and jagged edges would surely have broken off. If for the collection of renders by an estate, surely a witnessed event, and one that would demand a less crude receptacle, although perhaps the fact that it was made of lead demanded adequate respect. A wooden chest, or cask, again may have been more suitable, but we cannot now judge if it would have been more appropriate. Bartering is a separate consideration and one that may have occurred less publicly or visibly. Little in detail is known about these trade networks, apart from the fact that goods were regularly exchanged. How, why, or if these vessels were involved in this network, can only be left for the debate of others. The fact that lead scrap seems to have been traded in the 8th century – e.g. the Bottesford vessels (Cowgill forthcoming) – when other lead objects are not encountered on archaeological sites, including Flixborough (Loveluck, Volume 4, Chs 2, 6 and 7), may not be insignificant.

If, however, they were used for liquids, they may have served almost any function, from brewing to steeping of dyes, or in fact be multi-purpose. Indeed, most being low-walled, they could be described more specifically as basins,

rather than the more generic 'vessels'. This interpretation again suggests that they were common entities, unless they had one very specific role, although lead as a metal is assumed to have some value.

In discussions with colleagues the seeming close relationship of the Church with the lead supply keeps reoccurring, along with the possibility of fonts as a function, but, as stated above, it is inconceivable that such ill-finished and crude vessels could have served such a purpose, even if vessels of these capacities were required for Baptisms at this date. It is hard to envisage for what purpose the Church, an estate centre, or any other type of settlement would have required these vessels, were it not for measuring render or storing seed. Most functions involving liquids (for example, serving mead, ale or wine at feasts), unless mundane, would require a vessel suitable for display; these certainly are not.

The lead industry

The method employed today for sand-casting lead sheet is probably fundamentally similar to that used by the Anglo-Saxons; it is not a highly technological process, but does require learnt skill and knowledge. The uniformity of the thickness of the sheets used to make these vessels (the Bottesford examples ranged between 2.9 and 3.8mm thick, with some variation between different sheets), suggests that experienced lead casters produced them, in the opinion of modern professional casters (pers. comm. B. Lockwood). Pouring lead (or throwing, the current technical term) to make sheet is a skilled process that requires knowledge about the properties of lead, particularly the temperature needed to melt the lead to allow time to throw it. Temperatures of between 385°C and 400°C are used by modern traditional casters, even though it melts at 327°C (pers. comm. B. Lockwood). If the lead is not hot enough – for example if it is only tacky – it will not fuse to make sheet. Hot lead will not bond with cold lead – both bonding surfaces must actually be molten. Speed is of the essence, because the lead will set in a matter of seconds, not minutes, so the casters have to work rapidly. Throwing must have been undertaken by groups of craftsmen, because lead is so heavy (a 1m² sheet 3.05mm thick weighs 37.3kg). The only pottery vessels available in which to melt the lead would have been Maxey or Ipswich wares, unless imported pottery was used, and a single vessel would not have been physically strong enough to melt enough lead to make one sheet (pers. comm. A. Vince). The fact that multiple pourings were required is clearly visible on the sheets especially the base of no. 2468 (RF 60021), where it appears that the lead was only just hot enough to cast into sheet. To achieve sheet this thin, a bar of wood would have been rapidly run across the top of the molten lead to spread it before it cooled. (For further discussion of the difficulties and intricacies of sheet casting, see Cowgill forthcoming).

The composition of the lead used to make the Bottesford vessels was analysed by P. Northover (Materials Science-Based Archaeology Group, University of Oxford; Cowgill,

op. cit.). Nineteen samples from the three vessels were taken, to include sheet, ribs, basal rings and possible solder, and the results indicate that the lead is remarkable for its consistency and purity, and that tin, silver and bismuth are absent at detection levels in this analysis, with the most consistent impurities being zinc, antimony and cadmium. There was no evidence for any lead/tin solder; therefore, the various lead elements that make up the vessels must have been welded together. Unfortunately, permission was not given for samples to be taken from the Flixborough vessels, but it is likely that the lead used to construct them was equally pure. It is often suggested that the lead used by the Anglo-Saxons was reused Roman lead, but the latter appears to be consistently contaminated with tin – values from 0.3% to over 1% are recorded in the majority of pieces analysed (Cowgill, *op. cit.*).

Lead galena ores are available in both Yorkshire and the Peak District in Derbyshire, both of which would have used the Humber as the highway to export the metal to the east coast. Loveluck (1995) has discussed the evidence for the revival of the Derbyshire lead production industry from the mid-late 7th century, and the significant increase in wealth it generated for the secular aristocracy. By the 8th century the control of the lead mining area had been given to the Church by the Mercian kings, but was still run by the secular authorities. The distribution route from these mines must have been by pack horse and cart to a suitable staithe on the Trent, from which it could have been shipped out of the Trent, past Flixborough Stather, and the Royal estate staithe at Burton-upon-Stather, and out into the Humber (see Cameron and Loveluck, Volume 4, Ch. 4). It is possible that at these staithe, situated in the final kilometres before the Trent meets the Humber, the lead was loaded onto more sturdy seaworthy vessels, along with supplies to continue the more hazardous journey at sea.

The significant increase in the demand for lead at this date was led by the construction of stone churches, many along the east coast of England, by the Roman Christian Church (Loveluck 1995). Status and display were an essential element for these early church builders, and for this reason they chose to roof their buildings in lead sheet, even though it must have caused constructional difficulties to ensure the roof timbers could bear the load. Sheet used to roof cathedrals today is known as 7 pound lead (the weight for 1 foot square at 1/8th inch thick – or 3.175mm), and this will last for about 150 years on the roof (pers. comm. M. Allenby and B. Lockwood). The thinnest sheets could be used, but the additional thickness allows for protection against mechanical damage (mainly roofers walking on it), and provides sufficient metal to allow the plumbers to dress or boss the lead to shape (*The Plumber's Handbook*, 1960). This would have been equally valid in the past, and perhaps it is not purely a coincidence that the lead sheet from Bottesford is about 7lb. The lead is always laid with the shiny side facing outwards on modern buildings; this also tends to be the side with the least flaws on the vessels, but on these it is always the inside surface.

Large quantities of sheet would have been needed for roofing all the new churches (pers. comm. R. Cramp). Skilled plumbers, traditionally craftsmen who worked lead in all manner of ways, were probably rare or almost non-existent in 8th-century Anglo-Saxon England; however, the lead throwers appear to be experienced in the production of lead sheet (pers. comm. M. Allenby and B. Lockwood). Rather than trying to employ lead casters at each church under construction it would have been simpler to import the lead in sheet form to each site. Quality control could then have been centralised, and this would have allowed a specific number of sheets to have been ordered, rather than the more ambiguous weight of lead needed, given that the sheets vary to some degree in thickness. Lead ingots by necessity are very small because of their weight, but sheet, especially if rolled, is in contrast much lighter in terms of density. It is much easier to carry and transport, and will spread the load more evenly on the vehicle being used, be it pack animal, cart, or boat. Sheet lead is also much more stable as a cargo and is less likely to destabilize the chosen vehicle.

The sheet could have been thrown at or near the mines or even at the mouth of the Trent, at a site perhaps close to Flixborough and Bottesford. It is uncertain what size of sheet they were capable of casting, or perhaps more pertinently, regularly cast. There may have been a physical limit for the mechanics of heating and then pouring sufficient lead. The bigger the sheet, the more ceramic vessels would have been needed to heat the lead, although thickness as well as size will determine the amount of lead to be melted. The thinner the sheet, however, the greater the skill required.

It is difficult to estimate the value of lead at this date, but very little of it seems to have been in general circulation. Lead artefacts are rare on sites of this date. There are no certain examples at Flixborough until the 9th century; the majority were found in deposits in the latter part of that century and later (Loveluck and Atkinson, Volume 1, Chs 5, 6 and 7). The main users appear to have been the Church, who evidently viewed lead as a status symbol, and by using it, it suggests that lead was valuable, but how it ranked in comparison with other metals such as coppers and irons is now difficult to judge. Its silver colour and association with silver may also have enhanced its status. This limited use also suggests limited availability, and implies that it was tightly controlled by either the aristocracy or the Church. By casting the sheet at or close to the source, it would increase this level of control, giving a single point of dispatch for all Derbyshire sheet lead. The main, perhaps exclusive use of lead in the late 7th to early 9th centuries appears to have been in the form of sheet for roofs and the perplexing vessels discussed here, the main components of which were again sheet. By controlling the industry so tightly, it will have given the lead metal a sense of exclusivity, and falsely raised its financial value, if only the select had access to it. This tight control may have led to, or encouraged the recycling of

these vessels, thus explaining the state and perhaps location of the Bottesford vessels. This leads to a conflict between the possibly prestigious status of the metal and the poor quality of the finish on the vessels, but perhaps that was not significant then.

The south-east coast distribution of these vessels may reflect the main route by which the lead from Derbyshire was distributed. The fact that there is none, so far, north of the Humber, may reflect that the more northerly monastic houses received their lead sheet supply from another source, perhaps Weardale in Co. Durham. Derbyshire is generally seen as the main source of lead at this date, but this could be biased by the chance survival of documents, rather than truly reflect reality.

Conclusion

A cluster of seven excavated examples of large, lead cylindrical vessels has now been found just south of the Humber Estuary. The two from Flixborough were found intact, with the smaller example, containing a hoard, being placed inside the larger vessel buried in a pit, in an area to the west of the excavation. All the examples discussed here were crudely constructed from lead sheet with applied side ribs and basal rings; some have attached iron rings, perhaps to secure a lid. Only the large example from Flixborough is decorated, but with a simple and perhaps meaningful motif. All appear unfinished and have no noticeable signs of wear, and it is likely that recovery was intended in each case.

Further chance finds have been found in south-eastern England, most of which are decorated, sometimes with quite elaborate designs which is probably why they were reported, and entered the archaeological record. It is very unclear how common these vessels once were, how many were successfully recovered for recycling at the time, and how many simply decorated or plain examples may have been found in the intervening centuries, and ended up in the hands of scrap-metal merchants.

Interpreting the function of these vessels continues to be a problem, but their use in Christian rituals, particularly as fonts, seems very doubtful. When comparing their volumes, some leeway has been given, because of the problem of taking reliable measurements, but some volumetric relationship between their sizes is a possibility, leading to the suggestion that they could have been used as measures. It is uncertain whether any were water-tight; the Riby vessel probably was not, and the small one from Flixborough has holes in the walls. Storage of a community's seed for sowing next year's harvest is one suggestion, but this would imply that the vessels were quite common. An alternative is that they were used for measuring and collecting estate renders, or for bartering a measured quantity of goods. If they were used for liquids, they could have served a multitude of functions, although perhaps a specific role again needs to be sought.

Sand-casting lead sheet is not a highly technological process, but it does require skill and knowledge of the

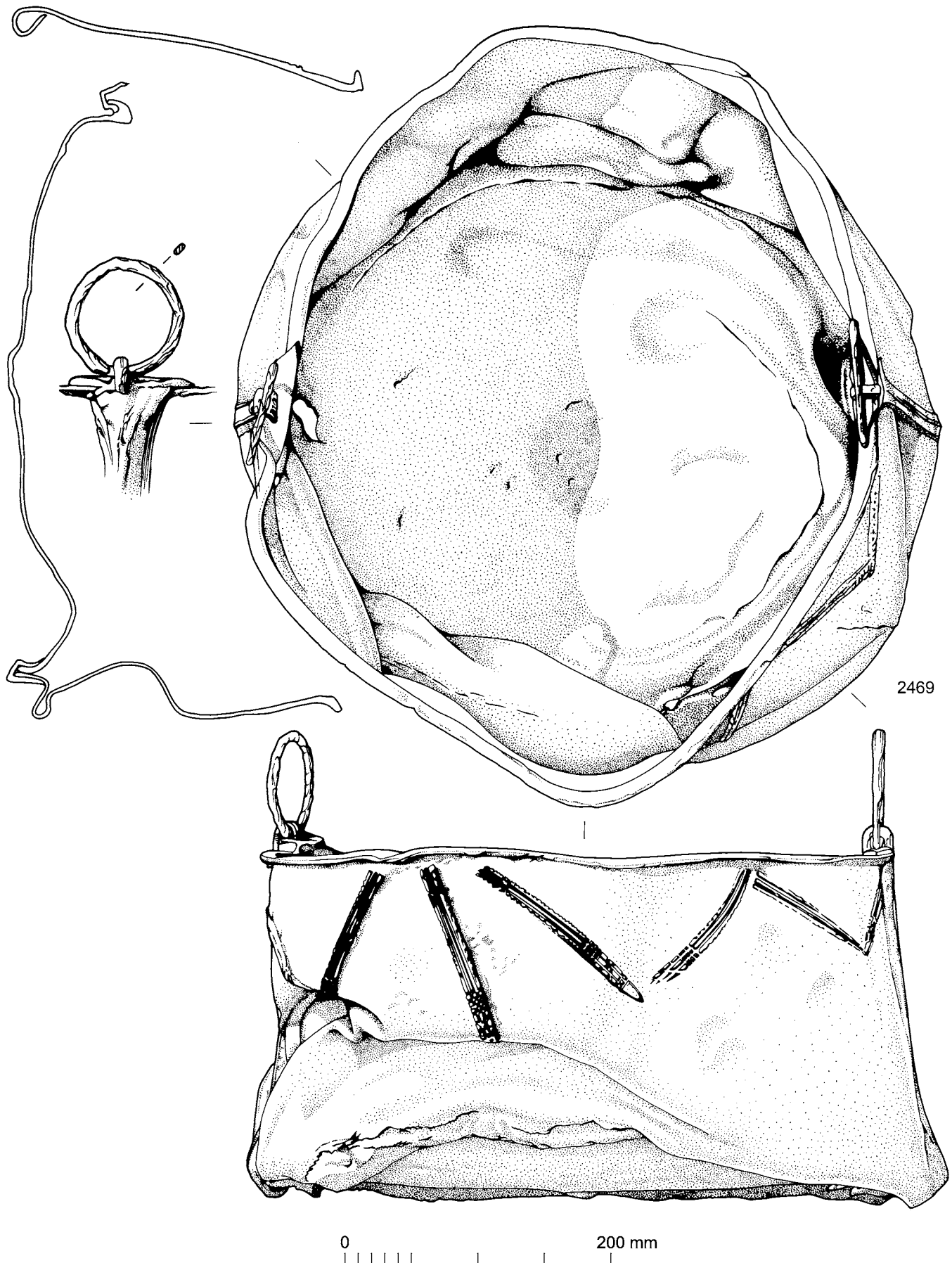


FIG. 7.13. Flixborough tool hoard: larger lead vessel, with design sequence $\vee\vee$. Scale 1:4.

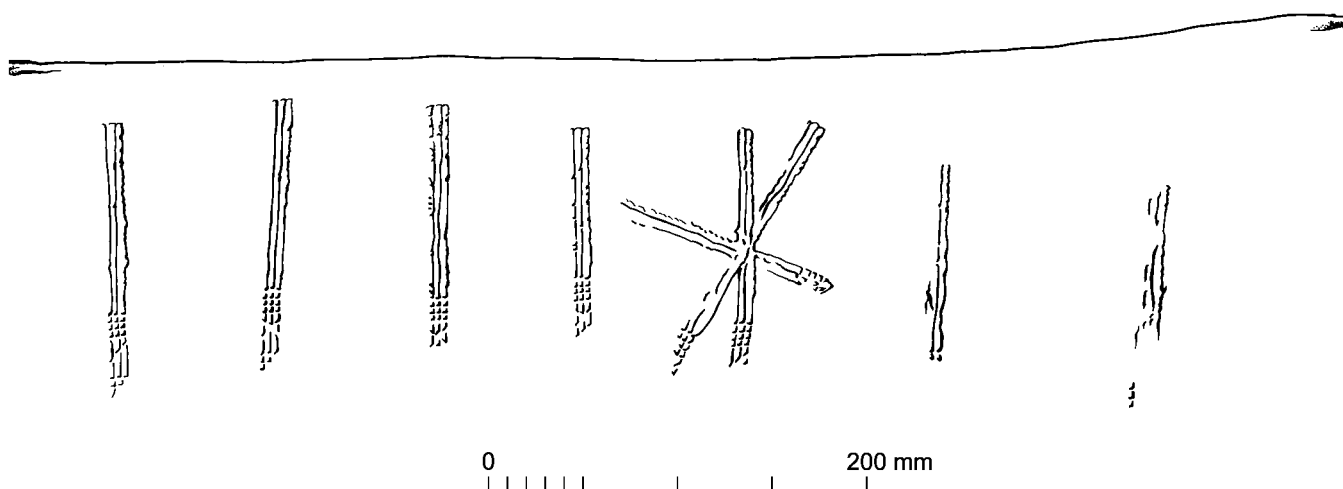


FIG. 7.14. Flixborough tool hoard: second design sequence on the reverse side to FIG. 7.13 on the larger lead vessel (no. 2469). Scale 1:4.

properties of lead. The sheet used to make these vessels was made by experienced casters, although they encountered some difficulties. It is proposed that the sheet was either cast at the mines, or close to the mouth of the River Trent, to export in rolled sheet form to Roman Christian churches then under construction. Status and display were significant factors in programmes of church building, so lead sheet was their chosen roofing material. The lack of lead finds generally on sites dating to the late 7th to early 9th centuries suggests access to the metal was being controlled by the upper echelons of society, and that it was not generally available to the wider community. This still, however, does not resolve how common these vessels were, and what purpose they served.

Notes

- 1 The writer is also aware of another lead vessel (with an elaborate pendant triangle decoration) which has recently been reported to the Portable Antiquities Scheme. This has been attributed to a find-spot near "Corby, Northants." (see the PAS website), though there are severe doubts about the reliability of this attribution. It has been excluded from the current discussion because it is highly and elaborately decorated, and much better finished than any of the other examples discussed here.
- 2 In discussing the possible functions of Anglo-Saxon household vessels and tools, several finds specialists have previously referred to the listing of such objects in the 11th-century text *Gerefa* (otherwise known as *The Discriminating Reeve*). Whilst this is a fascinating document which sheds considerable light on the running of an 11th-century estate, it is not without its problems. [For a very useful recent discussion of the archaeological relevance and possible interpretations of this text, see Gardiner 2006.] Not least of the problems is that the document appears to contain two

separate lists (A and B), which may have been compiled at different times. Lead vessels certainly appear in List B. Gardiner has put forward a plausible argument that the order in which they are cited may reflect the different parts of a farmstead in which vessels were kept; if this is accepted, then lead vessels would appear to have been associated with use within the kitchen area.

Whilst one may doubtless have much fun in speculating whether the position of lead vessels within this text might imply that they were used as containers for liquids rather than dry goods, this has little direct relevance to the Flixborough vessels, because the period in which they would have been used pre-dates the compilation of the *Gerefa* by at least two centuries. By the 11th century economic circumstances had also changed, and lead was far more plentifully available.

Acknowledgements

Particular thanks must go to Mr B. Lockwood of C. E. L. Traditional Sandcast Lead Manufacturers and Suppliers for helping me understand the joys of casting lead, and the skills and knowledge this requires. Also to Michael Allenby of Allenbys Joiners and Funeral Directors, who described so vividly the subtleties of working with lead, and the highs and lows of roofing with lead sheet. Richard Bartlett, Harlow Museum, Essex, kindly supplied a report with drawings and photographs of the Willingham vessels. David Hopkins, Kevin Leahy, Michelle Johns, D. James Rackham, Keith Smith, Gabor Thomas, and Alan Vince, and the many others with whom I have over the years had fruitful (to me anyway) discussions regarding Anglo-Saxon lead vessels.

Abbreviated catalogue

(FIGS 7.13–7.15 and PLs 7.3–7.9)

(more detail is given in the text and figures)

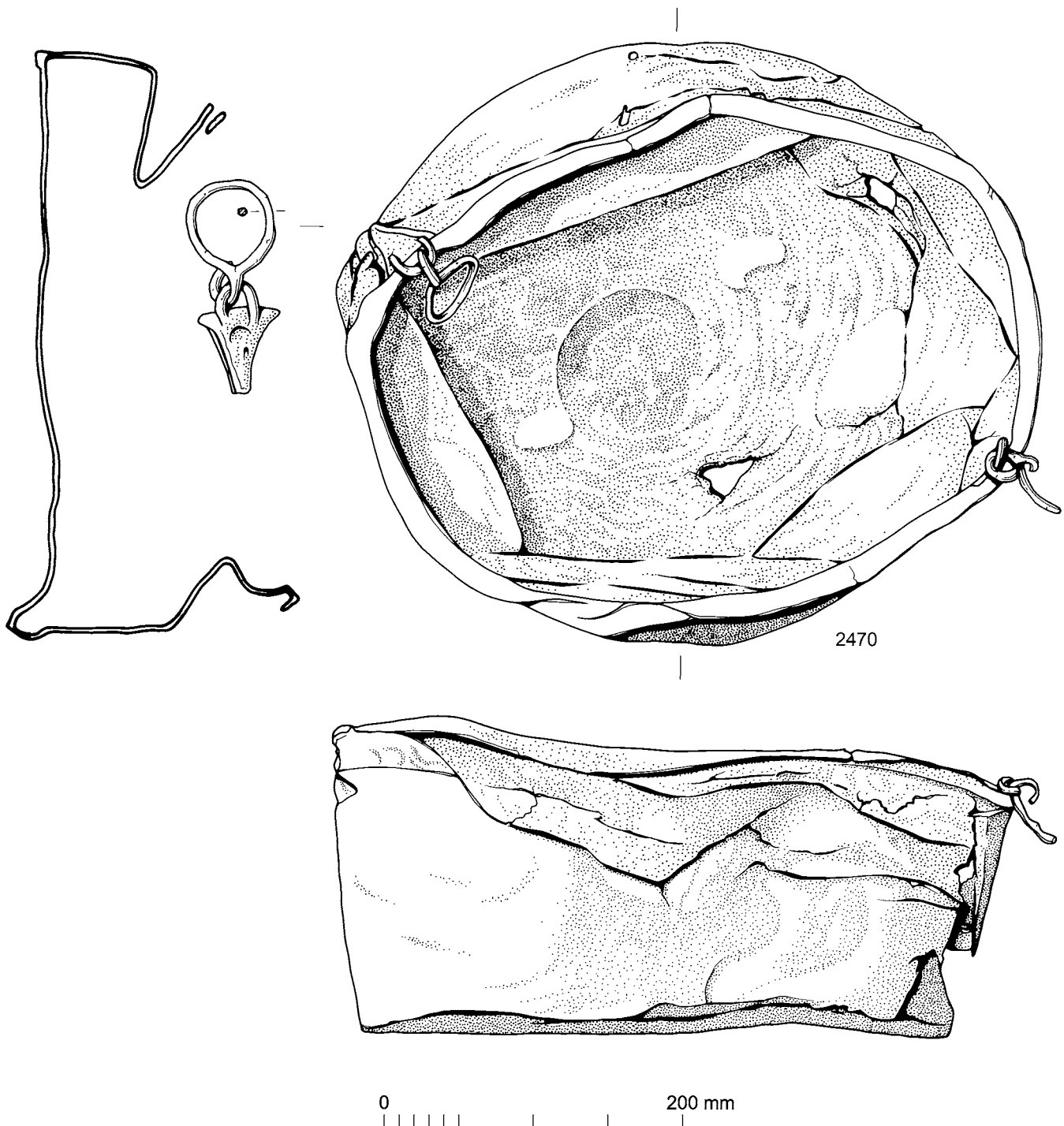


FIG. 7.15. Flixborough tool hoard: smaller lead vessel. Scale 1:4.

2469 Lead Vessel

The larger of two lead vessels, which housed the smaller of the lead vessels (no. 2470, RF 60020) and the hoard of tools and other objects.

Ht. 0.32m, Basal Diam. 0.52m. Capacity approx. 62.5 litres. (Figs 7.13–7.14 and Pls 7.3–7/8)

RF 60021, Unstratified, probably placed in a pit.

2470 Lead Vessel

The smaller of the two lead vessels, which housed the hoard and which was placed inside no. 2469 (RF 60021).

Ht. 0.23m, Basal Diam. 0.408m. Capacity approx. 27.65 litres. (FIG. 7.15 and Pls 7.3 and 7.9)

RF 60020, Unstratified, probably placed in a pit.

8 Leatherworking

Patrick Ottaway

with contributions by Glynis Edwards[†] and Jacqui Watson

Leather is likely to have been widely used throughout the life of the settlement for manufacturing a wide range of objects (e.g. articles of clothing, belts and straps, containers, drinking vessels, coverings, harness, and for sheaths and scabbards). Although the relatively dry aerated conditions prevalent at the site did not favour the preservation of leather objects per se, traces of leather were found as mineral-preserved organic material on many of the metal objects.

Direct evidence for leather-working was represented by a range of iron tools – slickers, a lunette knife, and a number of awls. In addition, some of the longer curved iron needles, and those with triangular sections, from the site, are more likely to have been used for leatherworking, than for textile-working; these are discussed with the other needles from the site, in Chapter 9 (q.v.).

8.1. Leatherworking tools

by Patrick Ottaway

Slickers (FIG. 8.1)

There are four leatherworker's slickers, or sleekers, from Flixborough, although only no. 2473 (RF 10111; Phase 4ii) is complete. It has a flat blade, from the back of which a tang projects at each end (FIG. 8.1). The slicker was used in the tanning process, to force out the dirt retained under the hair roots, just below the grain layer on a hide, and to shave the flesh side, until the surface was smooth, and the leather of even thickness. No. 2473 (RF 10111) is of the usual form seen in the Anglo-Saxon period, with back and cutting edge parallel. Another Middle Anglo-Saxon example comes from *Hamwic* (SOU169.2572, unpublished, excavated by Southampton City Council), while late Anglo-Saxon examples come from Lurk Lane,

Beverley (I. H. Goodall 1991, 132, 135, fig. 102, 319) and Winchester (I. H. Goodall 1990, fig. 53b, 324–5). No. 2445 (RF 7851; unstratified) has an unusual convex back, which has no obvious parallel. Nos 2472 and 2474 (RF 8298, Phase 6iii; and RF 10431, Phases 6ii–iii) are fragmentary.

Lunette knife (FIG. 8.1; PL. 8.1)

No. 2475 (RF 10841; Phase 5a/5b) exists as a crescent-shaped blade, with a tang projecting from the centre of the concave side (FIG. 8.1; PL. 8.1). This is probably a so-called 'lunette knife', used for cutting leather. It is a unique object as far as the Anglo-Saxon period in England is concerned, although another of similar date to the Flixborough knife comes from Hedeby, north Germany (Westphalen 1993, Taf. 27, 8). An example has also been recovered from the Pictish monastic site at Portmahomack, on the Moray Firth, Scotland (Carver 2004, 18).

Awls (FIG. 8.1)

There are 28 awls (9 unstratified), which are tools usually thought to be used for leatherworking, although in most cases they could have served for working other materials including wood, bone and even metal. An awl consists of two slender, tapering arms, which are usually, but not always, of more or less equal length. In the Flixborough assemblage the arms usually have a rectangular cross-section, or have one arm, presumably the tang, with a rectangular cross-section, and the other arm with a rounded cross-section. No. 2495 (RF 11541; Phase 4ii) is unusual in having arms of triangular cross-section, but there are no examples of awls with diamond-shaped cross-sections. This latter form is specifically related to leatherworking, and is common on awls of the late Anglo-Saxon period (Ottaway 1992, 552–4), but it appears to be almost unknown on Middle Anglo-Saxon awls.

A slight shoulder between the arms, to prevent the

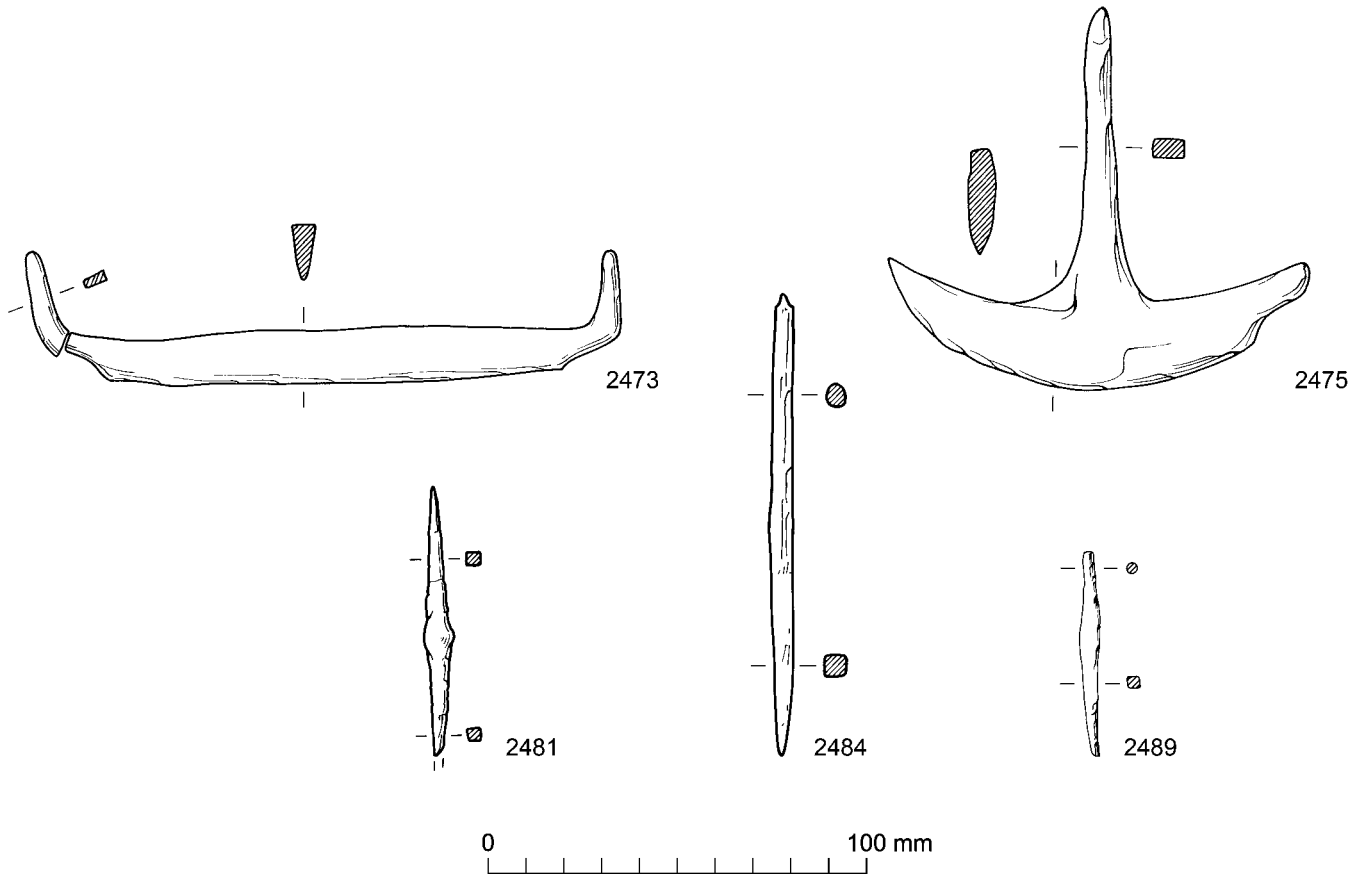


FIG. 8.1. Leatherworking tools. Scale 1:2.

handle slipping, can be seen on some of the awls, usually in the form of a slight expansion. A flattened and widened area between the arms on no. 2481 (RF 5484; Phase 4ii; FIG. 8.1) makes it similar to two Anglo-Scandinavian awls from 16–22 Coppergate, York (Ottaway 1992, 552–4, fig. 222, 2722, 2726). No. 2502 (RF 13296; unstratified) has one arm which is markedly thicker than the other, making it almost qualify as a small tanged punch (see Ch. 10.1, below).

Nine awls have traces of wooden handles, but only two could be identified. No. 2498 (RF 11842) with a willow or poplar handle, and RF 13027 with an alder handle. Both woods were regularly used for this purpose.

Four of the smaller awls (no. 2494, RF 11259, unstratified; no. 2500, RF 12396, Phase 4ii; nos 2501 and 2503, RFs 12621 and 13381, both unstratified) are very similar objects, in being at their thickest near one end, rather than in the middle; the opposite end, presumably the tang, has a wedge-shaped tip.

The size of the Flixborough awls varies considerably, although most are or were c.40–80mm in length. Two are however, markedly longer than the rest: no. 2484 (RF 6573; Phase 3bv; FIG. 8.1) is 120mm long, and no. 2486

(RF 7865; unstratified) is 128mm long and they are the only examples comparable in length to those longer late Anglo-Saxon/Anglo-Scandinavian awls which usually have the diamond-shaped cross-section. It is not possible to say however, if this means the Flixborough specimens are leatherworkers' awls.

Catalogue

Slickers (FIG. 8.1)

A slicker consists of a flat blade with a tang projecting at 90° from the back at each end.

- 2471 One end of blade missing, back convex. Heavy soil and charcoal present. L.98, W.22mm. Heavy soil, and charcoal noted in conservation.
RF 7851, Unstratified.
- 2472 Tang and stub of blade only. L.26mm
RF 8298, Context 3989, Phase 6iii.
- 2473 One tang broken. Random organic material present. L.155, W.16mm. (FIG. 8.1)
RF 10111, Context 3758, Phase 4ii.
- 2474 In two pieces, one end missing, surviving tang bent. L.c.50, W.14mm
RF 10431, Context 1892, Phase 6ii–6iii.

Lunette knife (FIG. 8.1; PL. 8.1)

- 2475 Crescent-shaped blade with tapering tang projecting from the centre of the concave side. L.110, W.110, Th.6mm. (FIG. 8.1; PL. 8.1)
RF 10841, Context 10834, Phase 5a–5b.

Awls (FIG. 8.1)

The arms have rectangular cross-sections unless stated.

- 2476 L.80, Th. 8mm. Traces of wood remain, but these are probably random
RF 849, Unstratified.
- 2477 One tip (? of tang) is wedge-shaped. Possible trace of a wooden handle, but not enough to sample for identification. Pith is probably present which would indicate that the handle was made from branch-wood. L.46, Th.5mm
RF 1491, Context 1462, Phase 6iii.
- 2478 L.50, Th.6mm
RF 1584, Context 1017, Phase 7.
- 2479 Both arms have a sub-rounded cross-section. L.82, Th.5mm
RF 2627, Context 2024, Phase 6iii.
- 2480 Shoulder between the tang and the working arm which has a rounded cross-section. L.56, Th.6mm.
RF 2818, Context 51, Phase 4ii.
- 2481 A widened area with convex sides between the arms, one tip missing. L.72, Th.8mm. (FIG. 8.1)
RF 5484, Context 3758, Phase 4ii.
- 2482 Shoulder between the arms. Tang bent over. L. (originally) 56, Th.8mm
RF 5708, Context 5139, Phase 5a.
- 2483 One arm only, rounded cross-section. L.51, Th.4mm
RF 5801, Context 5139, Phase 5a.
- 2484 One arm has rounded and the other a rectangular cross-section. Slight trace of a wooden handle on the tang, but not enough to identify the species, also some random organic material. L.120, Th.7mm. (FIG. 8.1)
RF 6573, Context 6235, Phase 3bv.
- 2485 One arm has a rounded cross-section, tip missing. Random organic material. L.71, Th.8mm
RF 6845, Context 6300, Phase 6iii–7.
- 2486 One arm has a rounded cross-section, tip missing. L.128, Th.7mm
RF 7865, Unstratified.
- 2487 Obscured by corrosion, but evidently the arm tips were missing. L.68, Th.6mm
RF 7899, Unstratified.
- 2488 L. 55, Th. 6mm
RF 8300, Context 3989, Phase 6iii.
- 2489 One arm has rectangular cross-section and the other a sub-rounded cross-section. L.55, Th.5mm. (FIG. 8.1)
RF 8933, Context 3107, Phase 4ii.
- 2490 L.44, Th.7mm
RF 8966, Context 3107, Phase 4ii.
- 2491 One arm has rounded cross-section. L.57, Th.10mm
RF 9623, Unstratified.
- 2492 Tang shorter than the working arm, a slight shoulder between them. L.41mm
RF 9654, Unstratified.
- 2493 Possible trace of leather? L.55, Th.6mm
RF 11161, Context 6472, Phase 5b–6i.
- 2494 At its thickest near one end, the other has a wedge-shaped tip. Slight shoulder between the arms. L.57, Th.7mm
RF 11259, Unstratified.
- 2495 Both arms have a triangular cross-section. Charcoal and random organic material. L.106, Th.8mm
RF 11541, Context 3758, Phase 4ii.
- 2496 One arm has a rounded cross-section. Wood is positioned on the top of the soil so is unlikely to be the handle. Possible fragments of leaf litter rather than leather. L.66, Th.4mm
RF 11660, Context 5983, Phase 3biv.
- 2497 Slightly curved. One arm has a rounded cross-section. L.78, Th.4mm
RF 11822, Context 11663, Phase 3biii.
- 2498 Tang incomplete. Considerable remains of a wooden handle, possibly *Salix* sp. (willow) or *Populus* sp. (poplar) [SEM B798]. Pith is also present which indicates that the handle was made from small roundwood such as a branch. One arm of this awl has a rounded cross-section. L.64, Th.4mm
RF 11842, Context 11699, Phase 3bii.
- 2499 Charcoal and traces of random organic material. L.48, Th.3mm
RF 12345, Context 10772, Phase 2–4ii.
- 2500 At its thickest near one end, the other has a wedge-shaped tip. Slight shoulder between the arms. L.49, Th.9mm
RF 12396, Context 10772, Phase 2–4ii.
- 2501 At its thickest near one end, the other has a wedge-shaped tip. Random organic material survives. L.51, Th.4mm
RF 12621, Unstratified.
- 2502 One arm thicker than the other, pronounced shoulder between the arms. L.53, Th.8mm
RF 13296, Unstratified.
- 2503 At its thickest near one end, the other has a wedge-shaped tip. Possible leather case but may be compacted corrosion. L.63, Th.8mm
RF 13381, Unstratified.

9 Textile Production

Penelope Walton Rogers

with contributions by Geoff Gaunt, Christopher Loveluck, Patrick Ottaway, Ian Panter and Lisa M. Wastling

This chapter examines the extensive evidence for textile production and working at this site: the full scope of the evidence, and its chronological range is set out in the introduction below. Textile-related finds constituted 11.34% of the recorded finds from the site. Because of the large quantities of artefacts recovered relating to this activity, illustration of the finds has had to be selective.

9.1 Introduction

The textile crafts at Flixborough are represented by objects associated with fibre-processing, spinning, weaving, cutting and stitching. Due to the poor preservation of organic materials at this site, there are no wooden tools present, but there are enough artefacts made from stone, clay, bone and metal, to act as representatives of each of these crafts. Only dyeing – if it was ever practised at Flixborough – has left no material evidence.

Altogether there are 1,104 items connected with textile production (1,134 if iron shears are included), most of which come from between Period 3, Phase 3b and Period 6. The different classes of object existed side-by-side through these phases, so that it may be concluded that raw flax and wool were brought to the site and made up into textiles, and then clothing, throughout the main site periods, from the 8th to the early 11th century. A summary of the objects is presented in FIG. 9.1.

Analysis of the evidence shows that certain aspects of textile production at the site changed with time. The Period 4, Phase 4ii artefacts, for example, indicate some form of specialised production, which continued into Period 5, Phase 5a, but disappeared during Phase 5b. The Period 6 evidence in itself is also particularly informative, as it presents a marked contrast with urban sites of the same date in terms of textile technology, and this in turn

must have had social and economic implications. The artefacts will be described here, and the significance of this important body of material is discussed further in Volume 4, Ch. 6.

9.2 Fibre processing

Fragments of a wool-comb, no. 2504 (RF 11777/11778. FIG. 9.2), were recovered from an unstratified deposit. This is the typical Anglo-Saxon form of wool-comb, with a rectangular, iron-bound head and two rows of relatively short iron teeth, 93mm long. The wooden head that the iron would have encased, and the wooden handle are no longer present. Wool-combs of this sort were used in pairs to prepare wool for spinning. Better preserved combs, often in pairs, have been found at a number of Middle and Late Anglo-Saxon sites, the earliest being from 7th-century Lechlade, Gloucestershire (Ottaway 1992, 538–40; Boyle *et al.* 1998, 58–9, 156, and 192–3). They probably continued in use until the 13th or 14th century, when they were displaced by the modern long-toothed wool-comb (Walton Rogers 1997, 1720–1, 1727–30).

A further 194 iron spikes were recovered from the excavation, 102 from stratified deposits (FIG. 9.1). Spikes of this sort are often assumed to be teeth from wool-combs, but there is another tool, the flax heckle, which has teeth of a similar nature. Heckles consist of a block of iron spikes set vertically in a wooden mount, and are used to split flax into individual fibres at the final stage of processing, prior to spinning. Their teeth are straight and sharp-tipped, and range from 40 to 200mm in length; they are mostly set into the wooden mount without the aid of an iron base-plate, although there are some exceptions to this rule on the Continent. The spikes from wool-combs are more standardised, at 90–110mm long, with a rounded rectangular cross-section (corrosion can make this look more angular); they have an almost imperceptible curve

Period/phase	Preparation of fibres (fibre processing spikes)			Spinning (Spindle whorls)		Weaving		Needlework (Needles)		
	<i>Flax</i>	<i>Wool</i>	<i>Undeter- mined</i>	<i>Stone</i>	<i>Other*</i>	<i>Loom weights</i>	<i>Pin beaters</i>	<i>Iron</i>	<i>Copper alloy</i>	<i>Bone</i>
7th and early 8th centuries										
1 & 2		1		1		5 (217g)		1		
Broadly 8th and 9th centuries										
2–3						6 (212g)	1	2		1
2–4ii	5	1	3	2		5 (529g)		4		
8th and early 9th centuries										
3a		1	1			1 (107g)				
3a–b						1 (118g)				
3a–4						1 (31g)				
3b			2	1	1	159 (8,599g)		2	1	1
3b–4			2	1		2 (396g)	1			
Early–mid 9th century										
4	7	2	4	11		244 (15,794g)	1	13	3	1
4ii–5a	3				1	5 (357g)		1		
Mid–late 9th century										
5a	4	1	5	6		40 (1,646g)		2	1	
5a–5b			1	3	1	24 (818g)		2		
5b		1	1	2	1	45 (1,384g)		6		2
5–6	2	1	1	1	1	16 (1,507g)	1	4		
Early 10th and 11th centuries										
6	6	14	28	5	1	148 (7,636g)	1	14		1
6iii–7	1	3	1		1	12 (423g)	2	3		
7				1		4 (48g)		1		
Unstratified	7	22**	63	13	7	38 (2,787g)	5	13	2	
TOTALS	35	47	112	47	14	756 (42,609g)	12	68	7	6

Key: *clay/lead/bone/antler. **including a fragmentary woolcomb

FIG. 9.1. Textile-making equipment from Flixborough by type and phase.

at the tip, and they sometimes retain remains of the iron base-plate 10–15mm from the base of the spike.

At Flixborough, there is a cluster of especially sharp-tipped spikes, 66–108mm long, from the fill of the ditch in Area G in Period 4, Phase 4ii (Loveluck and Atkinson,

Volume 1, Ch. 5; see ADS archive distribution plot for Phase 4ii). Some of these spikes have clearly been embedded in a deep block of wood, and most, if not all, can be confidently identified as flax heckle spikes. This area is away from the main buildings, and supports the historical

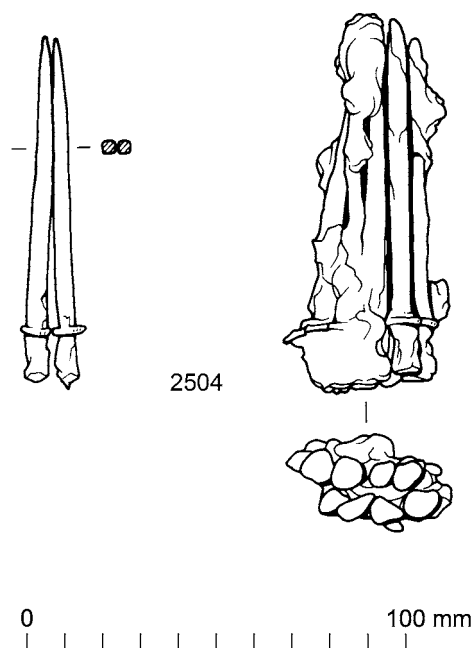


FIG. 9.2. Parts of an iron wool comb. Scale 1:2.

and archaeological evidence that flax processing was largely carried out in the open air (Walton Rogers 1997, 1796–9). In later phases, flax heckle spikes were found towards the centre of the site, in and around the dumps (Phase 5a, contexts 5139, 5193; Period 6, context 5988), but they rarely occurred in the same deposits as wool-comb teeth.

Spikes confidently identified as wool-comb teeth (90–110mm long, rounded rectangular section, with remains of an iron base-plate), were found in the central dumps in Period 5, phases 5a – contexts 5860, 5885; and 5b – contexts 3081, 3082 and 6344, (see ADS archive distribution plot for phases 5a and 5b). By Period 6, Phase 6iii, however, wool-comb spikes were concentrated in the eastern quadrant of the site, in site areas C and F (Volume 1, FIG. 2.3 and FIG. 7.10; Loveluck and Atkinson, Volume 1, Ch. 7). This reflects the general shift in occupation towards the east during the course of the 10th century (Loveluck and Atkinson, Volume 1, Ch. 7; Loveluck, Volume 4, Ch. 2). Wool-combing, unlike flax processing, was an indoor craft, and wool-combs tend to follow habitation more closely than flax heckles.

9.3 Spinning

Once the wool had been combed and the flax heckled, the fibres would be ready for spinning. The craft of spinning is represented by 62 spindle whorls, made from stone, lead, clay and bone (FIGS 9.3–9.6). Each of these would have been mounted on the end of a wooden spindle and used to give twist to fibres being drawn from a distaff. As already

noted, wooden tools such as distaffs and spindles were not preserved at Flixborough.

Stone spindle whorls (FIG. 9.3)

Of the 48 stone whorls, 47 are hemispherical, or near-hemispherical, a type which was prevalent in the Humber region of Yorkshire and North Lincolnshire from the 7th to the 10th centuries (Walton Rogers 1997, 1736–41). This form of whorl has one flat face at the top (Form A1, FIG. 9.3. Nos 2515, 2517, 2521, 2523, 2525, and 2536–7; RFs 3512, 4001, 5498, 5830, 6000, 11518, 11543) or one large flat face at the top and one small flat face at the bottom (Form A2, FIG. 9.3. Nos 2545–6; RFs 10174, 11051). The whorls of this type from Period 6 are from the ‘dark soil’ refuse deposits above the earlier dumps, and have the typically small spindle hole, 6–9mm diameter, of Early and Middle Anglo-Saxon whorls. On typological grounds, it seems likely that these Period 6 whorls are residual, and the Phase 5b (late 9th century) whorls are therefore the latest confidently dated stone whorls from Flixborough. A single stone whorl, no. 2553 (RF 6290) from Phase 3bv–4ii, is an early example of the cylindrical/doughnut-shaped whorl, Form B, which was already in use in Yorkshire by the 8th century, but was not common until the later 10th century (Walton Rogers 1997, 1736–9).

The stone whorls are made from the types of limestone, chalk, siltstone and mudstone which can be found in the Yorkshire-Lincolnshire region, and some of the raw materials may have been collected quite close to the Flixborough site (see Gaunt below).

A review of stone spindle whorls from British sites down to the 14th century has shown that most whorls reflect the geology of the region in which they have been found (Walton Rogers 2000, 2531, Table 251). There is, therefore, a certain amount of overlap in raw materials, between Flixborough and 8th- to 11th-century York, 50 km to the north-west (Gaunt in Walton Rogers 1993, 1268; Gaunt in Walton Rogers 1997, 1736). This does not mean that there was any specialist production centre – the wide variation in shape and technology of production shows otherwise – merely outcrops of similar rocks in different parts of the region and perhaps also common collecting grounds for raw materials.

Almost all of the Flixborough stone whorls are lathe-turned, which contrasts with York, where three-quarters of the Anglo-Saxon whorls were either cut with a knife or ground to shape. Only two of the Flixborough whorls have an incised-line decoration (no. 2517; RF 4001, Period 2; and no. 2546; RF 11051, Phase 5a; FIG. 9.3), which is much less than the 15% of decorated stone whorls at York (Walton Rogers 1993, fig. 625; 1997, fig. 808) and 25% at Flaxengate, Lincoln (Mann 1982, figs 21–2). Altogether, the Flixborough whorls are more standardised and uniform than other Anglo-Saxon collections in the region.

The Flixborough whorls are also especially small. The 38 Form A1 whorls weigh only 7–33g, most being between 10g and 20g. The other stone whorls are a similar

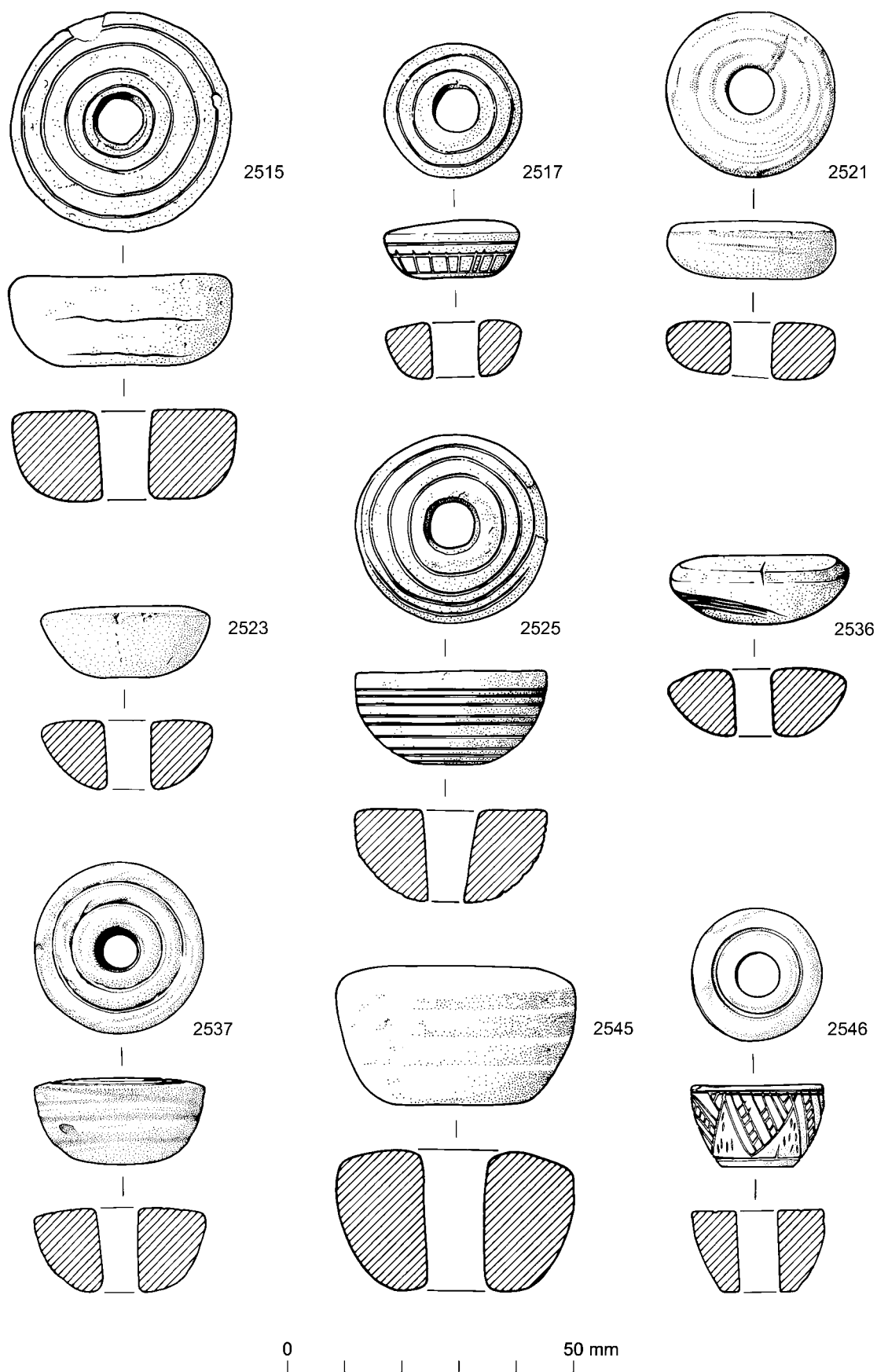


FIG. 9.3. Stone spindle whorls. Scale 1:1.

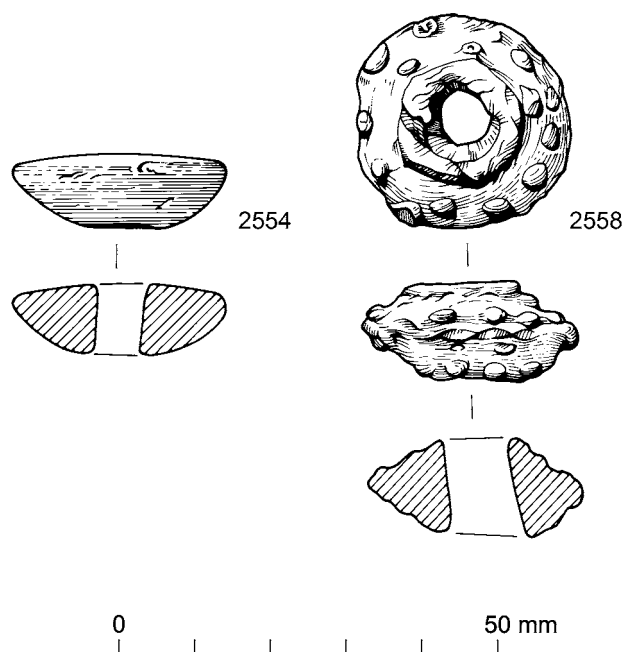


FIG. 9.4. Lead spindle whorls. Scale 1:1.

range of weight, although there are two heavier Form A2 whorls, one 48g (no. 2545; RF 10174), from Period 5b and another 37g (no. 2542; RF 5049), unstratified. In York, Form A whorls weighed 9–63g, the heavy, medium and light whorls being used together in the same phases. At Flaxengate, the stone whorls weighed 6–42g, most being 20–30g (Mann 1982, 22–57). In the Early Anglo-Saxon settlement at Mucking, Essex, stone whorls were few, but the potsherd and clay whorls weighed 14–60g, most being 25–45g (Hamerow 1993, 65). The significance of the lightweight whorls in Periods 4 and 5a at Flixborough will be discussed further in Volume 4, Ch. 6.

*A note on the geology of the stone spindle whorls
by Geoff Gaunt*

THE LIMESTONE SPINDLE WHORLS

The 13 spindle whorls with a lithology exemplified by that of no. 2507 (RF 795) are made from fine-grained silty, and in some whorls slightly quartzitic or 'sandy', limestone. In no. 2519 (RF 4401) and a few other whorls the calcitic grains are seen to be mainly microbioclastic, i.e. consisting of finely comminuted fossil fragments. Microscopic flattish voids parallel to the grain layers are characteristic of the texture.

Seven spindle whorls exemplified by no. 2508 (RF 902) have an almost identical lithology to no. 2507 (RF 795) *et al.* except for being slightly coarser-grained (but still fine-grained in absolute terms), less silty and apparently devoid of quartz 'sand'. Three more spindle whorls exemplified by no. 2513 (RF 2756) are also almost identical except that their grain-size range extends slightly into the medium

grade; they appear not to be silty and have hardly any microscopic voids.

The constituents and textures of the three lithologies exemplified by nos 2507–8 and 2513 (RFs 795, 902 and 2756) are so precisely similar that they suggest a common depositional environment and probably, therefore, a common provenance for all of the relevant 23 spindle whorls.

There are two possible local provenances. One comprises thin limestones in the upper part of the Scunthorpe Mudstones, but below the Frodingham Ironstone (Gaunt *et al.* 1992, 32–4). These limestones crop out on the west-facing scarp slope east of the site of the Flixborough excavations, locally less than 1km away. Other thin, but more coarsely bioclastic, limestones in the same sequence are considered to be the source of some of the padstones and sills from the buildings. The other possible local provenance is the Cleatham limestone, a thin basal layer within the Raventhorpe Beds, which comprise the lowest part of the Lincolnshire Limestone (Gaunt *et al.* 1992, 46–8). This thin limestone crops out irregularly on top of the Lincoln Edge, being nearest to the Flixborough site around Roxby, 4 to 6km to the north-east.

Considered together, the lithologies of the 23 spindle whorls reviewed here are most closely comparable to those in the thin limestones in the upper part of the Scunthorpe Mudstones, although that of the three whorls exemplified by no. 2513 (RF 2756) is admittedly equally comparable to mainly fine-grained oolite-free varieties of the Cleatham limestone occurring near its northern limit of outcrop west of Winterton. If, however, all the 23 limestone whorls considered here are from the same provenance, then on lithological grounds, and also those of proximity, the upper part of the Scunthorpe Mudstones is the more likely of the two possible local sources.

THE CHALK SPINDLE WHORLS

Of 19 spindle whorls made from chalk (nos 2527 and 2531, RFs 6282 and 6335, being from the same whorl), seven of them are from fine-grained varieties that imply a provenance in the circa 26m-thick Ferriby Chalk Formation in the lowest part of the >250m-thick Chalk Group, and another four have a very fine to fine-grained texture suggestive of the same provenance. The remaining eight spindle whorls have entirely very fine-grained textures and could have provenances in almost any part of the Chalk Group, which crops out widely in the Lincolnshire and Yorkshire Wolds (Gaunt *et al.* 1992, 77).

The manufacture of spindle whorls from chalk erratics is unlikely because such erratics (except recently formed beach pebbles) are degraded by weathering and ground-water, and would be insufficiently robust or durable for this purpose. In the nearest chalk-bearing deposits to the site of the Flixborough excavations, those occurring between Winterringham and Winterton, the degradation is such that 'the number of chalk pebbles decreases markedly upwards in the top 1m, and they are virtually absent at the surface' (Gaunt *et al.* 1992, 119).

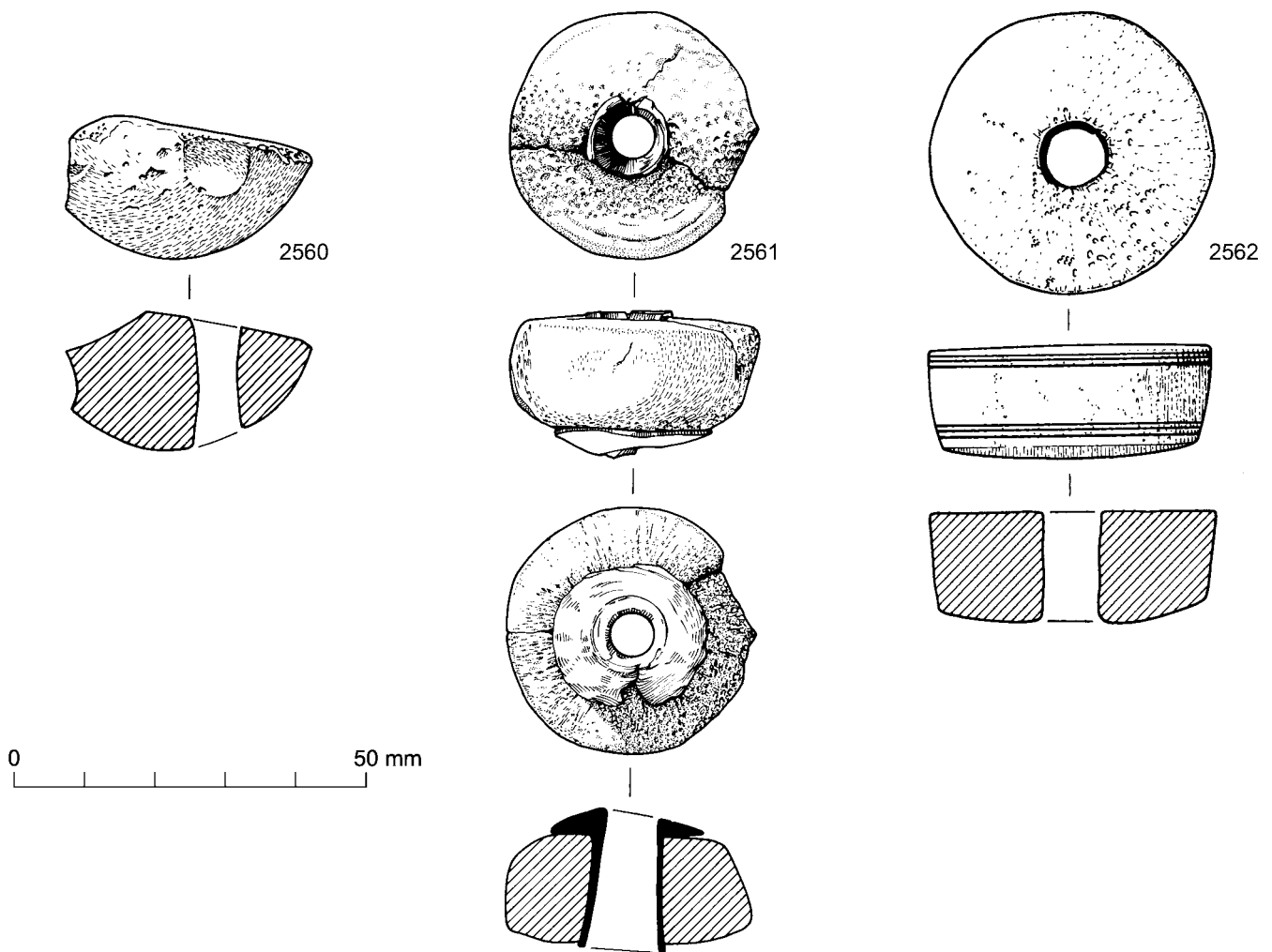


FIG. 9.5. Bone and antler spindle whorls. Scale 1:1.

It is likely, therefore, that the spindle whorls were made from chalk obtained directly from outcrops by excavating through the weathering zone into 'fresh' rock, a task more easily accomplished on steep slopes than flattish ground. Perhaps the relative abundance of spindle whorls made from Ferriby Chalk (despite this sequence comprising only about 10 percent of the entire Chalk Group) relates to the fact that the Ferriby Chalk crops out on the steep scarp slopes of the Wolds. Moreover, chalk does not readily occur in natural exposures except on sea cliffs, but the Ferriby Chalk is exposed naturally along South Ferriby Cliff, and may well have been similarly exposed on the landslip scars between Horkstow and Saxby All Saints. Whatever the provenances, the distances from the Flixborough site suggest a degree of specialist extraction.

Spindle whorls in other materials

The remaining fourteen spindle whorls consist of three bone, four clay and seven lead. The second bone example, no. 2561 (RF 1989, from phases 5b–6i), has been lathe-turned to the same A1 shape as the stone whorls, and has the curious feature of a lead sleeve lining the spindle hole (FIG. 9.4). Another, no. 2561 (RF 5745 from Phase 5b), has been lathe-turned to A2 shape (FIG. 9.5) and is made from antler pedicle, which is the part of the deer's skull from which the antler rises (all bone identification by S. O'Connor). This cutting of bone to shape for spindle whorls is quite common in the Early and Middle Anglo-Saxon period (e.g. Brodribb *et al.* 1972, 122, 124; Hamerow 1993, 65; Eagles and Evison 1970, 45), but in the 10th and 11th centuries cattle femur heads, which have a naturally domed surface, began to be used instead (Woodland 1990, 217; Walton Rogers 1997, 1743). There is one example of

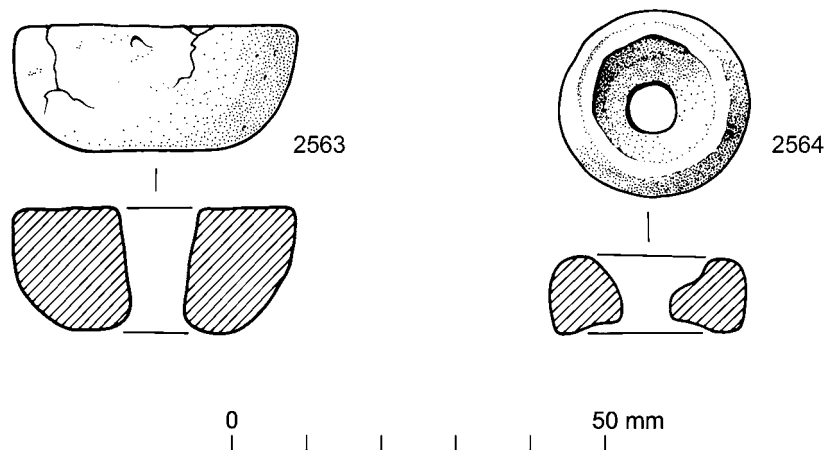


FIG. 9.6. Fired clay and ceramic spindle whorls. Scale 1:1.

this later type from Flixborough, no. 2560 (RF 1555) from Phase 6iii (Fig. 9.5).

Two of the clay whorls have also been shaped into A1 forms: no. 2565, RF 3044, Phase 5a–5b; and no. 2563, RF 6892, Phase 6iii–7 (no. 2563, RF 6892 is shown in Fig. 9.6); a third is doughnut-shaped form B (no. 2564, RF 14126, unstratified; Fig. 9.6). They therefore reflect the shapes of the stone whorls. The fourth clay whorl, RF 10374 from Phase 3biii, is of the rounded biconical, Form C; a type which is rare in this region. Clay whorls are more common in areas where there are no easily accessible outcrops of rock, such as the Thames basin (Walton Rogers 2000), and at Mucking, situated on Essex clay, where there were nine flattened-globular and rounded-biconical clay whorls (Hamerow 1993, 65). This, then, could be a rare example of a whorl from outside the region.

Six of the seven lead whorls have been cast in a mould, with a former for the spindle hole, but the seventh, no. 2559 (RF 12449), has been cut by hand. Most have been made in the same Form A1 and A2 shapes as the stone whorls, which suggests that they originated in Middle or Late Anglo-Saxon levels, although five are from unstratified deposits and one is from upper levels of the site (no. 2555; RF 333, Period 7). There was evidence for the manufacture of lead whorls in the same shapes at 10th-century Coppergate (Walton Rogers 1997, 1799). A single lead whorl, no. 2558 (RF 12448), also unstratified, is biconical, with a decoration of raised dots (Fig. 9.4). This type is sometimes attributed to the Roman period (Wheeler 1958, 50, Pl. III), but the pattern of raised dots is much more common in lead whorls from post-medieval sites (Oakley and Hall 1979, 287, Ivens *et al.* 1995, 359).

Several of the stratified spindle whorls are distributed close to buildings and two are from occupation deposits from inside buildings (no. 2517, RF 4001, Building 20, Period 2; and no. 2550, RF 5419, Building 7, Period 6,

Phase 6i), exactly as they were at Coppergate (Walton Rogers 1997, fig. 841); the rest are all from the central dumps. Spindle spinning is an easily portable craft, and spindle and distaff were sometimes carried out into the fields in later times. At Flixborough and at Coppergate, however, the evidence suggests that spinning was largely practised indoors, or at any rate close to buildings.

9.4 Weaving

Weaving at Flixborough is represented by pin-beaters and loom-weights. The loom-weights indicate the use of the warp-weighted loom, in which the loom frame is leant against a wall, and the warp (the vertical threads) suspended from the top beam and tensioned with weights at the bottom (Walton Rogers 1997, fig. 812). Double-ended pin-beaters are used with this loom as an all-purpose hand tool, to pick out misplaced threads, to strum across the warp to even out tension, and to push the weft (horizontal threads) loosely into position. Iron sword-beaters were also used with this loom, to beat up the weft, but they seem to have been regarded as valuable objects, and are more often found deliberately placed in Early Anglo-Saxon women's burials (e.g. Walton Rogers 1998), rather than lost or discarded in areas of habitation such as this.

Pin-beaters (Fig. 9.7; PL 9.2)

There are two complete pin-beaters and fragments of eleven more (a selection is shown in Fig. 9.7). All are made from animal long-bones (identified by S. O'Connor). The complete ones are of the double-ended form, which has a point at either end and a round cross-section; and the incomplete ones appear to be mainly of the same type. The double-ended pin-beater is firmly associated with the warp-weighted loom and, significantly, the six pin-beaters from phases 4ii to 6iii (Fig. 9.1) all come from deposits

which have also yielded loom-weights (contexts 3758, 6472, 3451 and 6300). Three pin-beaters have a band of incised lines around the girth (nos 2568 and 2570–1; RFs 2226, 3577, 7246, FIG. 9.7; PL. 9.2), and where the surface is well preserved it has a high polish from use. These incised bands are often called ‘decoration’, although experience with the warp-weighted loom suggests that they are in fact intended to help the hand keep a grip on the polished surface.

Bone pin-beaters are well known from Anglo-Saxon sites, but the Flixborough ones are particularly long and slender. The two complete pin-beaters, nos 2573 and 2575 (RFs 12158 and 14042; FIG. 9.7), are 110mm long, and three of the incomplete ones were probably originally closer to 170mm in length. Diameters are mainly 6.0–8.0mm, except in the late examples, from Phases 6iii and 7 where they are 8.0–10.0mm. Anglo-Saxon pin-beaters recorded so far have been 80–160mm long and 8–12 mm diameter, but the shorter, sturdier types are the most common. At Århus, Denmark, there is a more slender example, 136mm long, 6mm wide, from the same ceramic phase as a cut-off piece of linen warp (Andersen *et al.* 1971), and it is possible that these slim pin-beaters should be associated with linen production. The appearance of the thicker pin-beaters at Flixborough coincides with an increase in the weight of loom-weights between Period 5, Phase 5b and the end of Period 6, and probably also with an increase in the production of wool cloth in these later periods of occupation.

Loom-weights (Figs 9.8–9.11)

There were 756 separate finds of loom-weights, but, since many of these were collections of fragments, they have been summarised by weight for FIG. 9.8. There are only 12 complete loom weights (see FIGS 9.10–9.12 for the majority of these), but confident estimates of original dimensions and weights could be obtained from a further 230 almost complete examples, and the discussion of size and weight, below, is based on these 242 weights.

The weights are all hand-made from an estuarine clay which was probably collected from the Trent Valley close to Flixborough (Vince, petrological analysis, ADS archive). The evidence of an un-worked bar of clay, no. 2572 (RF 9997), in association with half-finished (no. 2751; RF 9996) and unfired (no. 2750; RF 9982) weights in context 6885, Phase 4ii, adjacent to a dump containing partially fired loom-weights and a pin-beater (context 3758), suggests that weights were being made on the site, not far from where they were used. Further half-made and non-fired weights were found in another central dump, context 8108, Phase 5a. Non-fired (or perhaps under-fired) weights were also found in deposits from Period 5, Phase 5b and Period 6, but in these cases, it is possible that they represent loom-weights used ‘in the green’ (unfired), as seems to have been the case with many of the weights from the Anglo-Saxon villages at West Stow, Suffolk (West 1985 II, 138), and Mucking, Essex (Hamerow 1993, 68).

To make each weight, the clay has been worked into a round shape and then the central hole has been pushed through, so that there is often a flange around the hole on one side. They occur in a variety of shapes, ranging from flat quoit-shaped to near-spherical. Anglo-Saxon loom-weights are often divided into ‘annular’, in which the hole is wider than the thickness of the ring; ‘intermediate’, in which the hole is narrower; and ‘bun-shaped’, in which the hole is small. Broadly speaking, annular is regarded as Early, intermediate as Middle, and bun-shaped as Late Anglo-Saxon (Hurst 1959, 23–25, reconsidered by Holden 1976, 310–11; and Hedges 1980, 87–93). At Flixborough, the weights are all bun-shaped and intermediate, as is to be expected of a Middle and Late Anglo-Saxon site, but the two types clearly existed side-by-side through all phases. There seems to be a better correlation between shape and weight, rather than between shape and date; the bun-shaped weights being mostly heavier than the intermediate ones. As a result, the number of bun-shaped weights rises and falls with the average weight in each phase (FIG. 9.8).

Many weights have a groove emerging from the central hole, where a thin cord has probably suspended the weight – although it is curious that some of these grooves seem to have been made before firing. Sixty-three weights also have impressed marks (cf. FIGS 9.9–9.11). These first appear in Phase 3b (7 examples), but are largely a Period 4 (44 examples) phenomenon, especially Phase 4ii (40 examples). The Phase 4ii marks include a large circle (at least 16 examples), a small circle (at least 6 examples), four dots in a square (seven examples), a double row of dots (two examples), and single deep, round marks evenly spaced around the weight (five examples); there is also a single example of a small impressed square from Phase 4ii–5a. Six weights with these designs also occur in Phase 5b and Period 6 deposits, almost certainly residually, as one example with a small circle from Phase 6iii (no. 2832; RF 3832, context 3989) fits a fragment from Phase 4ii (no. 2648; RF 3859, context 3758). In these later periods, however, some new marks appear. There are two examples of a ‘+’ mark enclosed in a circle, one from Phase 5b and the other from Period 6; and one example of a reversed, curled ‘S’ on a large weight from Period 6, Phase 6ii–6iii (no. 2812, FIG. 9.11).

Circular loom-weights were used by most of the Germanic peoples in northwest Europe, and those with impressed marks are best represented at trading centres with a well-to-do population, such as Dorestad (Roes 1965, 70), Haithabu (Graham-Campbell 1980, 21), Ribe (Bender Jørgensen 1991, 67ff) and Birka (Andersson, pers. comm.). They seem less common in England, although a large, undated bun-shaped weight from Binton, Warwickshire, has a mark which Mytum suggests has been made with a cattle-branding iron. This could well be true of the reversed curled ‘S’ from Period 6 at Flixborough, but the earlier Flixborough marks have more in common with the stamped decoration on Early Anglo-Saxon pottery (Hamerow 1993, 45–52): these marks seem to have been made with carved

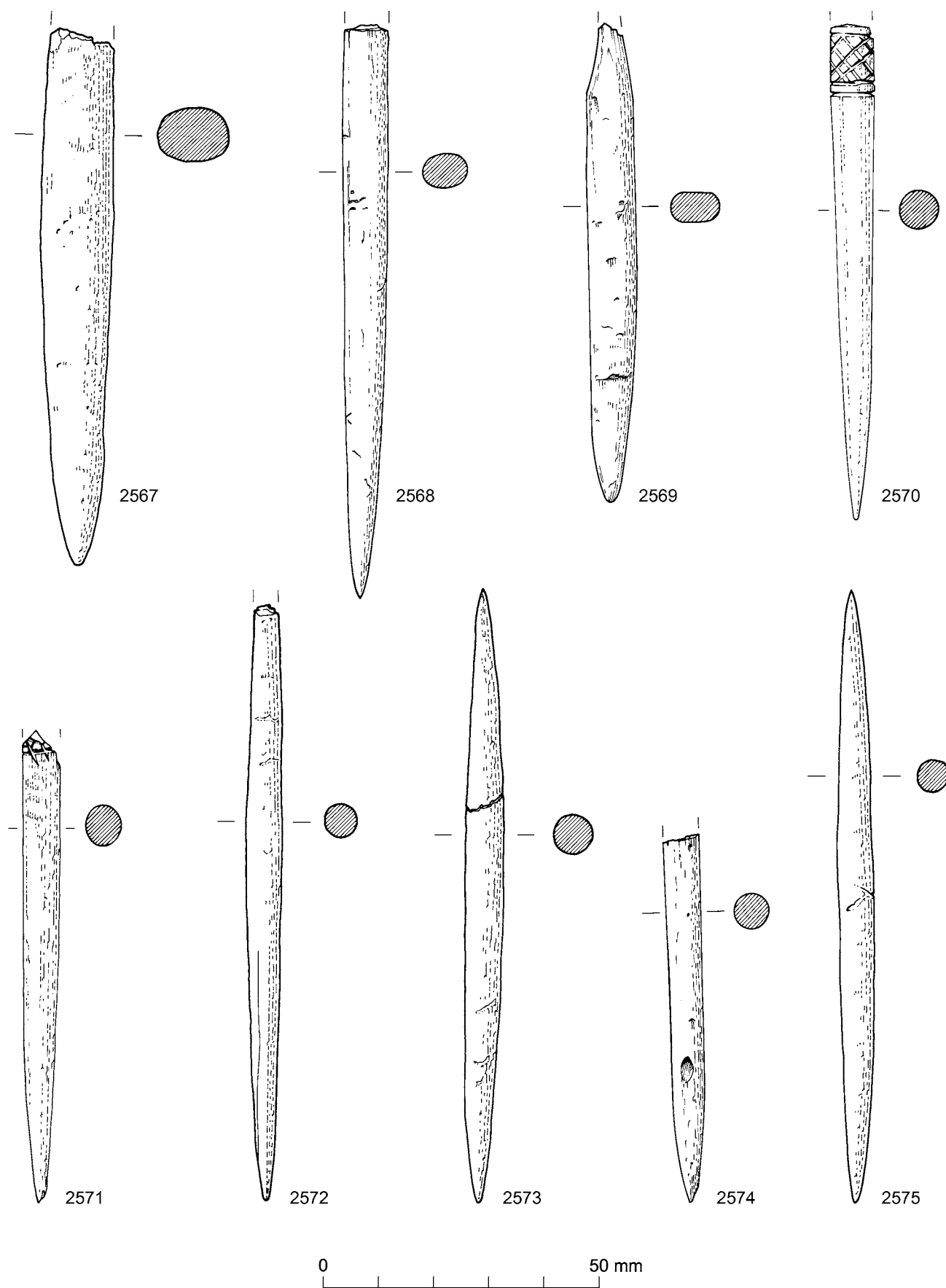


FIG. 9.7. Pin-beaters. Scale 1:1.

Period or phase	Date range	Context	Weight
Phase 1b	mid-late 7th century	2231	1g
Phase 1b-2	mid-late 7th to early 8th century	767	15g
Period 2	late 7th to early 8th century	4621	200g
		10938	1g
Phase 2-3a	late 7th to mid 8th century	4769	105g
		5314	16g
		5369	80g
		10700	11g
Phase 2-4ii	late 7th to mid 9th century (almost certainly phase 4ii ditch fills)	258	4g
		269	3g
		2860	463g
		2915	59g
Phase 3a	early to mid 8th century	9963	107g
Phase 3a-3bv	early 8th to early 9th century	10238	118g
Phase 3a-4ii	early 8th to mid 9th century	484	31g
Phase 3b	mid 8th to early 9th century	5983	705g
		11736	2g
		11748	2g
Phase 3bi	early to mid 8th century	6384	47g
Phase 3bi-3bii	mid 8th to early 9th century	11726	6g
Phase 3bi-3bv	mid 8th to early 9th century	968	189g
		7418	147g
Phase 3bii	mid 8th to early 9th century	6465	2900g (55 RFs)
		6952	9g
		7546	2g
		11699	353g
		11436	3g
Phase 3biii	mid 8th to early 9th century	8200	2g
		11631	2g
		7153	18g
		7220	78g
Phase 3biii-3bv	mid 8th to early 9th century	11893	129g
Phase 3biv	mid 8th to early 9th century	5653	9g
		6039	4g
		6630	2g
		10048	33g
Phase 3biv-3bv	mid 8th to early 9th century	6441	2g
		6456	21g
		6710	224g
Phase 3bv	mid 8th to early 9th century (probably early 9th century)	2743	2g
		5617	72g
		6136	3234g (51 RFs)
		6304	402g
Phase 3bi-4i	mid 8th to early 9th century	4323	358g
		12248	38g
Period 4	early to mid 9th century	6235	1262g
Phase 4i	early to mid 9th century	6132	339g
		6146	73g
		7388	30g
		7543	1g
Phase 4i-4ii	early-mid 9th century	5827	3g
		2777	8g
Phase 4ii	mid 9th century	3107	25g
		3758	12418g (198 RFs)

FIG. 9.8. Total weight of loom-weights by context and phase.

Period or phase	Date range	Context	Weight
		5503	87g
		6885	1511g (25 RFs)
		8787	37g
Phase 4i–5a	early to late 9th century	2373	8g
Phase 4ii–5a	mid to late 9th century	5193	309g
		5252	40g
Phase 5a	mid to late 9th century	72	11g
		2611	20g
		3247	47g
		3711	87g
		4041	9g
		5139	321g
		5640	26g
		5860	5g
		5885	219g
		6491	2g
		8108	674g
		11039	122g
		11379	27g
		11412	8g
		11442	68g
Phase 5a–5b	mid 9th to early 10th century	9	25g
		11	12g
		49	11g
		207	8g
		256	88g
		275	30g
		304	4g
		461	54g
		503	49g
		515	55g
		5828	18g
		5861	42g
		7150	18g
		8192	98g
		12057	293g
		12191	13g
Phase 5b	late 9th to early 10th century	1727	2g
		2562	3g
		3597	511g
		5553	38g
		5690	10g
		5920	8g
		8091	61g
		8153	146g
		8189	88g
		8237	78g
		8323	164g
		8345	9g
		8532	4g
		8535	43g
		8541	61g
		8647	26g
		8660	11g
		8668	8g
		8761	15g
		10055	1g

FIG. 9.8 (cont.). Total weight of loom-weights by context and phase.

Period or phase	Date range	Context	Weight
		10187	83g
		11105	2g
		13837	12g
Phase 5b–6i	late 9th to mid 10th century	1672	50g
		4195	21g
		6344	827g
		6472	76g
		8089	192g
Phase 5b–6	late 9th to early 11th century	1728	135g
		3427	181g
		6490	25g
Period 6	early 10th to early 11th century	1457	53g
		3730	98g
Phase 6i	early to mid 10th century	5871	289g (18 RFs)
		5930	42g
		5988	125g
Phase 6i–6ii	early to mid 10th century	11083	16g
Phase 6ii	mid 10th century	923	48g
		925	23g
		3255	55g
		3610	339g
		3891	992g (24 RFs)
		5281	6g
		6046	32g
		6471	900g
		6797	247g
Phase 6ii–6iii	mid 10th century to early 11th century	555	7g
		1841	177g
		1889	12g
		1891	14g
		6343	504g
		6365	4g
		6489	2g
		6499	315g
		7054	18g
		10333	25g
		10394	134g
Phase 6iii	mid/late 10th to early 11th century	535	435g
		636	24g
		779	3g
		1131	6g
		1276	16g
		1269	54g
		1283	126g
		1284	71g
		1285	37g
		1288	41g
		1307	4g
		1439	84g
		1440	7g
		1453	211g
		1454	15g
		1456	6g
		1462	606g
		1740	138g
		1670	237g
		2177	3g

FIG. 9.8 (cont.). Total weight of loom-weights by context and phase.

Period or phase	Date range	Context	Weight
		2179	6g
		3451	71g
		3989	1071g (10 RFs)
		6036	14g
		7123	18g
		7817	85g
Phase 6iii–7	mid/late 10th to 12th–14th century	6300	423g (12 RFs)
Period 7	early to mid 10th or 12th–14th century	534	41g
		1017	7g
Unstratified		0	2606g (35 RFs)
		03870	142g
		FLX 88, R59–R62	39g

FIG. 9.8 (cont.). Total weight of loom-weights by context and phase.

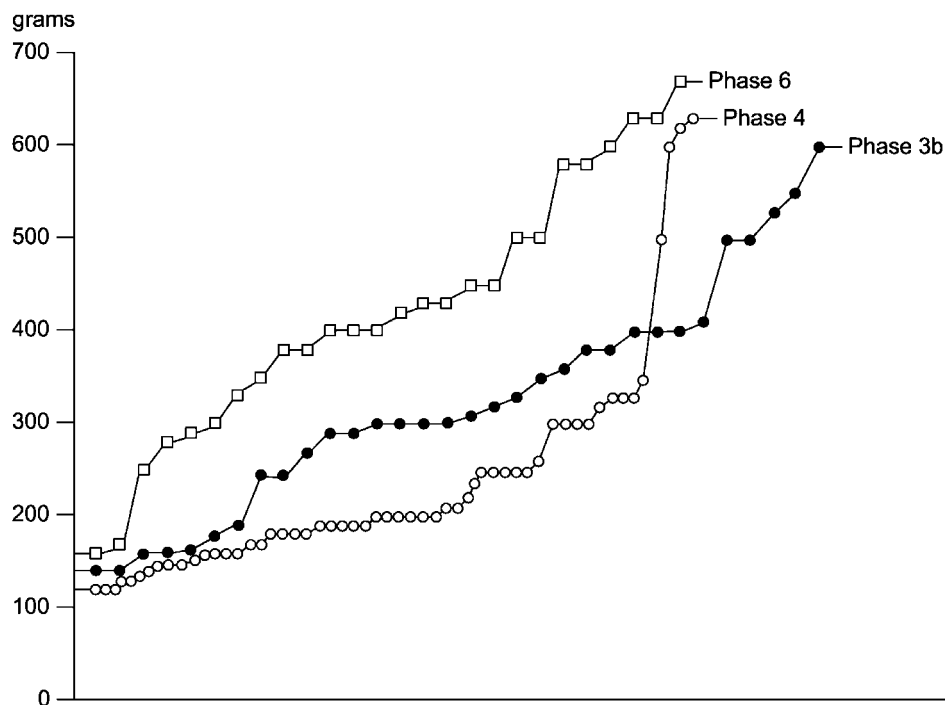


FIG. 9.9. The comparative weights of the Flixborough loom-weights recovered from Phase 3b, Period 4 and Period 6.

antler tines, such as those found at West Stow (West 1985 II, 125). The purpose of the marks is not entirely clear. They may have been a potter's mark, an owner's mark or an indicator of a set of standard weight. At Flixborough, the different marks in Period 4 are jumbled together in the dumps, so that there is no reason to suggest that they indicate different workshops.

Perhaps the most significant feature of the Flixborough loom-weights is the way in which their weight changes through the different periods (FIG. 9.9). Anglo-Saxon loom-weights most commonly weigh 150–500g, although the full range of recorded weights is 100–1460g. At

Flixborough, the weights were especially light in Period 4, and heavier in Period 6. The average weights for the main phases are 337g for Period 3, Phase 3b; 236g for Period 4; 329g for Period 5; and 416g for Period 6; and if the residual material in Period 6 (weights with Phase 4ii-type impressed marks, found in Period 6 deposits directly above the Period 4 central dumps) is removed, the average weight for Period 6 is closer to 500g. The Period 4 weights are broadly speaking 120–350g and 70–110mm diameter, but their main cluster is around 200g and 80mm diameter. It is these small, standardised weights that most commonly have the impressed marks. A comparison can be made with

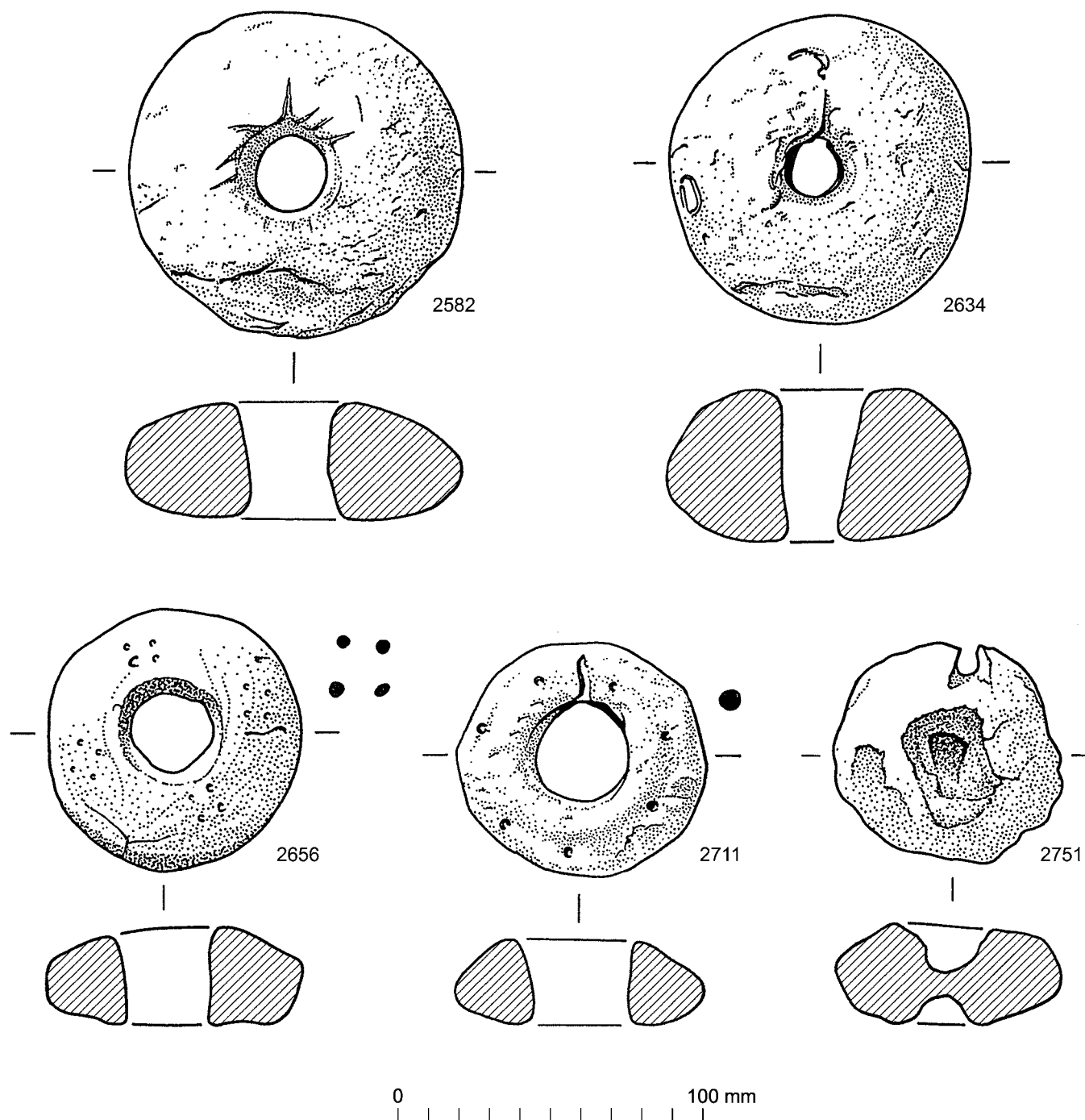


FIG. 9.10. Loom-weights. Scale 1:2.

the Early Anglo-Saxon village at Mucking, Essex, where weights were between 150g and 1000g, and 80–130mm diameter (Hamerow 1993 I, 67); and the farmstead at Middle Anglo-Saxon Old Erringham, Shoreham, West Sussex, where weights were between 532 and 1,396g, and 109 and 150mm diameter (Holden 1976, 315). Combined with the long slender pin-beaters and small spindle whorls,

the Flixborough weights suggest some form of specialised production – possibly of finer, more lightweight fabrics – in Period 4.

In Period 3, Phase 3b and Period 4 most of the weights seem to have been deposited in the central dumps. In Period 5 (phases 5a–5b), however, there is a cluster of especially thin and flat weights, 180–220g, around Building 36/37, in

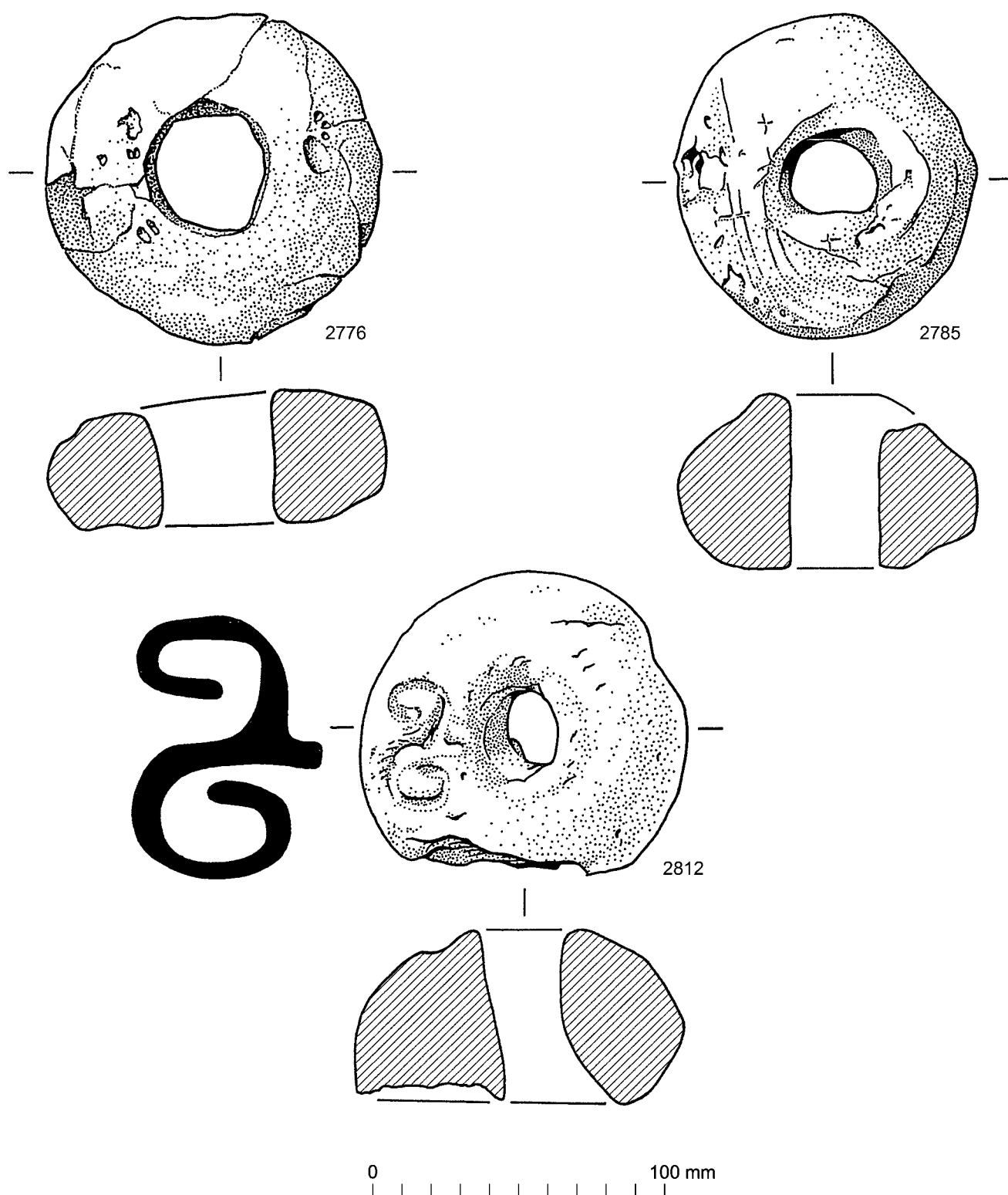


FIG. 9.11. Loom-weights. Scale 1:2.

contexts 256, 275, 503 and 515 (also context 3107 Phase 5a and, residually, 3427 Phase 5b–6). As there had been no previous dumping of loom-weights in that area, these

are likely to represent a 'set' of loom-weights used in that building. They form a separate group from the heavier weights, which had started to appear in Period 5, Phase 5b,

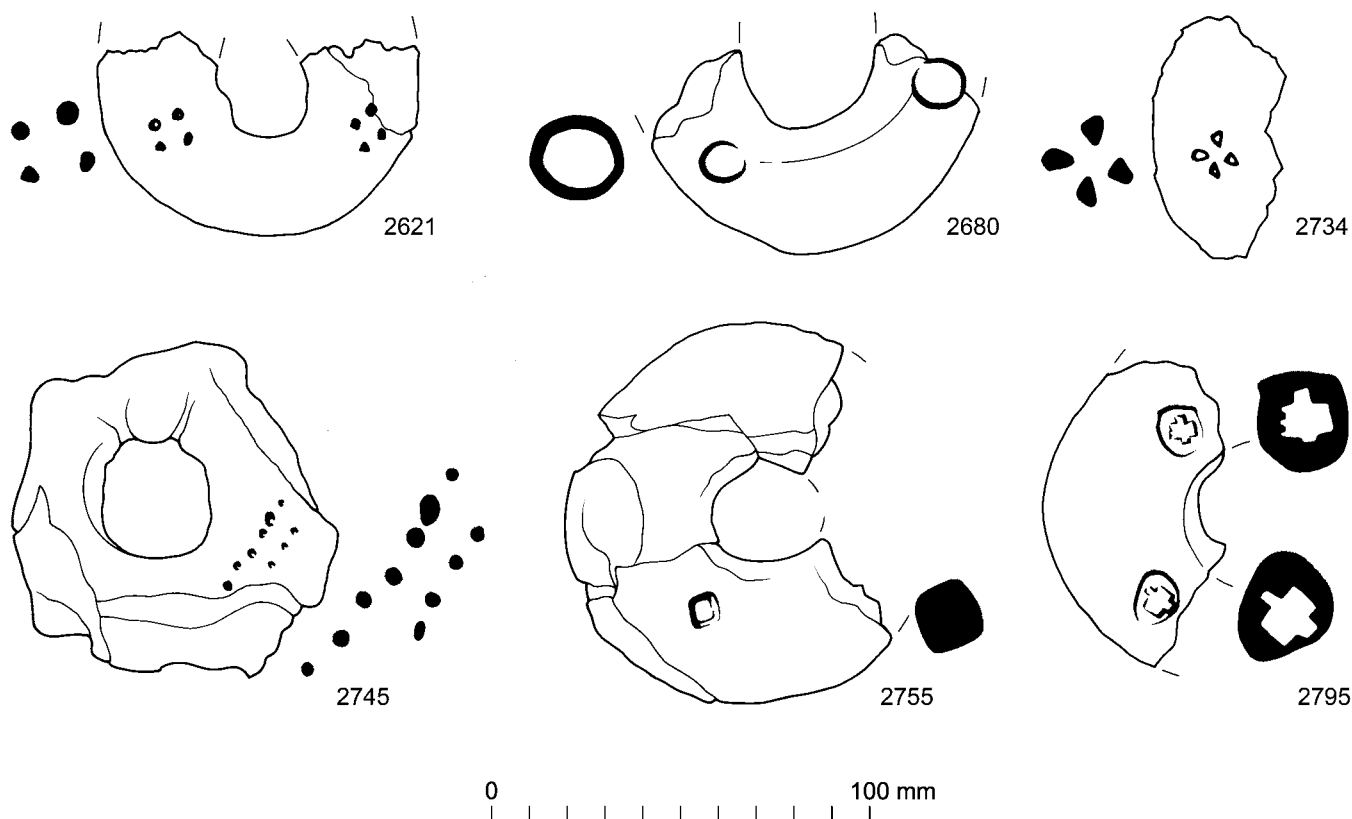


FIG. 9.12. Loom-weights. Scale 1:2.

and which, by Period 6, Phase 6ii, were distributed over the eastern half of the site, along with the thicker pin-beaters (Loveluck and Atkinson, Volume 1, Ch. 7, FIG. 7.10; and ADS archive distribution plot for Phase 6ii–6iii).

The arrival of heavier weights with new impressed marks, in a different part of the site, in Period 6 provides clear evidence that the warp-weighted loom continued in use in this area into the second half of the 10th century. In contrast, in towns such as Winchester and York, the warp-weighted loom can be shown to have disappeared by about AD 900, and to have been replaced by the two-beam vertical loom (Keene 1990, 203–8; Walton Rogers 1997, 1799–1801). Outside Winchester, however, in the hamlet of Sparkford, the warp-weighted loom remained in use as late as the 11th century (Collis 1978). The Flixborough evidence confirms the late use of this loom in rural parts. The 10th-century changes in textile production are too complex to debate here (see instead, Volume 4, Ch. 6; Walton Rogers 1997 and 2001), but as far as Flixborough is concerned, it is important to note that the signs of specialised production visible in Period 4, Phase 4ii had disappeared by Period 6 and, in terms of weaving technology, the settlement had become something of a backwater, using an old style of loom and probably producing rather coarser types of cloth than formerly.

9.5 Cutting and stitching

After weaving, the cloth would be washed and pressed. It would then be ready for cutting and stitching into garments and soft furnishings.

Remains of 30 pairs of iron shears suitable for cutting cloth and yarn have been recovered from the site: 18 pairs, or fragments of pairs, in stratified deposits from Period 1, Phase 1b to Period 7, and 12 unstratified.

Shears (FIG. 9.13; PLS 9.3–9.4)

by Patrick Ottaway and Penelope Walton Rogers

All the shears appear to be, or to have been, very similar in form. The bows are slightly looped and there are no examples of the simple U-shaped bow common in the early Anglo-Saxon period. Viewed from the side the bows either have straight sides and widen gradually to the top (e.g. no. 2877; RF 9952), or are more distinctly formed and have convex sides (e.g. no. 2859; RF 325 – Period 7; PL. 9.3).

Three bows have internal nibs at the base: no. 2861 (RF 1864; phases 6ii–iii), on which they are particularly pronounced, and no. 2871 (RF 5482; Phase 4ii) and no. 2882 (RF 12147; Phase 6ii–iii). All the blades are very similar in form, having a straight back which curves in to

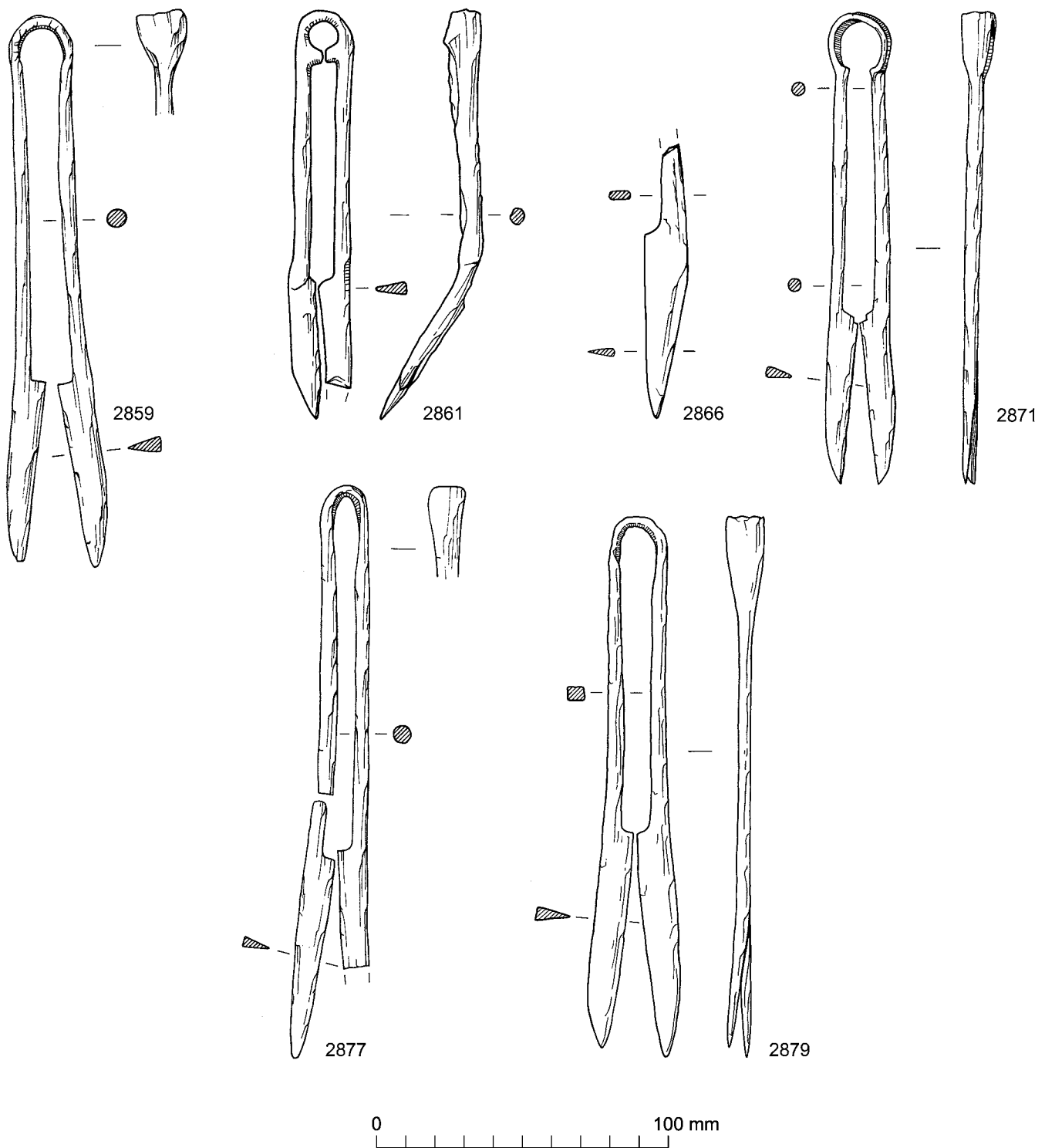


FIG. 9.13. Iron shears. Scale 1:2.

the tip; this corresponds to knife blade back form C (see Ottaway, Ch. 5, above). The only exception is no. 2866 (RF 3587; phases 1b–2), a single blade which has an angle-back. The shoulders between blade and stem are in roughly

equal measure horizontal, sloping, and concave. There are also four examples of stepped shoulders: nos 2871, 2873, and 2886–7 (RF 5482; Phase 4ii; RF 5660; Phase 4ii; RF 12333, unstratified; and RF 12627; unstratified), which are

otherwise uncommon, although two Anglo-Scandinavian examples were recorded at York (Ottaway 1992, fig. 219, 2689–90). Other features to note include a moulded collar at the junction of bow and stem on the now fragmentary no. 2860 (RF 416; Phase 4ii) and short projecting ‘ears’ at the same place on no. 2868 (RF 4111, Phase 4ii). This latter feature has no parallel in England, but can be found on a pair of shears from the Viking ship from Oseberg, Norway (Grieg 1928, fig. 118). The surviving stem of no. 2890 (RF 13503, unstratified) has three grooves around it below the bow, and two in the centre. This is again a rare feature, but similar grooves can be seen on a 9th- to 10th-century pair of shears from York (22 Piccadilly sf352) and also on a pair from Hedeby (Westphalen 1993, Taf. 28, 3).

The overall length of the complete shears is from 100mm to 205mm, and the blades are from 43×9.5 mm (no. 2891, RF 13510) to $>150 \times 15$ mm (no. 2867, RF 3749). At least one pair, no. 2875 (RF 6004), from a central dump in Phase 5a, represents the sort of shears with long shanks and short blades (overall length 144mm, blades 44×9 mm), which are sometimes found in Anglo-Saxon women’s burials, suspended from the belt. These were probably used for small domestic tasks, such as snipping thread during sewing. Only the larger bladed examples would be suitable for cutting cloth.

Needles

by Penelope Walton Rogers, with investigative conservation by Ian Panter

Altogether there are 68 iron needles, seven copper alloy and six bone (Fig. 9.1), although it will be shown that some of the bone ones may be garment pins rather than sewing needles. The iron needles range from 25 to 47mm in length, and are 1.3 to 3.8mm thick. Investigation of those where the eye has been preserved, carried out by Ian Panter, has shown that at least 13 iron needles have round eyes and over 20 have long eyes. The round eyes appear to have been punched, as have two unusual needles with triangular (no. 2927; RF 8989) and rectangular (no. 2928; RF 9049) eyes. The long eyes have in a few cases been made by splitting the shank into a Y shape, and then re-joining it above the eye (nos 2932–3, 2939 and 2941; RFs 11475, 11772, 13622, 13656). Most, however, have an oval eye punched into a long groove. The latter may have been made with two punches, one long to form the groove, and one round to perforate the needle, as described by Rollins for the more recent manufacture of needles (Rollins 1981, 8–9). Alternatively, they may have been made in a similar manner to the copper alloy needles described below. Most of the iron needles are rounded in cross-section, but some of the longer ones are more angular – usually triangular – in section (see below).

The seven copper alloy needles are alike in general appearance and method of manufacture. The complete examples are 43–58mm long, and 1.3–2.0mm thick. They

are round in cross-section, but flatter towards the head. The eyes have a long tapering groove on either side, in which there is a punched oval eye. Examination of the grooves at $\times 10$ magnification reveals longitudinal scratches, which suggest the grooves were made by drawing out the end of the needle with a strong pair of pincers, before punching through the eye. The six stratified copper-alloy needles come from phases 3b to 5a (Fig. 9.1), but it is possible that they are a discrete early to mid 9th-century type, as an example from Phase 5a, no. 2897 (RF 8497), comes from an area with much re-deposited Period 4 material.

The bone objects resembling needles are 63–93mm long, and 4.5–7.5mm thick. The shanks are round to oval in section, but the heads are slightly flatter. The eyes are oval in the early examples, and circular in those from Period 5, Phase 5b and Period 6. Needles such as these would function well as darning needles, for repairs to the coarser types of wool cloth, but the wear pattern, where visible, does not support this view. There is a modest amount of polish on nos 2900, 2901 and 2903 (RFs 766, 6037 and 6089), but this is not around the eye, where needles receive most wear, and in 766 it is clearly concentrated on the tip. This contrasts with three small bone needles from Coppergate, York, which had a very high degree of polish all over, with obvious signs of wear around the eye. It is possible that the Flixborough bone ‘needles’ are in fact garment pins of the sort which have a thong loop threaded through the eye, the loop being passed over the tip of the pin when in use. A pin of this sort, still with remains of the leather thong in the eye, was found crossways at the throat of a woman in a 7th-century burial at Castledyke, North Lincolnshire, and had probably been used to fasten the woman’s cloak (Grave 137, Drinkall and Foreman 1998, 75, 276, 290).

Even the objects confidently identified as sewing needles may not necessarily have been used on textiles. A group of longer iron needles with angular (mostly triangular) cross-sections were found in the same ditch as the flax-processing spikes (nos 2929, 2975 and unnumbered: RF 415, RF 2811, RF 9325 in Phase 4ii and RF 10539 in Phase 6iii). A needle with a sharpened, chamfered tip, no. 2966 (RF 9289), was also found in the ditch and there is another, no. 2926 (RF 8931), unstratified. Cordwainers (leatherworkers) use needles with triangular sections, and they frequently sharpen their needles with small hones. They also use needles which are curved lengthways, of which there is one unstratified example, no. 2935 (RF 12595). It may be suggested that leather goods were being stitched on the site, in an area separate from the buildings in which textile-making took place. In contrast, the simpler forms of iron needle, with round cross-sections, were mainly recovered from the central dumps, along with the copper alloy needles, bone needles/pins and other textile tools.

The Flixborough collection of needles and needle-like objects is comparable with the material from Late Anglo-Saxon Winchester (Biddle and Elmhirst 1990) and

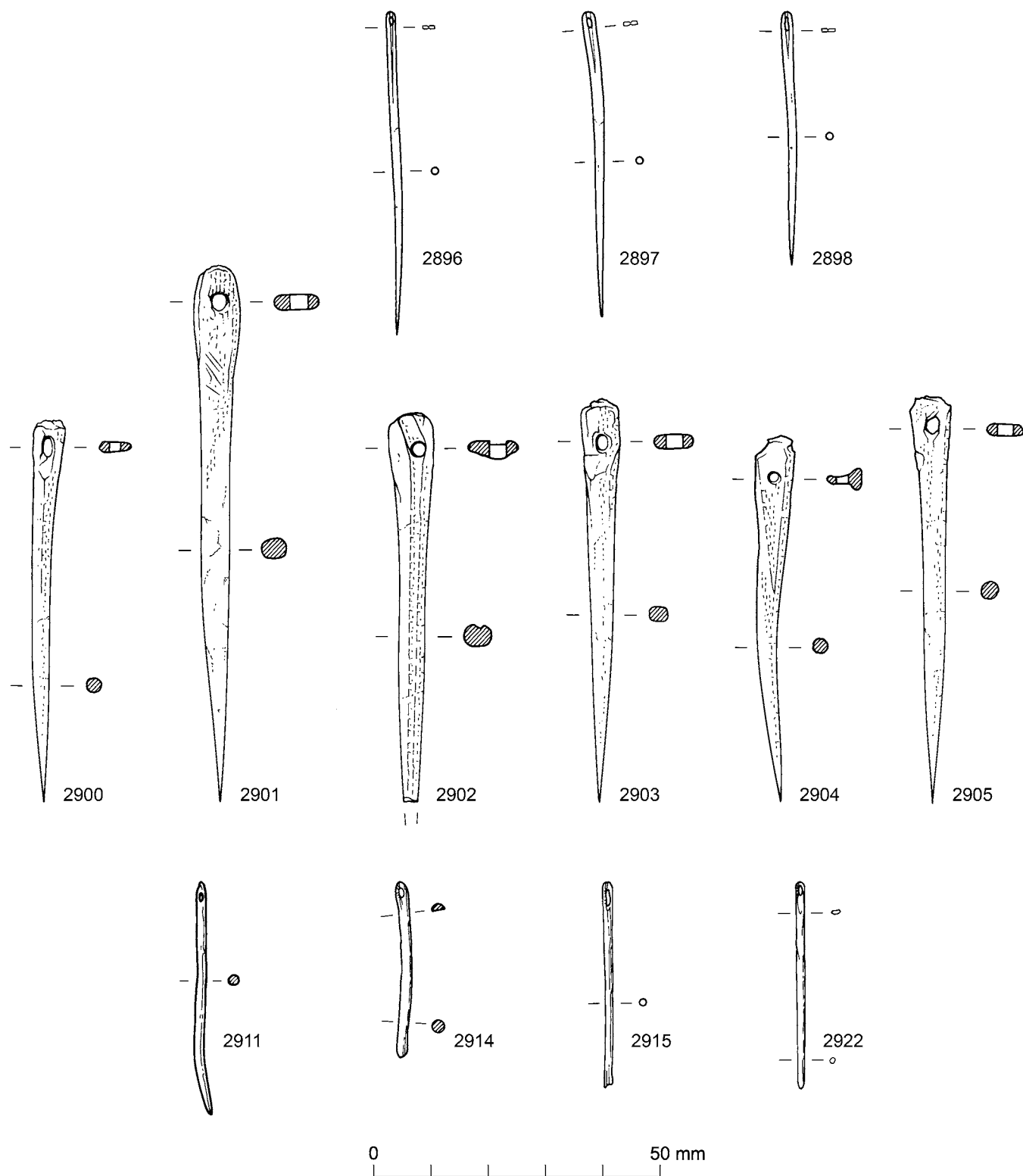


FIG. 9.14. Copper alloy, bone and iron needles. Scale 1:1.

Anglo-Scandinavian York (Walton Rogers 1997, 1781–5). In these towns, iron needles were more numerous than copper alloy until the Anglo-Norman period, when copper alloy started to come to the fore; bone needles (and garment pins) occurred up until the end of the Anglo-Saxon period, and then tapered off rapidly after the Conquest. Among the metal needles, round eyes and long eyes were used contemporaneously, the round eyes becoming more common in later periods. When lengths and thicknesses of needles are compared, it becomes clear that the Flixborough collection, including the leatherworking needles, falls towards the finer end of the scale. The iron needles from Anglo-Scandinavian Coppergate, York, for example, were 23–73mm \times 1.0–5.0mm, compared with 25–47mm \times 1.3–3.8mm for Flixborough; the copper alloy from Coppergate were mainly 50–80mm \times 2.0mm, compared with 43–58mm \times 1.3–2.0mm at Flixborough. Here, once again, the Flixborough material indicates finer, more delicate work.

Rubbing stones (FIG. 9.15)

by Lisa M. Wastling

Six stones were recovered from Flixborough which, although polished, do not fit into the hones or accepted slick-stone categories. The stratified examples were all recovered from 9th- to 10th-century deposits. These types of tools may be under-represented in the archaeological record, as they are difficult to categorise, and can be overlooked during excavation.

Three are of chalk, all bar-shaped, and of small size. There are a number of very similar objects to these at Flaxengate, Lincoln, found in 11th–12th century levels (Mann 1982, fig. 45, 415–19, 423). No. 2983 (RF 6267) appears to be a reused fragment of a larger wedge-sectioned rubber,

which has split along the bedding plane of the chalk, and subsequently has been smoothed along these planes. No. 2988 (RF 342) has been worn obliquely at both ends, in a similar way to two examples at Lincoln (*ibid.*, 65). The limestone example, no. 2986 (RF 5290), has a plano-convex section, similar to that of slick-stones, though the wear patterns and material are incompatible with textile finishing.

Although nos 2987 and 2984 (RFs 244 and 3162) do not possess the usual circular plano-convex form of the glass slick stones and some stone examples, both appear to bear comparable wear marks, when examined at $\times 20$ magnification. Their fine-grained, hard lithology would also seem to be consistent with this function. Though these are not of the usual form, they may still have been of use for finishing or the flattening of seams.

All of these stones are likely to have been used in the finishing of materials, probably of leather and textiles, in the case of nos 2987 and 2984 (RFs 244 and 3162).

9.6 Summary

The evidence of the artefacts presented above demonstrates that a full range of textile crafts was in action at Flixborough from the mid 8th to the early 11th century. Flax was prepared, wool combed, yarn spun, cloth woven and garments stitched throughout this period of time. The tools used for these processes – the two-row wool-comb, the suspended spindle with hemispherical spindle whorl, the warp-weighted loom with circular clay loom-weights and double-ended pin-beaters – are all typically Anglo-Saxon, and many of the textiles found in Anglian cemeteries of the region, or on later Anglo-Saxon habitation sites, could have been made with them. The tools themselves

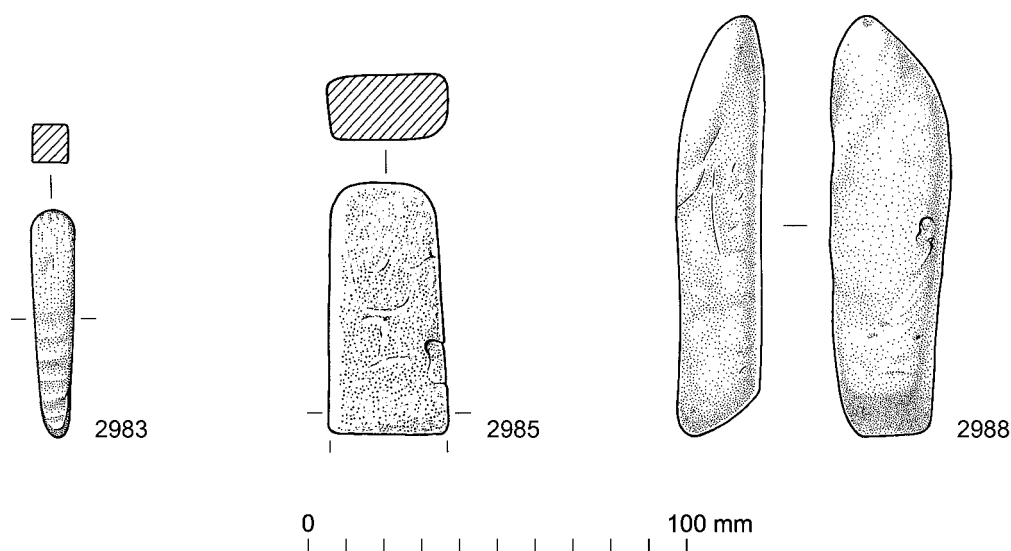


FIG. 9.15. Rubbing stones. Scale 1:2.

are made from raw materials available within the region, and the loom-weights, for example, seem to have been made in the immediate vicinity of the looms with which they were used.

The small, lightweight nature of many of the Flixborough textile tools has been repeatedly emphasised above, and it has been suggested that this indicates the production of fine qualities of cloth and clothing, as would be appropriate for a high-status settlement. Signs of this specialised production had already begun to appear in Period 3, Phase 3b, but are clearest in Period 4. The evidence from the boundary ditch was especially associated with flax production in Period 4, although wool was also being processed at this time. By Period 6, however, there is a marked increase in the weights of loom-weights, the thickness of pin-beaters and perhaps also the weights of spindle whorls. How quickly this change came about is not clear. Light weights were still present in Phases 5a–5b, at the same time as heavier ones, and it is possible that the process was a gradual one, which was only accomplished by Period 6 (although Loveluck regards the light weights as residual: Loveluck and Atkinson, Volume 1, Ch. 6; Loveluck Volume 4, Chs 2 and 6). By Phase 6ii, the focus of the settlement has shifted to the east, towards North Conesby (Loveluck, Volume 4, Ch. 2), and some of the heavier tools can be seen following this shift. Wool-combing is especially well represented in these later phases. The implications of this evidence are discussed further in Volume 4, Ch. 6.

Selective catalogue

Compiled by Penelope Walton Rogers, Chris Loveluck, Patrick Ottaway, Lisa M. Wastling and Geoff Gaunt

Fibre processing (Fig. 9.2)

The 194 individual spikes from the processing of flax and wool are listed in the ADS archive. Only the fragmentary wool-comb is presented here.

- 2504 Fragmentary wool-comb. Six spikes set in an iron baseplate; spikes in two rows. Two further spikes loose. Corroded rectangular sections. The two main fragments are illustrated. L.93mm. (Fig. 9.2).
RF 11777/11778. Unstratified.

Spindle whorls (Figs 9.3–9.6)

STONE: (47)

Form A1

- 2505 Whorl
Complete, hemispherical, neatly made, surface abraded, encircling grooves on flat face. Form A1. Chalk, greyish-white, fine-grained, with sparse minute fossil fragments. Ferriby Chalk.
D.31mm, Th.14mm, Hole D.7mm, Wt.19g.
RF 193, Context 195, Phase 5a–5b.

- 2506 Whorl
Incomplete hemispherical, encircling grooves top and sides, lathe-turned. Form A1.
Chalk, brownish-white, very fine-grained. Chalk Group.
D.28mm, Th.15mm, Hole D.8mm, Estimated Wt.17g.
RF 343, Unstratified.

- 2507 Whorl
Fragment (half), hemispherical, encircling grooves on sides only, lathe-turned. Form A1.
Limestone, medium grey, fine-grained. Upper part of Scunthorpe Mudstones or, less likely, Cleatham Limestone.
D.34mm, Th.12mm, Hole D.8–9mm, Estimated Wt.17g.
RF 795, Unstratified.
- 2508 Whorl
Fragment (half), hemispherical, lathe-turned grooves top and sides. Form A1.
Limestone, pale grey, fine-grained. Upper part of Scunthorpe Mudstones or, less likely, Cleatham Limestone.
D.32mm, Th.16mm, Hole D.8mm, Estimated Wt.20g.
RF 902, Context 463, Phase 2–3bv.
- 2509 Whorl
Incomplete, shallow hemispherical, encircling grooves top and sides, surface abraded. Form A1.
Chalk, yellowish-white, fine-grained. Ferriby Chalk.
D.33mm, Th.12mm, Hole D.8–10mm, Estimated Wt.18g.
RF 951, Context 463, Phase 2–3bv.
- 2510 Whorl
Complete, hemispherical, deep encircling grooves top and sides (almost rilled). Form A1.
Limestone, pale brownish-grey, otherwise apparently as no. 2507 (RF 795).
D.39mm, Th.26mm, Hole D.7–10mm, Wt.32g.
RF 979, Unstratified.
- 2511 Whorl
Complete, shallow hemispherical, top slightly convex, lathe-turned grooves top and sides. Form A1. Limestone, apparently as no. 2507 (RF 795).
D.28mm, Th.10mm, Hole D.6–7mm, Wt.9g.
RF 1856, Context 1836, Phase 6ii–6iii.
- 2512 Whorl
Fragment, hemispherical encircling grooves on sides. Form A1.
Limestone, dark grey, very fine-grained. Scunthorpe Mudstones or Coleby Mudstones.
D.22mm, Th.15mm, Hole D.7mm.
RF 1916, Context 1832, Phase 6ii–6iii.
- 2513 Whorl
Complete, hemispherical, surface abraded. Form A1.
Limestone, pale yellowish-brown, fine to slightly medium grained. Upper part of Scunthorpe Mudstones or Cleatham Limestone.
D.32mm, Th.12mm, Hole D.8mm, Wt.15g.
RF 2756, Unstratified.
- 2514 Whorl
Incomplete, hemispherical, Form A1. Chalk Group.
D.23mm, Th.9mm, Hole D.7mm, Wt.7g.
RF 2760, Context 4, Topsoil.
- 2515 Whorl
Complete, flattened hemispherical, lathe-turned grooves on top, remains of others on sides. Form A1.
Chalk, apparently greyish-white, very fine-grained. Chalk Group.
D.39mm, Th.15mm, Hole D.8–9mm, Wt. 33g. (Fig. 9.3)
RF 3512, Context 3483, Phase 3biv–3bv.

- 2516 Whorl
Complete, hemispherical, lathe-turned grooves top and sides. Form A1.
Limestone, apparently as no. 2507 (RF 795).
D.35mm, Th.13mm, Hole D.7–8mm, Wt.20g.
RF 3793, Unstratified.
- 2517 Whorl
Incomplete, shallow hemispherical, slight convex top, horizontal ladder decoration, lathe-turned.
Form A1.
Siltstone, pale brown, with sparse very fine-grained quartz.
Upper part of Scunthorpe Mudstones or basal part of Coleby Mudstones.
D.23mm, Th.8mm, Hole D.8mm, Estimated Wt.7g. (Fig. 9.3)
RF 4001, Context 3346, Period 2.
- 2518 Whorl
Incomplete, hemispherical, lathe-turned grooves top and sides. Form A1.
Chalk, slightly yellowish-white, very fine to fine-grained, with sparse fossil fragments. Probably Ferriby Chalk.
D.35mm, Th.14mm, Hole D.7–9mm, Wt.22g.
RF 4200, Context 3891, Phase 6ii.
- 2519 Whorl
Complete, in two pieces, hemispherical, lathe-turned grooves, surface abraded. Form A1.
Limestone, as no. 2507 (RF 795).
D.30mm, Th.16mm, Hole D.9mm, Wt.19g.
RF 4401, Unstratified.
- 2520 Whorl
Complete, flattened hemispherical, top slight convex, surface eroded. Form A1.
Limestone, as no. 2513 (RF 2756), with sparse small fossil fragments.
D.33mm, Th.14mm, Hole D.8–9mm, Wt.20g.
RF 4980, Context 3711, Phase 5a.
- 2521 Whorl
Complete, flattened hemispherical, lathe-turned. Form A1.
Chalk, pale grey to pale brown, fine-grained with small fossil fragments. Ferriby Chalk.
D.29mm, Th.9mm, Hole D.8mm, Wt.12g. (Fig. 9.3)
RF 5498, Context 5503, Phase 4ii.
- 2522 Whorl
Complete, cup-shaped (vertical sides with round base), regular but no lathe marks. Form A1.
Chalk, variegated pale to medium grey, fine-grained. Ferriby Chalk.
D.27mm, Th.13mm, Hole D.8–9mm, Wt.13g.
RF 5674, Context 3758, Phase 4ii.
- 2523 Whorl
Complete, hemispherical. Form A1.
Limestone, pale grey, otherwise as no. 2507 (RF 795).
D.30mm, Th.12mm, Hole D.8mm, Wt.13g. (Fig. 9.3)
RF 5830, Context 5139, Phase 5a.
- 2524 Whorl
Fragment, hemispherical, lathe-turned grooves top and sides. Form A1.
Limestone, as no. 2508 (RF 902).
D.32mm, Th.14mm, Hole D.7–9mm.
RF 5906, Context 5193, Phase 4ii–5a.
- 2525 Whorl
Complete, hemispherical, deep, close, lathe-turned grooves on sides, finer on top. Form A1.
Chalk, greyish-white, very fine-grained. Chalk Group.
D.34mm, Th.14mm, Hole D.7–9mm, Wt.20g. (Fig. 9.3)
RF 6000, Context 5503, Phase 4ii.
- 2526 Whorl
Fragment, hemispherical, fine lathe-marks top and sides. Form A1.
Limestone, as no. 2507 (RF 795), but devoid of quartz.
D.27mm, Th.15mm, Hole D.6–8mm, Estimated Wt.20g.
RF 6268, Context 5503, Phase 4ii.
- 2527 Whorl
Incomplete, in two pieces, hemispherical, lathe-turned grooves, top and sides. Form A1.
Chalk, pale grey, very fine-grained, with bulbous shell fragments. Chalk Group. (same whorl as no. 2531, RF 6335).
D.31mm, Th.13mm, Hole D.7mm, Wt.16g.
RF 6282, Context 5373, Phase 5a–5b.
- 2528 Whorl
Fragment, hemispherical, lathe-marks top and sides. Form A1.
Limestone, pale to medium grey, otherwise as no. 2508 (RF 902).
D.33mm, Th.16mm, Hole D.7–8mm, Estimated Wt.22g.
RF 6297, Context 5503, Phase 4ii.
- 2529 Whorl
Complete, hemispherical, surface abraded but probably lathe-turned, Form A1.
Limestone, medium grey, otherwise as no. 2508 (RF 902).
D.33mm, Th.17mm, Hole D.9–10mm, Wt.25g.
RF 6298, Unstratified.
- 2530 Whorl
Complete, hemispherical, regular but no lathe-marks. Form A1.
Chalk, greyish-white, very fine to fine-grained, with sparse small fossil fragments. Probably Ferriby Chalk.
D.34mm, Th.15mm, Hole D.9–11mm, Wt.23g.
RF 6302, Context 3758, Phase 4ii.
- 2531 Whorl
Fragment, ?hemispherical, lathe-turned. Form ?A1.
Chalk as no. 2527 (RF 6282): they are fragments of the same whorl.
For measurements see RF 6282.
RF 6335, Context 5373, Phase 5a–5b.
- 2532 Whorl
Fragment, hemispherical, lathe-marks and encircling grooves on sides. Form A1.
Limestone, medium to dark grey, devoid of quartz, otherwise as no. 2507 (RF 795).
D.34mm, Th.18mm, Hole D.7–8mm, Estimated Wt.25g.
RF 6572, Context 6498, Phase 6ii–6iii.
- 2533 Whorl
Fragment, shallow hemispherical, lathe-turned grooves on top and sides. Form A1.
Limestone, as no. 2508 (RF 902).
D.23mm, Th.11mm, Hole D.c.7mm.
RF 6601, Context 5139, Phase 5a.

- 2534 Whorl
Complete, hemispherical, lathe-marks on sides. Form A1. Limestone, medium to dark grey, and with appreciable minute fossil fragments on flat surface, otherwise as no. 2507 (RF 795).
D.27mm, Th.14mm, Hole D.6–8mm, Wt.14g.
RF 8450, Context 8189, Phase 5b.
- 2535 Whorl
Incomplete, flattened hemispherical, lathe-turned grooves and lines on top and sides. Form A1. Limestone, pale brownish-grey, otherwise as no. 2507 (RF 795).
D.32mm, Th.10mm, Hole D.8mm, Estimated Wt.17g.
RF 10076, Context 6491, Phase 5a.
- 2536 Whorl
Complete, flattened hemispherical, regular, but no lathe-marks. Form A1.
Mudstone, medium brownish-grey, finely laminated, slightly calcareous and slightly silty. Lower part of Scunthorpe Mudstones or various parts (notably highest part) of Coleby Mudstones.
D.30mm, Th.11mm, Hole D.8mm, Wt.10g. (Fig. 9.3)
RF 11518, Context 3758, Phase 4ii.
- 2537 Whorl
Complete, hemispherical, encircling grooves top and sides. Form A1.
Limestone, medium grey, otherwise as no. 2508 (RF 902).
D.29mm, Th.14mm, Hole D.6–7mm, Wt.16g. (Fig. 9.3)
RF 11543, Context 3758, Phase 4ii.
- 2538 Whorl
Fragment, hemispherical, lathe-marks top and sides. Form A1.
Siltstone, dark grey, with one or more large calcitic fossils, otherwise as no. 2543 (RF 5547).
D.c.29mm, Estimated Wt.16g.
RF 13278, Context 3758, Phase 4ii.
- 2539 Whorl
Complete, flattened hemispherical, lathe-marks. Form A1.
Limestone, as no. 2507 (RF 795).
D.28mm, Th.9mm, Hole D.7mm, Wt.10g.
RF 13514, Unstratified.
- 2540 Whorl
Complete, hemispherical, grooves and lathe-marks top and sides. Form A1.
Limestone, medium grey, otherwise as no. 2508 (RF 902).
D.26mm, Th.13mm, Hole D.6–7mm, Wt.11g.
RF 14125, Unstratified.
- 2541 Whorl
Incomplete, ?hemispherical, surface crumbling, probably lathe-turned, Form A1.
Chalk, banded greyish-white and yellowish-white, very fine to fine grained. Probably Ferriby Chalk.
D.22mm, Th.10mm, Hole D.7mm, Wt.7g.
RF 14128, Unstratified.
- Form A2*
- 2542 Whorl
Complete, tapering, waisted, flat base. Form A2.
Chalk, white, fine-grained. Ferriby Chalk.
D.44mm, Th.17mm, Hole D.10–12mm, Wt.37g.
RF 5049, Unstratified.
- 2543 Whorl
Fragment (half), hemispherical with flat base, rilled, cone-shaped spindle hole. Form A2.
Siltstone, medium to dark grey, strongly calcareous. Upper part of Scunthorpe Mudstones.
D.34mm, Th.17mm, Hole D.9–12mm, Estimated Wt.22g.
RF 5547, Context 3254, Phase 5a.
- 2544 Whorl
Fragment (half), hemispherical shaved at base, lathe-turned. Form A2.
Chalk, pale grey, fine-grained, sparse minute fossil fragments. Ferriby Chalk.
D.31mm, Th.11mm, Hole D.7–8mm, Estimated Wt.15g.
RF 6413, Context 6235, Phase 3bv.
- 2545 Whorl
Complete, cup-shaped (near-vertical sides, rounded base shaved flat), lathe-marks. Form A2.
Limestone, banded medium grey and brownish-red, otherwise as no. 2507 (RF 795).
D.41mm, Th.21mm, Hole D.10–12mm, Wt.48g. (Fig. 9.3)
RF 10174, Context 8189, Phase 5b.
- 2546 Whorl
Complete, rounded conical, incised decoration of triangles, ladders and dots around sides. Form A2.
Chalk, white, very fine-grained. Chalk Group.
D.22mm, Th.14mm, Hole D.6–7mm, Wt.9g. (Fig. 9.3)
RF 11051, Context 11039, Phase 5a.
- 2547 Whorl
Fragment, tapering (shaved conical), deep encircling grooves and lathe-marks. Form A2.
Limestone, medium slightly reddish-brown, otherwise as no. 2507 (RF 795). Probably heat-reddened.
D.c.30mm, Th.21mm, Hole D.c.8mm.
RF 11521, Context 3758, Phase 4ii.
- 2548 Whorl
Complete, hemispherical with shaved base, regular but no lathe-marks, Form A2.
Chalk, white, very fine-grained, with appreciable foraminifera. Chalk Group.
D.28mm, Th.11mm, Hole D.7mm, Wt.11g.
RF 11751, Unstratified.
- 2549 Whorl
Complete, hemispherical with shaved base, lathe-turned grooves on side and base. Form A2
Mudstone, dark grey with pale grey 'patina'. Scunthorpe Mudstones or Coleby Mudstones.
D.37mm, Th.3mm, Hole D.6–8mm, Wt.24g.
RF 14127, Unstratified.
- Form A1 or A2*
- 2550 Whorl
Incomplete, ?hemispherical with lower part missing, rilled. Form A1 or A2.
Limestone, as no. 2513 (RF 2756). Partly heat-reddened.
D.29mm, Th.14mm, Hole D.10–11mm, Estimated Wt.18g.
RF 5419, Context 4195, Phase 5b–6i.

Form A1/B

2551 Whorl

Complete, irregular, doughnut shape with rounded base. Form A1/B.
Chalk, brownish-white, fine-grained. Chalk Group.
D.26mm, Th.11mm, Hole D.7–8mm, Wt.8g.
RF 1166, Context 1155, Phase 6iii.

Form B

2552 Whorl

Complete, small, irregular doughnut shape (not a whorl?). Form B.
Chalk, greyish-white, fine-grained. Ferriby Chalk.
D.24mm, Th.8mm, Hole D.9–11mm, Wt.6g.
RF 1962, Unstratified.

2553 Whorl

Complete, shallow cylindrical, not lathe-turned, Form B, spindle-hole hourglass shape. Form B.
Chalk, white, very fine to fine-grained. Probably Ferriby Chalk.
D.19mm, Th.11mm, Hole D.8–10mm, Wt.20g.
RF 6290, Context 5854, Phase 3bv–4ii.

LEAD (FIG. 9.4)

(14 non-stone whorls)

2554 Whorl

Complete, flattened hemispherical, cast in mould, top face finished. Form A1.
D.29mm, Th.8mm, Hole D.7mm, Wt.42g. (FIG. 9.4)
RF 154, Unstratified.

2555 Whorl

Complete, lead, rounded conical, cast with former for spindle hole, top edge knife-trimmed. Form A1.
D.21mm, Th.14mm, Hole D.4–5mm, Wt.35g.
RF 333, Topsoil. Phase 7+.

2556 Whorl

Complete, flattened hemispherical, asymmetrical, cast with former for spindle hole. Form A1.
D.20mm, Th.7mm, Hole D.6mm, Wt.19g.
RF 7327, Unstratified.

2557 ?Whorl

Complete, lead, rounded truncated cone. Cast in mould. Vertical ridge decoration on sides. Form A2.
D.15mm, Th.7mm, Hole D.5–7mm, Wt.8g.
RF 10954, Context 10772, Phase 2–4ii.

2557a Whorl

Complete, lead, deep hemispherical, irregularly cut, spindle hole asymmetrical (7 x 5mm, tapering). Form A1.
D.29mm, Th.18mm, Hole D.c.6mm, Wt.82g.
RF 14043, Unstratified.

2558 Whorl

Complete, biconical, cast with former for spindle hole, cast raised dots in irregular rows. Form C.
D.29mm, Th.13mm, Hole D.10mm, Wt.42g. (FIG. 9.4)
RF 12448, Unstratified.

2559 Whorl

Complete, almost disc-shaped, cut with knife, no evidence for casting. Form A1/B.
D.22mm, Th.5mm, Hole D.8mm, Wt.14g.
RF 12449, Unstratified.

BONE/ANTLER (FIG. 9.5)

2560 Whorl

Incomplete. Left cattle femur-head, unfused, from juvenile, chopped to shape, spindle hole smallest at flat face.
D.43mm, Th.8mm, Hole D.7mm. (FIG. 9.5)
RF 1555, Context 1453, Phase 6iii.

2561 Whorl

Complete, cup-shaped bone whorl, lathe-turned, with lead base and lining of spindle hole. Form A1.
D.34mm, Th.17mm, Hole D.8mm, Wt.19g. (FIG. 9.5)
RF 1989, Context 1672, Phase 5b–6i.

2562 Whorl

Complete, antler pedicle, truncated conical, two bands incised lines on sides at top and bottom, polished. Form A2.
D.40mm, Th.14mm, Hole D.8–9mm, Wt.18g. (FIG. 9.5)
RF 5745, Context 5553, Phase 5b.

FIRED CLAY/ CERAMIC (FIG. 9.6)

2563 Whorl

Complete, clay, hemispherical. Form A1, very smooth and regular.
D.38mm, Th.15mm, Hole D.9–11mm, Wt.31g. (FIG. 9.6)
RF 6892, Context 6300, Phase 6iii–7.

2564 Whorl

Complete, ceramic, rounded cylindrical (doughnut-shaped) with concave top. Made from the base of a Roman wheel-thrown pot, the shape of the internal base forming the concave top. Form B.
D.25mm, Th.9mm, Hole D.7mm, Wt.6g. (FIG. 9.6)
RF 14126, Unstratified.

2565 Whorl

Incomplete, clay, flattened hemispherical, part of lower surface missing. Form ?A1.
D.40mm, Th.12mm, Hole D.13mm, Wt.20g.
RF 3044, Context 2668, Phase 5a–5b.

2566 Whorl

Fragment, clay, rounded biconical (asymmetrical). Form C.
D.c.45mm, Th.28mm, Hole D.12mm, Estimated Wt.45g.
RF 10374, Context 7220, Phase 3biii.

BONE PIN-BEATERS (FIG. 9.7; PL. 9.2) (13)

2567 Pin-beater

Incomplete. Flattened ovoid section. Polished by wear. Large mammal longbone.
L.95mm, D.12mm. (FIG. 9.7)
RF 475, Unstratified.

2568 Pin-beater

Incomplete. Oval section. Two partial transverse incised lines. Very polished by wear. Large mammal longbone.
L.102mm, Diam.8mm. (FIG. 9.7).
RF 2226, Context 2356, Phase 2–3a.

2569 Pin-beater

Incomplete. Double-ended. Flattened ovoid section. Polished by wear. Large mammal longbone.
L.85mm, D.9mm. (FIG. 9.7).
RF 3490, Context 3451, Phase 6iii.

2570 Pin-beater

Incomplete. Circular section. Band of incised lines and lattice. Finely worked and polished. Transverse scratches

around point. Large mammal longbone.
L.89mm, D.8mm. (FIG. 9.7; PL. 9.2).
RF 3577, Context 3541, Phase 3bv.

2571 Pin-beater

Incomplete. Oval section. Band of incised lines. Polished by wear. Medium-sized or large mammal longbone.
L.83mm, D.8mm. (FIG. 9.7).
RF 7246, Context 6300, Phase 6iii–7.

2572 Pin-beater

Incomplete. Double-ended. Circular section. Polished by wear. Medium-sized or large mammal longbone.
L.108mm, D.7mm. (FIG. 9.7).
RF 10216, Unstratified.

2573 Pin-beater

Complete. Double-ended. Circular section. Polished by wear. Large mammal longbone.
L.110mm, D.7mm. (FIG. 9.7).
RF 12158, Context 8232, Natural.

2574 Pin-beater

Incomplete. Circular section. Very polished by wear. ?cattle ?metapodial.
L.65mm, D.6mm. (FIG. 9.7).
RF 14102, Unstratified.

2575 Pin-beater

Complete. Double-ended. Circular section. Polished by wear. Medium-sized or large mammal longbone.
L.110mm, D.6mm. (FIG. 9.7).
RF 14042, Unstratified.

2576 Pin-beater

Incomplete. Double-ended. Circular section. Both points missing. Polished by wear. Medium-sized or large mammal longbone.
L.65mm, D.6mm.
RF 5357, Context 3758. Phase 4ii.

2577 Pin-beater

Incomplete. Circular section. Point only. Polished by wear. Medium-sized or large mammal longbone.
L.33mm, D.6mm.
RF 7203, Context 6472. Phase 5b–6i.

2578 Pin-beater

Incomplete. Oval section. Very polished by wear. Large mammal longbone.
L.55mm, D.10mm.
RF 11365, Context 6300. Phase 6iii–7.

2578a Pin-beater

Incomplete. Oval section. Very polished by wear. Distorted by burning. Calcined medium-sized mammal longbone.
L.45mm, D.5mm.
RF 11504, Context 3758. Phase 4ii.

LOOM-WEIGHTS (FIGS 9.8–9.12)

(abbreviated catalogue)

There were 756 separately itemised finds (recorded find numbers) of loom-weights from Flixborough. Many of these were represented by bags of small fragments. In the accompanying table (FIG. 9.8), the total weight of fragments recovered from each context has been given. Only significant items have been described in detail in the catalogue.

Abbreviations

Wt. = weight of fragment

est.Wt. = estimated original weight of loom-weight

D. = diameter of loom-weight

est.D. = estimated original diameter of loom-weight

Th. = width of clay in ring when loom-weight laid flat and viewed from above

H. = depth of clay in ring when loom-weight laid flat and viewed from side

Hl.D. = diameter of central hole

Period 2, late 7th to early 8th century

2579 Tall D. section, Wt.186g, est.Wt.900g, est.D.110mm, Th.52 × H.54mm.

RF 4623, Context 4621, Period 2.

Phase 2–3a, late 7th to mid 8th century

2580 Round D-section, Wt.105g, est.Wt.550g, est.D.100mm, Th.36 × H.46mm

RF 4834, Context 4769, Phase 2–3a.

2581 Flat section (quoin-shaped) Th.33, H.14

RF 13715, Context 5314, Phase 2–3a.

Phase 2–4ii, late 7th to mid 9th century

(almost certainly Phase 4ii ditch fills)

2582 Complete, shallow asymmetrical D-section, three fine grooves. Radiating from centre, Wt.438g, D.106–109mm, Th.39–45mm, H.38mm, Hl.D.26–28mm (FIG. 9.10).

RF 2913, Context 2860, Phases 2–4ii.

2583 Approximately one-quarter, D-section with prominent flange around hole, Wt.25g, est.Wt.100g, est.D.75mm, Th.28 × H.28mm.

RF 2918, Context 2860, Phases 2–4ii.

2584 Asymmetrical D-section, H.50mm

RF 2917, Context 2915, Phases 2–4ii.

Phase 3a, early to mid 8th century

2585 Unfired, round D-section, est.Wt.330g, est.D.80mm, Th.39 × H.41mm

RF 9960, Context 9963, Phase 3a.

Phase 3a–3bv, early 8th to early 9th century

2586 Irregular round D-section, four impressed dots evenly spaced, Wt.118g, est.Wt.180g, D.81, Th.26–32 × H.25–27mm

RF 12056, Context 10238, Phase 3a–3bv.

Phase 3b, mid 8th to early 9th century

2587 Quarter, round D-section, Wt.134g, est.Wt.525g, est.D.110mm, Th.44 × H.44mm

RF 6467, Context 5983, Phase 3b.

2588 D-section, Wt.115g, est.Wt.275g, est.D.80mm, Th.35 × H.42mm

RF 6721, Context 5983, Phase 3b.

2589 One block of four impressed dots and part of a second, Wt.12g

RF 10202, Context 5983, Phase 3b.

2590 Pointed D-section, Wt.100g, est.Wt.400g, est.D.80mm, Th.36 × H.48mm

RF 10306, Context 5983, Phase 3b.

2591 Quoin-shaped (shallow pointed D-section), Wt.112g, est.D.130–40mm

RF 10309, Context 5983, Phase 3b.

- 2592 ?pointed D-section?, Wt.76g, est.Wt.500g, Th.42 × H.41mm
RF 14338, Context 5983, Phase 3b.

Phase 3bi, early to mid 8th century

- 2593 Round D-section, Th.37 × H.32mm
RF 11054, Context 6384, Phase 3bi.

Phase 3bi–3bv, mid 8th to early 9th century

- 2594 Approximately half, sandy fabric under-fired or not fired; pointed D cross-section Wt.160.0, est.Wt.320g, D.87, Th.40 × H.40mm
RF 1119, Context 968, Phase 3bi–3bv.
- 2595 Unfired sand in calcareous clay (different fabric from rest), D-section, Wt.147g, est.Wt.165g, D.78, Th.29 × H.31mm
RF 7726, Context 7418, Phase 3bi–3bv.

Phase 3bii, mid 8th to early 9th century

- 2596 Asymmetrical section, Wt.154g, est.Wt.385g, est.D.100mm, Th.39 × H.39mm
RF 10479, Context 6465, Phase 3bii.
- 2597 Pointed D-section, Wt.187g, est.Wt.600g, est.D.110mm, Th.45 × H.44mm
RF 10482, Context 6465, Phase 3bii.
- 2598 Shallow pointed D-section, Wt.91g, est.Wt.400g, Th.42 × H.38mm
RF 10483, Context 6465, Phase 3bii.
- 2599 Groove radiating from hole, Wt.142g, est.Wt.500g, est.D.>110mm
RF 10519, Context 6465, Phase 3bii.
- 2600 Pointed D-section, Wt.41g
RF 10520, Context 6465, Phase 3bii.
- 2601 Pointed D-section, Wt.140g, est.Wt.310g, D.99, Th.41 × H.38mm
RF 10521, Context 6465, Phase 3bii.
- 2602 Pointed D-section, very like RF 10521, Wt.134g, est.Wt.300g, D.96, Th.33 × H.41mm
RF 10647, Context 6465, Phase 3bii.
- 2603 Asymmetrical D-section, Wt.58g, Th.44mm
RF 10670, Context 6465, Phase 3bii.
- 2604 Pointed D-section, Wt.67g, Th.37 × H.38mm
RF 10701, Context 6465, Phase 3bii.
- 2605 Pointed D-section, flanges both sides, Wt.172g, est.Wt.350g, D.100, Th.36 × H.38mm
RF 10706, Context 6465, Phase 3bii.
- 2606 Pointed D-section, Wt.109g, est.Wt.300g, est.D.100mm, Th.40mm
RF 10713, Context 6465, Phase 3bii.
- 2607 Pointed D-section, Wt.71g, est.D.95mm, Th.37 × H.40mm
RF 10714, Context 6465, Phase 3bii.
- 2608 Round asymmetrical D-section, Wt.173g, est.Wt.600g, est.D.>110mm, Th.49 × H.48
RF 11872, Context 11699, Phase 3bii.
- 2609 Round asymmetrical D-section, Wt.110g, est.Wt.475g, est.D.100mm, Th.46 × H.46mm
RF 11873, Context 11699, Phase 3bii.

Phase 3biii, mid 8th to early 9th century

- 2610 Pointed D-section, Wt.78g, Th.38 × H.44mm
RF 13705, Context 7220, Phase 3biii.

Phase 3biii–3bv, mid 8th to early 9th century

- 2611 Pointed D-section with flange, Wt.129g, est.Wt.290g, est.D.100mm, Th.33 × H.43mm
RF 11915, Context 11893, Phase 3biii–3bv.

Phase 3biv–3bv, mid 8th to early 9th century

- 2612 Round D-section, groove radiating from hole, Wt.224g, est.Wt.550g, est.D.115mm, Th.42
RF 6719, Context 6710, Phase 3biv–3bv.

Phase 3bv, mid 8th to early 9th century (probably early 9th century)

- 2613 Wt.62g, est.D.>100mm, Th.39mm
RF 8166, Context 5617, Phase 3bv.
- 2614 Shallow pointed D-section, Wt.62g, est.Wt.240g, est.D.90mm, Th.40 × H.27mm
RF 6151, Context 6136, Phase 3bv.
- 2615 Flattened D-section, Wt.130g, est.D.90mm, Th.39 × H.29mm
RF 6154, Context 6136, Phase 3bv.
- 2616 Round D-section, hole off-centre, Wt.150g, est.Wt.160g, D.80, Th.32 × H.29mm
RF 6157, Context 6136, Phase 3bv.
- 2617 (Three-quarters), shallow wedge-shaped section, 265g, est.Wt.360g, D.108, Th.40 × H.37.
RF 6160, Context 6136, Phase 3bv.
- 2618 ?unbaked, irregular section, Wt.89g, est.Wt.400g, Th.36 × H.31mm
RF 6164, Context 6136, Phase 3bv.
- 2619 Fired at low temp., wedge-shaped section, est.Wt.235g, est.D.110mm, Th.43 × H.36mm
RF 6166, Context 6136, Phase 3bv.
- 2620 Irregular, shallow wedge section, one deep impressed dot, Wt.63g, est.Wt.140g, D.90, Th.25–33 × H.19–23mm
RF 6168, Context 6136, Phase 3bv.
- 2621 Broad D-section, two impressed marks each consisting of four dots, Wt.78g, D.84, Th.27, H.27. (Fig. 9.12).
RF 6169, Context 6136, Phase 3bv.
- 2622 Broad D-section with slight flange, Wt.230g, est.Wt.290g, D.97, Th.36 × H.37mm
RF 6171, Context 6136, Phase 3bv.
- 2623 Fragments of more than one weight, one possibly unbaked
RF 6189, Context 6136, Phase 3bv.
- 2624 Round D-section, impressed dots in double row, Wt.96g, est.Wt.140g, D.80, Th.27mm
RF 6197, Context 6136, Phase 3bv.
- 2625 Impressed circle 15 × 17mm, Wt.50g, est.D.100mm
RF 6198, Context 6136, Phase 3bv.
- 2626 Wt.38g, est.D.>100mm
RF 6199, Context 6136, Phase 3bv.
- 2627 Fragments of more than one weight, (i) D-section, est.Wt.300g, est.D.95mm, Th.38 × H.30 (ii) pointed D-section, smaller than (i), Wt.80g, est.Wt.160g, D.83, Th.23
RF 6205, Context 6136, Phase 3bv.

- 2628 Est.Wt.300g, est.D.90 mm
RF 6212, Context 6136, Phase 3bv.
Th.28 × H.26mm
RF 3804, Context 3758, Phase 4ii.
- 2629 Wt.23g, est.D.85 mm
RF 6215, Context 6136, Phase 3bv.
- 2630 Grooves radiating from central hole, Wt.74g, est.Wt.160g,
D.76, Th.22–26mm
RF 6218, Context 6136, Phase 3bv.
- 2631 Deep groove radiating from centre, Wt.106g, est.
D.>100mm
RF 6221, Context 6136, Phase 3bv.
- 2632 Fired at low temp., one (or two?) impressed circles 16mm
diam. Wt.226g, est.D.100 mm
RF 6227, Context 6136, Phase 3bv.
- 2633 Shallow D-section, Wt.94g, est.Wt.380g, est.D.90mm,
Th.38 × H.36mm
RF 6229, Context 6136, Phase 3bv.
2634. Complete, round D-section, one groove radiating from
hole, Wt.402g, est.Wt.410g, D.100, Th.40 × H.50–52mm,
Hl.D.20mm. (FIG. 9.10).
RF 12249, Context 6304, Phase 3bv.
- Phase 3bi–4i, mid 8th to early 9th century*
- 2635 Fragment of very large weight, Wt.358g, est.D.155mm,
H.>65 × Th.>65mm
RF 5253, Context 4323, Phase 3bi–4i.
- 2636 Groove radiating from hole.
RF 13999, Context 12248, Phase 3bi–4i.
- Period 4, early to mid 9th century*
- 2637 Complete, round D-section, elliptical hole 38 × 52mm,
possibly annular (or eroded to this shape), Wt.620g,
D.120–125, Th.38–43, H.45mm, Hl.D.38–52mm
RF 6549, Context 6235, Period 4.
- 2638 Irregular D-section, 3 or 4 deep impressed dots 10mm wide.
Evenly spaced, hole off-centre, Wt.515g, est.Wt.625g,
D.103–110, Th.40–52 × H.48mm
RF 6553, Context 6235, Period 4.
- 2639 Flattened pointed D, Wt.73g, est.D.100mm, Th.36 ×
H.29mm
RF 10141, Context 6235, Period 4.
- 2640 Fragments, two parallel rows of impressed dots, Wt.42g
RF 13749, Context 6235, Period 4.
- Phase 4i, early to mid 9th century*
- 2641 Wt.63g, est.D.80mm
RF 6133, Context 6132, Phase 4i.
- 2642 Fragment of large weight, Wt.111g, est.Wt.?600g,
D.>135mm, Th.52mm
RF 6159, Context 6132, Phase 4i.
- 2643 Wt.30g, est.D.80 mm
RF 7444, Context 7388, Phase 4i.
- Phase 4i–4ii, early–mid 9th century*
- 2644 Impressed with circle 17mm diam. Wt.3g
RF 5831, Context 5827, Phase 4i–4ii.
- Phase 4ii, mid 9th century*
- 2645 Small, wedge-shaped section, Wt.25g, est.Wt.120g, est.
D.70mm, Th.25 × H.21mm
RF 6118, Context 3107, Phase 4ii.
- 2646 Wedge-section with flange, Wt.93g, est.Wt.200g, D.95,
Th.28 × H.26mm
RF 3804, Context 3758, Phase 4ii.
- 2647 Pointed flat D-section, 2 sets impressed marks 4 dots each,
Wt.170g, est.Wt.250g, D.95, Th.38 × H.>36mm
RF 3858, Context 3758, Phase 4ii.
- 2648 Pointed flattened D-section, impressed circle 12mm,
fits RF 3832 from context 3989, Period 6, Wt.89g, est.
Wt.180–200g, D.85mm, Th.35mm
RF 3859, Context 3758, Phase 4ii.
- 2649 Flattened D-section with flange, two impressed circles
17mm diam. Wt.179g, est.Wt.200g, D.89, Th.36 ×
H.20mm.
RF 3985, Context 3758, Phase 4ii.
- 2650 Impressed circle 17mm diam., fragments totalling Wt.208g,
Th.34 × H.28mm
RF 3986, Context 3758, Phase 4ii.
- 2651 Impressed circle 17mm diam. Wt.16g
RF 4092, Context 3758, Phase 4ii.
- 2652 Two small deep circular impressed marks, Wt.71g, D.98,
Th.31mm
RF 5173, Context 3758, Phase 4ii.
- 2653 Shallow D-section, Wt.31g, Th.36 × H.21mm
RF 5178, Context 3758, Phase 4ii.
- 2654 Circular to round-D section, Wt.85g, est.Wt.250g, D.87,
Th.34mm
RF 5399, Context 3758, Phase 4ii.
- 2655 Fragments, including one with groove radiating from hole,
Wt.46g
RF 5403, Context 3758, Phase 4ii.
- 2656 Complete, wedge-shaped section with flange, impressed
with four dots arranged in square, Wt.163g, D.85, Th.33
× H.30mm. (FIG. 9.10).
RF 5405, Context 3758, Phase 4ii.
- 2657 Flattened D-section, est.D.110mm, Wt.102g, Hl.D.26mm
RF 5409, Context 3758, Phase 4ii.
- 2658 Irregular section, Wt.140g, est.D.75mm Th.33 × H.23–
25mm
RF 5410, Context 3758, Phase 4ii.
- 2659 Includes one irregular flattened D-section, Th.33 ×
H.22mm
RF 5423, Context 3758, Phase 4ii.
- 2660 Includes one irregular D-section, Th.27 × H.20mm
RF 5424, Context 3758, Phase 4ii.
- 2661 Irregular section with flange, Wt.104, est.Wt.300g, est.
D.105, Th.35 × H.30mm
RF 5434, Context 3758, Phase 4ii.
- 2662 Impressed circle of 15mm diam. Wt.10g
RF 5435, Context 3758, Phase 4ii.
- 2663 Shallow pointed D-section, Wt.84g, est.Wt.165g, D.85,
Th.32 × H.22mm
RF 5458, Context 3758, Phase 4ii.
- 2664 Two impressed ovals 15–17mm diam., est.D.80mm
RF 5460, Context 3758, Phase 4ii.
- 2665 Asymmetrical section, Wt.62g, est.Wt.250g, est.D.100mm,
Th.41 × H.35mm
RF 5508, Context 3758, Phase 4ii.
- 2666 Irregular, wedge-shaped section with flange, 3 impressed

- ovals 15 × 17mm, Wt.214g, est.Wt.330g, D.102, Th.36–9 × H.26–30mm
RF 5510, Context 3758, Phase 4ii.
- 2667 Pointed D-section, 2 deep impressed dots, Wt.54g, est. Wt.130g, D.80, Th.28 × H.28mm
RF 5522, Context 3758, Phase 4ii.
- 2668 Deep impressed dot, Wt.14g
RF 5528, Context 3758, Phase 4ii.
- 2669 Asymmetrical section, impressed mark, edge of circle, Wt.60g, est.D.100mm, Th.33 × H.25mm
RF 5556, Context 3758, Phase 4ii.
- 2670 Flattened D-section, impressed oval 15 × 17mm, Wt.53g, est.D.80, Th.31 × H.24mm
RF 5558, Context 3758, Phase 4ii.
- 2671 Pointed D-section, Wt.153g, est.Wt.185g, D.86, Th.36 × H.30mm
RF 5569, Context 3758, Phase 4ii.
- 2672 Deep impressed dot
RF 5571, Context 3758, Phase 4ii.
- 2673 Complete or near-complete, flattened round D-section, Wt.172g, est.Wt.180g, D.93
Th.37 × H.27mm, Hl.D.24mm
RF 5572, Context 3758, Phase 4ii.
- 2674 Flattened pointed D-section, Wt.79g, est.Wt.160g, est. D.84mm, Th.29mm
RF 5573, Context 3758, Phase 4ii.
- 2675 Parallel grooves emerging from central hole, Wt.70g
RF 5574, Context 3758, Phase 4ii.
- 2676 Est.D.80mm
RF 5580, Context 3758, Phase 4ii.
- 2677 Irregular section with flange, Wt.129g, est.Wt.320g, est. D.105mm, Th.37–41 × H.32mm
RF 5581, Context 3758, Phase 4ii.
- 2678 Flattened D-section, Wt.150g, est.Wt.200g, est.D.95mm, Th.33 × H.23mm
RF 5582, Context 3758, Phase 4ii.
- 2679 Section probably asymmetrical, Wt.145g, est.Wt.260g, D.97mm, Th.39 × H.28mm
RF 5584, Context 3758, Phase 4ii.
- 2680 Flange around hole, two impressed circles 11mm diam. Wt.60g, est.D.85mm (FIG. 9.12)
RF 5585, Context 3758, Phase 4ii.
- 2681 Wide wedge-shaped section, Wt.58g, est.Wt.130g, est. D.80mm, Th.34 × H.24mm
RF 5587, Context 3758, Phase 4ii.
- 2682 Flared hole 22–28mm diam. Wt.65g, est.D.>100mm
RF 5588, Context 3758, Phase 4ii.
- 2683 Round D-section, Wt.157g, est.Wt.175g, D.87mm, Th.28 × H.36mm
RF 5589, Context 3758, Phase 4ii.
- 2684 Two impressed circles 11–12mm diam. Wt.52g, est. Wt.300g, est.D.80mm
RF 5592, Context 3758, Phase 4ii.
- 2685 Impressed circle 17mm diam. Wt.55g
RF 5594, Context 3758, Phase 4ii.
- 2686 Impressed mark, edge of circle 19mm diam. Wt.21g
RF 5598, Context 3758, Phase 4ii.
- 2687 D-section, Wt.128g, est.Wt.155g, D.80mm, Th.23–28 × H.28mm
RF 5599, Context 3758, Phase 4ii.
- 2688 Fragment of fired clay, possibly not loom-weight, Wt.6g
RF 5606, Context 3758, Phase 4ii.
- 2689 Fragments fired at low temperature, total Wt.205g, largest 45 × 37 × 25mm
RF 5608, Context 3758, Phase 4ii.
- 2690 Fired at low temperature, pointed D-section, Wt.94g, Th.32mm
RF 5632, Context 3758, Phase 4ii.
- 2691 Fragments, one with impressed circle 17mm diam., total Wt.37g
RF 5858, Context 3758, Phase 4ii.
- 2692 Fragments, unfired, total Wt.87g
RF 6007, Context 3758, Phase 4ii.
- 2693 Wedge-shaped section, Wt.84g, est.D.100 mm, Th.42 × H.25 mm
RF 6008, Context 3758, Phase 4ii.
- 2694 Irregular pointed D-section, Wt.145g, est.Wt.190g, D.86, Th.29 × H.31mm
RF 6090, Context 3758, Phase 4ii.
- 2695 Fired at low temperature, quoit-shaped (flat with rounded edge), Wt.243g, est.Wt.330g, D.106, Th.38 × H.29 mm
RF 6095, Context 3758, Phase 4ii.
- 2696 ?unbaked, Wt.55g
RF 6096, Context 3758, Phase 4ii.
- 2697 ?unbaked, Wt.22g
RF 6097, Context 3758, Phase 4ii.
- 2698 D-section with flange, Wt.57g, est.Wt.180g, D.80, Th.22 × H.28 mm
RF 6248, Context 3758, Phase 4ii.
- 2699 Asymmetrical section with slight flange, at least two impressed circles 11–12mm, Wt.121g, est Wt.190g, D.86, Th.32 × H.29mm
RF 6252, Context 3758, Phase 4ii
- 2700 Wedge-shaped section, Wt.35g, est.Wt.130g, est.D.75mm, Th.29 × H.18mm
RF 6253, Context 3758, Phase 4ii.
- 2701 Impressed circle 17mm diam. Wt.24g
RF 6258, Context 3758, Phase 4ii.
- 2702 Wt.15g, est.D.70mm
RF 6274, Context 3758, Phase 4ii.
- 2703 Pointed D-section, two grooves radiating from hole, Wt.157g, est.Wt.195g, D.83, Th.27 × H.33mm
RF 6294, Context 3758, Phase 4ii.
- 2704 Flattened D-section with flange, impressed circle 10–12 mm diam. Wt.125g, est.Wt.325g, Th.41 × H.30mm
RF 6296, Context 3758, Phase 4ii.
- 2705 Wedge section with slight flange, Wt.254g, est.Wt.500g, D.110, Th.41 × H.37mm
RF 6314, Context 3758, Phase 4ii.
- 2706 Est.D.80mm
RF 6599, Context 3758, Phase 4ii.
- 2707 D-section, irregular hole, Wt.100g, est.D.90mm, Th.34 × H.30mm
RF 7356, Context 3758, Phase 4ii.

- 2708 Single deep impressed dot, Wt.10g
RF 7769, Context 3758, Phase 4ii.
- 2709 Impressed circle 9 × 11mm, Wt.10g
RF 8066, Context 3758, Phase 4ii.
- 2710 Round D-section, Wt.84g, est.Wt.350g, est.D.100mm,
Th.35 × H.35mm
RF 8777, Context 3758, Phase 4ii.
- 2711 Complete, irregular pointed D-section with flange, radiat-
ing groove(s), evenly spaced impressed dots, Wt.140g,
D.75–82, Th.26 × H.28–29mm, Hl.D.33mm. (Fig. 9.10).
RF 8869, Context 3758, Phase 4ii.
- 2712 Block of four impressed dots, Wt.25g, est.D.80mm,
Th.33mm
RF 8871, Context 3758, Phase 4ii.
- 2713 Fragments, one with impressed incomplete circle 15mm
diam., total Wt.18g
RF 9355, Context 3758, Phase 4ii.
- 2714 Fragments of more than one weight, including one irregular
flanged section, Wt.101g, est.Wt.130g, D.82, Th.32, H.26
RF 9935, Context 3758, Phase 4ii.
- 2715 Shallow D-section, Wt.110g, est.D.85mm
RF 10028, Context 3758, Phase 4ii.
- 2716 ?unbaked, total Wt.128g
RF 10030, Context 3758, Phase 4ii.
- 2717 Block of 4 impressed dots
RF 10032, Context 3758, Phase 4ii.
- 2718 D-section, Wt.43g, est.Wt.170g, est.D.75mm, Th.27 ×
H.25mm
RF 10038, Context 3758, Phase 4ii.
- 2719 Impressed oval 15 × 20mm, Wt.34g
RF 10039, Context 3758, Phase 4ii.
- 2720 Pointed D-section, Wt.45g, est.Wt.200g, est.D.100mm,
Th.30 × H.29mm
RF 10043, Context 3758, Phase 4ii.
- 2721 Flattened D-section, block of four impressed dots, Wt.56g,
est.Wt.200g, est.D.95mm, Th.35 × H.27mm
RF 10045, Context 3758, Phase 4ii.
- 2722 Impressed oval 20 × 15mm, Wt.47g, Th.39 × H.23mm
RF 10046, Context 3758, Phase 4ii.
- 2723 ?unbaked, 92g
RF 11495, Context 3758, Phase 4ii.
- 2724 Wt.56g, est.Wt.160g, est.D.80mm, Th.30mm
RF 11498, Context 3758, Phase 4ii.
- 2725 Pointed D-section, two parallel rows of impressed dots,
Wt.101g, est.Wt.250g, est.D.90mm, Th.34 × H.30mm
RF 11501, Context 3758, Phase 4ii.
- 2726 Flat quoit-like shape, two impressed circles 15–16mm
diam, Wt.61g, est.Wt.180g, est.D.80mm
RF 11505, Context 3758, Phase 4ii.
- 2727 Fragments, total Wt.274g, est.D.105mm, Th.42 mm
RF 11506, Context 3758, Phase 4ii.
- 2728 Asymmetrical section with flange, Wt.185g, est.Wt.210g,
D.81mm, Th.2 × H.16mm
RF 11507, Context 3758, Phase 4ii.
- 2729 Asymmetrical section with flange, Wt.138g, est.Wt.200g,
D.81mm, Th.29 × H.32mm
RF 11508, Context 3758, Phase 4ii.
- 2730 One set of four impressed dots, Wt.31g, est.D.80mm, Th.36
× H.20mm
RF 11510, Context 3758, Phase 4ii.
- 2731 Shallow wedge-shaped section, Wt.41g
RF 11524, Context 3758, Phase 4ii.
- 2732 Asymmetrical pointed D-section, Wt.63g, est.Wt.160g,
D.80mm, Th.30 × H.29mm
RF 11532, Context 3758, Phase 4ii.
- 2733 Fragments of ?two weights, both shallow asymmetrical D-
section, One with set of four impressed dots, total Wt.230g,
est.Wt.120g each, est.D.80mm each, Th.33 × H.25mm
RF 11534, Context 3758, Phase 4ii.
- 2734 One set of four large impressed dots, Wt.37g. (Fig.
9.12).
RF 11535, Context 3758, Phase 4ii.
- 2735 Edge of impressed circle, Wt.2g
RF 11536, Context 3758, Phase 4ii.
- 2736 One set of four large impressed marks, Wt.11g
RF 11542, Context 3758, Phase 4ii.
2737. Pointed D-section, Wt.87g, est.Wt.170g, D.80mm, Th.26
× H.33mm
RF 6226, Context 5503, Phase 4ii.
- 2738 Wt.42g, est.D.85mm, Th.32 × H.18mm
RF 8458, Context 6885, Phase 4ii.
- 2739 D-section, Wt.84g, est.Wt.300g, est.D.90mm, Th.40 ×
H.35mm
RF 8484 (i), Context 6885, Phase 4ii.
- 2740 Asymmetrical section, Wt.62g, est.Wt.300g, Th.38 ×
H.33mm
RF 8484 (ii), Context 6885, Phase 4ii.
- 2741 Pointed D, groove(s) radiating from hole, Wt.154g, est.
Wt.210g, D.97mm, Th.30 × H.30
RF 9971, Context 6885, Phase 4ii.
- 2742 Asymmetrical D-section, Wt.52g, est.Wt.200g, est.
D.80mm
RF 9972, Context 6885, Phase 4ii.
- 2743 Pointed D-section with flange, Wt.61g, est.Wt.150g, est.
D.80mm, Th.28 × H.27mm
RF 9974, Context 6885, Phase 4ii.
- 2744 Shallow pointed D-section, Wt.101g, est.Wt.200g,
D.85mm, Th.30 × H.26mm
RF 9975, Context 6885, Phase 4ii.
- 2745 Grooves radiating from hole, two parallel rows of
impressed dots, Wt.125g, est.Wt.220g, est.D.95mm,
Th.31mm. (Fig. 9.12).
RF 9976, Context 6885, Phase 4ii.
- 2746 Wt.84g, est.D.100mm
RF 9977, Context 6885, Phase 4ii.
- 2747 D-section, Wt.68g, est.Wt.250g, est.D.100mm, Th.37 ×
H.30mm
RF 9978, Context 6885, Phase 4ii.
- 2748 D-section, Wt.59g, Th.32 × H.36mm
RF 9979, Context 6885, Phase 4ii.
- 2749 D-section, Wt.143g, est.Wt.245g, D.90mm, Th.27 ×
H.34mm
RF 9980, Context 6885, Phase 4ii.

- 2750 Fragments, total Wt.50g, ?unfired
RF 9982, Context 6885, Phase 4ii.
- 2751 Complete, unfired or fired at low temperature, unfinished, D-section, but hole does not fully penetrate clay, Wt.150g, D.75mm, Th.26 × H.30mm. (Fig. 9.10).
RF 9996, Context 6885, Phase 4ii.
- 2752 Rectangular piece of unfired clay (not a loom-weight), 68 × 28 × 27mm, Wt.
RF 9997, Context 6885, Phase 4ii.
- 2753 Flattened D-section, Wt.87g, est.D.100mm, Th.43mm
RF 9998, Context 6885, Phase 4ii.
- 2754 Rounded rectangular section, Wt.35g, Th.28 × H.24mm
RF 10005, Context 6885, Phase 4ii.

Phase 4ii–5a, mid to late 9th century

- 2755 Shallow D section, small deep impressed square, Wt.203g, est.Wt.300g, D.100mm, Th.41 × H.30mm. (Fig. 9.12).
RF 5151, Context 5193, Phase 4ii–5a.
- 2756 Triangular section, flared hole, Wt.103g, est.Wt.206g, D.85mm, Th.29 × H.30–33mm
RF 5217, Context 5193, Phase 4ii–5a.

Phase 5a, mid to late 9th century

- 2757 Rounded D-section, Wt.79g, est.D.80–90mm
RF 13735, Context 3711, Phase 5a.
- 2758 Not fired or possibly low-fired, D-shaped section, Wt.310g, est.Wt.425g, D.105mm, Th.48–52 × H.41mm
RF 5668, Context 5139, Phase 5a.
- 2759 Th.30 × H.22mm
RF 5693, Context 5640, Phase 5a.
- 2760 Impressed dots in a row, Wt.31g
RF 6059, Context 5885, Phase 5a.
- 2761 Unfired, flattened pointed D-section, small, unfinished hole off-centre, Wt.190g, est.Wt.200g, D.90mm, Th.32–39 × H.26mm
RF 8825, Context 8108, Phase 5a.
- 2762 Probably unfired, flattened pointed D-section, elongated hole off-centre, cf. RF 8825, Wt.155g, est.Wt.180g, D.87mm, Th.32–38 × H.25mm
RF 8826, Context 8108, Phase 5a.
- 2763 Fragments, probably unfired, total Wt.88g
RF 8828, Context 8108, Phase 5a.
- 2764 Unfired, quoit-shaped (flat pointed section), unfinished – hole does not penetrate clay, Wt.210g, est.Wt.300g, D.107mm, H.26–36mm
RF 8829, Context 8108, Phase 5a.
- 2765 Clay fragment irregular shape, possibly not loom-weight, Wt.67g,
RF 11414, Context 11039, Phase 5a.
- 2766 Wt.39g, est.D.75mm
RF 13798, Context 11039, Phase 5a.
- 2767 Wt.68g, est.D.80mm
RF 11477, Context 11442, Phase 5a.

Phase 5a–5b, mid 9th to early 10th century

- 2768 Thin wedge-shaped cross-section, flange around hole, Wt.55g, est.Wt.200g
RF 245, Context 256, Phase 5a–5b.
- 2769 Thin wedge-shaped cross-section, Wt.33g, est.Wt.180g
RF 247, Context 256, Phase 5a–5b.

- 2770 Thin, rounded wedge-shaped cross-section, Wt.30g
RF 280, Context 275, Phase 5a–5b.
- 2771 Fragments of two weights, largest est.Wt.135g
RF 512, Context 503, Phase 5a–5b.
- 2772 Thin wedge-shaped cross-section, flange around hole, Wt.34g, est.Wt.220g
RF 253, Context 00515, Phase 5a–5b.
- 2773 Groove radiating from hole, Wt.68g, Th.32mm
RF 8216, Context 08192, Phase 5a–5b.
- 2774 Wt.30g, est.D.100mm, Th.36
RF 8217, Context 08192, Phase 5a–5b.
- 2775 Irregular section, Wt.232g, est.Wt.900g, est.D.150mm
RF 12254, Context 12057, Phase 5a–5b.

Phase 5b, late 9th to early 10th century

- 2776 Complete, round D-section, Wt.511g, D.110–115, Th.36–40 × H.43, Hl.D.40mm. (Fig. 9.11).
RF 3699, Context 3597, Phase 5b.
- 2777 Impressed circle 10 × 12mm, Wt.9g
RF 5784, Context 5553, Phase 5b.
- 2778 Wedge-shaped section, Wt.146g, est.Wt.450g, est.D.100–110mm, Th.43 × H.41mm
RF 8234, Context 8153, Phase 5b.
- 2779 Wt.43g, est.D.90mm
RF 8223, Context 8189, Phase 5b.
- 2780 Wedge-shaped section, Wt.56g, est.D.80mm, Th.36 × H.31mm
RF 8508, Context 8323, Phase 5b.
- 2781 D-section, Wt.80g, est.Wt.275g, est.D.90mm, Th.35 × H.42mm
RF 8510, Context 8323, Phase 5b.
- 2782 Impressed circle 15 × 14 diam. Wt.4g
RF 13282, Context 8323, Phase 5b.
- 2783 ?unbaked
RF 10185, Context 10187, Phase 5b.
- 2784 Groove radiating from hole, two impressed marks in form of +, Wt.12g
RF 13670, Context 13837, Phase 5b.

Phase 5b–6i, late 9th to mid 10th century

- 2785 Complete, irregular pointed D-section, hole off-centre, groove inside hole, Wt.498g, D.100–106, Th.39–48 × H.52–59mm. (Fig. 9.11).
RF 10271, Context 6344, Phase 5b–6i.
- 2786 Possibly unfired, total 21g
RF 13726, Context 6344, Phase 5b–6i.
- 2787 Round D-section, irregular hole, groove radiating from hole, Wt.261g, est.Wt.350g, D.99, Th.28–40 × H.50mm
RF 13742, Context 6344, Phase 5b–6i.
- 2788 Irregular round D-section, impressed dots arranged in square, Wt.76g, est.Wt.300g, est.D.90mm
RF 6474, Context 6472, Phase 5b–6i.
- 2789 D-section, Wt.104g, est.Wt.350g, est.D.80mm, Th.38 × H.39mm
RF 8095, Context 8089, Phase 5b–6i.
- 2790 Irregular round section, total Wt. 69g, Th.33 × H.30mm
RF 8109, Context 8089, Phase 5b–6i.

Phase 5b–6, late 9th to early 11th century

- 2791 Shallow round D-section, Wt.135g, est.Wt.270g, D.84mm, Th.37 × H.40mm
RF 1797, Context 1728, Phase 5b–6.
- 2792 Complete, D-section, single groove radiating from centre, Wt.181g, D.83mm, Th.24–27 × H.30mm, Hl.D.32mm
RF 3429, Context 3427, Phase 5b–6.
- 2793 Impressed circle 10–11mm diam. Wt.19g
RF 11408, Context 6490, Phase 5b–6.
- 2794 Edge of impressed circle, Wt.6g
RF 11575, Context 6490, Phase 5b–6.

Period 6, early 10th to early 11th century

- 2795 Wedge-section with flange around hole, two impressed marks +, Wt.83g, est.Wt.250g, est.D.85–90mm, Th.40 × H.30mm, Hl.D.19–23 mm. (Fig. 9.12).
RF 3728, Context 3730, Period 6.

Phase 6i, early to mid 10th century

- 2796 Wedge-shaped section, Wt.42g, est.Wt.170g, est.D.80mm, Th.30 × H.23mm
RF 6257, Context 5871, Phase 6i.
- 2797 Groove radiating from hole, Wt.27g
RF 7299, Context 5871, Phase 6i.
- 2798 Wt.85g, est.D.90–100mm
RF 9387, Context 5871, Phase 6i.
- 2799 Wedge-shaped section with flange, Wt.21g, est.D.80mm, Th.25 × H.26mm
RF 5950, Context 5930, Phase 6i.

Phase 6i–6ii, early to mid 10th century

- 2800 ?unfired
RF 11084, Context 11083, Phase 6i–6ii.

Phase 6ii, mid 10th century

- 2801 Thin, flat, wedge-shaped cross-section, flange around hole, Wt.48g, est.Wt.300g
RF 931, Context 923, Phase 6ii.
- 2802 Angular D-section, Wt.282g, est.Wt.420g, D.97, Th.40 × H.50–3, Hl.D.17–18mm
RF3661, Context 3610, Phase 6ii.
- 2803 Pointed D-section, groove at edge of central hole, Wt.321g, est.Wt.390g, D.95mm, Th.40 × H.53mm
RF 4089, Context 3891, Phase 6ii.
- 2804 Pointed D-section, Wt.73g, est.D.100mm
RF 4240, Context 3891, Phase 6ii.
- 2805 Wt.54g, est.D.100mm
RF 4262, Context 3891, Phase 6ii.
- 2806 D-section, Wt.47g, est.Wt.275g, est.D.80mm Th.26 × H.35mm
RF 5332, Context 3891, Phase 6ii.
- 2807 Pointed D-section, Wt.198g, est.Wt.500g, est.D.100mm, Th.36 × H.57mm
RF 6626, Context 6471, Phase 6ii.
- 2808 Pointed D-section, two grooves radiating from hole, Wt.337g, est.Wt.400g, D.102mm, Th.39 × H.47mm
RF 6637, Context 6471, Phase 6ii.
- 2809 Pointed D-section, Wt.220g, est.Wt.625g, est.D.110mm, Th.47 × H.54mm
RF 6839, Context 6797, Phase 6ii.

Phase 6ii–6iii, mid 10th century to early 11th century

- 2810 Asymmetrical section, Wt.147g, est.Wt.600g, est.D.100mm, Th.37 × H.43mm
RF 1859, Context 1841, Phase 6ii–6iii.
- 2811 Remains of groove
RF1894, Context 1889, Phase 6ii–6iii.
- 2812 Irregular D-section, large impressed mark 42 × 35 mm (reversed curled S), Wt.485g, est.Wt.650g, D.110, Th.45–50 × H.55mm. (Fig. 9.11).
RF 7271, Context 6343, Phase 6ii–6iii.
- 2813 D-section, Wt.315g, est.Wt.400g, D.109mm, Th.45 × H.>50mm
RF 6668, Context 6499, Phase 6ii–6iii.
- 2814 Round D-section, Wt.25g, Th.23 × H.26mm
RF 10677, Context 10333, Phase 6ii–6iii.
- 2815 Shallow D-section, deliberate impressed marks, but not in pattern, Wt.85g, est.Wt.155g, D.84mm, Th.27 × H.23mm
RF 10462, Context 10394, Phase 6ii–6iii.

Phase 6iii, mid/late 10th to early 11th century

- 2816 Wt.129g, est.Wt.375g
RF 580, Context 535, Phase 6iii.
- 2817 Irregular shape, approx. D-shape cross-section, Wt.39g
RF 597, Context 535, Phase 6iii.
- 2818 D-section, Wt.103g, est.Wt.450g, est.D.100mm
RF 1484, Context 1283, Phase 6iii.
- 2819 Irregular flattened D-section, Wt.45g, est.Wt.250g
RF 1441, Context 1439, Phase 6iii.
- 2820 RF 1562, Context 1440, Phase 6iii.
- 2821 Fragment, roughly one quarter, asymmetrical D-section, Wt.96g, est.Wt.380g, est.D.95 mm, Th.37 × H.47 mm
RF 1448, Context 1453, Phase 6iii.
- 2822 Flattened asymmetrical D-section, Wt.211g, est.Wt.450g, est.D.97 mm, Th.47 × H.50mm
RF 1499, Context 1462, Phase 6iii.
- 2823 Tall D-section, Wt.64g, est.D.100mm, Th.35 × H.46mm
RF 1614, Context 1462, Phase 6iii.
- 2824 Round D-section, Wt.154g, est.Wt.575g, H.49mm
RF 1625, Context 1462, Phase 6iii.
- 2825 Wt.47g, est.D.110mm, Th.52mm
RF 9339, Context 1462, Phase 6iii.
- 2826 Irregular, rounded D-section, Wt.138g, est.Wt.625g, est.D.110mm, Th.35 × H.49mm
RF 3800, Context 1740, Phase 6iii.
- 2827 Round D-section, Wt.237g, est.Wt.350g, D.92, Th.33 × H.43(+)mm
RF 1783, Context 1670, Phase 6iii.
- 2828 Irregular, D-section, Wt.71g, est.D.100mm
RF 3857, Context 3451, Phase 6iii.
- 2829 Complete, pointed D-section, Wt.426g, D.98–104, Th.42–45 × H.48mm, Hl.D.16–20mm
RF 3825, Context 3989, Phase 6iii.
- 2830 Pointed D-section, Wt.138g, est.Wt.575g, est.D.110mm, Th.43 × H.49mm
RF 3830, Context 3989, Phase 6iii.
- 2831 Wedge-shaped section with flange, Wt.84g, est.Wt.330g,

- est.D.90mm, Th.40 × H.32mm
RF 3831, Context 3989, Phase 6iii.
- 2832 Flattened D-section, impressed circle 12mm diameter, fits RF 3859(i), context 3758 (Period 5a), Wt.61g, est. D.85mm
RF 3832, Context 3989, Phase 6iii.
- 2833 Flattened D or wedge section, Wt.28g, est.D.85mm
RF 3850, Context 3989, Phase 6iii.
- 2834 Wt.133g, est.Wt.400g, est.D.100mm, Th.46 × H.35mm
RF 3988, Context 3989, Phase 6iii.
- 2835 Wt.126g, est.Wt.425g, est.D.130mm
RF 5866, Context 3989, Phase 6iii.
- Phase 6iii–7, mid/late 10th to 12th–14th century*
- 2836 Wedge-shaped section, Wt.100g, est.D.100mm, Th.42
RF 6718, Context 6300, Phase 6iii–7.
- 2837 Quoit-shaped (shallow pointed section), Wt.64g, est. Wt.160g, D.79, Th.34 × H.21mm
RF 6966, Context 6300, Phase 6iii–7.
- 2838 Wt.42g, est.D.100mm
RF 6967, Context 6300, Phase 6iii–7.
- 2839 Pointed D-section, Wt.56g
RF 10274, Context 6300, Phase 6iii–7.
- Unstratified*
- 2840 Regular D-shaped cross-section, Wt.135g, est.Wt.300g, D.91mm, Th.36 × H.37mm
RF 97, Context 0, Unstratified.
- 2841 Round D cross-section, hole flared, Wt.145g, est. Wt.600g
RF 163, Context 0, Unstratified.
- 2842 Wt.92g, est.Wt.550g
RF 826, Context 0, Unstratified.
- 2843 Impressed circle 17mm diam. Wt.6g
RF 4938, Context 0, Unstratified.
- 2844 Pointed D-section, Wt.67g, est.Wt.240g, est.D.80mm, Th.31 × H.25mm
RF 6500, Context 0, Unstratified.
- 2845 Wt.116g, est.D.90mm
RF 8751, Context 0, Unstratified.
- 2846 Asymmetrical D-section, Wt.170g, est.Wt.410g, D.100mm, Th.49 × H.42mm
RF 9934, Context 0, Unstratified.
- 2847 Tall D-section, deep groove formed before firing, Wt.134g, est.Wt.475g, est.D.90mm, Th.40 × H.53mm
RF 10270, Context 0, Unstratified.
- 2848 Shallow wedge-shaped section, Wt.32g, est.Wt.120g, est. D.75mm, Th. 27 × H.18mm
RF 10272, Context 0, Unstratified.
- 2849 Pointed D-section, groove radiating from hole, Wt.325g, est.Wt.350g, D.103mm, Th.37–40 × H.33–40
RF 13390, Context 0, Unstratified.
- 2850 Flattened round D-section, Wt.136g, est.Wt.260g, D.95mm, Th.36 × H.32mm
RF 13713, Context 0, Unstratified.
- 2851 Round D-section, Wt.125g, est.Wt.500g, est.D.100mm, Th.48
RF 13725, Context 0, Unstratified.
- 2852 Round D-section, Wt.55g, Th.38 × H.42mm
RF 14048, Context 0, Unstratified.
- 2853 Complete, asymmetrical D-section, irregular, two grooves radiating from hole, Wt.242g, D.85–91, Th.33×40 × H.31mm, Hl.D.20–22mm
RF 14079, Context 0, Unstratified.
- 2854 Wt.115g, est.D.80–90mm, Th.36mm
RF 14081, Context 0, Unstratified.
- 2855 D-section, possibly same weight as RF 14114, Wt.144g, est.Wt.425g, est.D.100mm, Th.39 × H.48mm
RF 14113, Context 0, Unstratified.
- 2856 Possibly same weight as RF 14113, Wt.120g, est.Wt.420g, Th.40
RF 14114, Context 0, Unstratified.
- 2857 D-section, Wt.65g, Th.37 × H.50mm
RF 14115, Context 0, Unstratified.
- 2858 Large weight, tall D-section, Wt.142g
RF 5119, Context 3870, Unstratified.
- SHEARS (FIG. 9.13; PLS 9.3–9.4)
Unless stated they all have slightly looped bows and blades of which the backs are straight before curving in to the tip.
- 2859 Complete. Blades have horizontal shoulders. L.188mm (FIG. 9.13; PL. 9.3)
RF 325, Context 1, Topsoil.
- 2860 Fragment of bow and stem only. There is a moulding at the junction of the bow and stem. L.28mm
RF 416, Context 400, Phase 2i–4ii.
- 2861 Bent in centre, tip of one blade missing. Blades have sloping shoulders. Bow has pronounced internal nibs at the base. L.143mm (FIG. 9.13)
RF 1864, Context 1838, Phase 6ii–6iii.
- 286 Blade and stub of stem. L.75mm
RF 1959, Unstratified.
- 2863 Complete, but bent into an L-shape. L. (originally) 111mm
RF 2296, Context 1831, Phase 6ii–6iii.
- 2864 Complete. Blades have sloping shoulders. L.115mm
RF 3313, Context 3107, Phase 4ii.
- 2865 Complete. Blades have concave shoulders. L.144mm
RF 3432, Context 2610, Phase 5a.
- 2866 Blade and stub of stem only. Blade has angle back and a rough groove cut into the top of one face. L.92mm (FIG. 9.13)
RF 3587, Context 3322, Phase 1b–2.
- 2867 One half missing, bow bent over. Blade shoulder horizontal. Original L.c.205mm
RF 3749, Unstratified.
- 2868 Bent at 90° in centre, one blade incomplete. Bow has external 'ears' on each side. Blade shoulders sloping. L.(originally) 136mm
RF 4111, Context 3107, Phase 4ii.
- 2869 Blade and stub of stem. Random organic material on the blade and tang; possible traces of handle, with indication of extent, just on the blade. L.66mm
RF 4124, Context 3989, Phase 6iii.
- 2870 Blade and stub of stem only. L.77mm
RF 4336, Context 3107, Phase 4ii.

- 2871 Complete. Bow has slight internal nibs at base. Blades have stepped shoulders. L.160mm (FIG. 9.13)
RF 5482, Context 3758, Phase 4ii.
- 2872 In two pieces. Blades have sloping shoulders. Random organic material present. L.197mm
RF 5513, Context 5033, Phase 2–3a.
- 2873 Complete, but in two pieces and bent in the centre. Blade shoulders stepped. L.(originally) 126mm
RF 5660, Context 3758, Phase 4ii.
- 2874 In two pieces, one blade missing. Blade has sloping shoulder. L.100mm
RF 5707, Context 5139, Phase 5a.
- 2875 Complete. Blades have sloping shoulders. L.144mm; blade L.44mm
RF 6004, Context 5885, Phase 5a.
- 2876 Fragment of bow and stem. L.32mm
RF 9170, Unstratified.
- 2877 One blade incomplete. Blades have horizontal shoulders. L.191mm (FIG. 9.13)
RF 9952, Context 6885, Phase 4ii.
- 2878 Two blades with incomplete stems. Largest piece: L.181mm
RF 10348, Context 6304, Phase 3bv.
- 2879 Complete. Blades have concave shoulders. L.185mm (FIG. 9.13; Pl. 9.4)
RF 10428, Context 1890, Phase 6ii–6iii.
- 2880 Blade and stub of tang. L.31mm
RF 10593, Context 1835, Phase 6ii–6iii.
- 2881 One arm missing. Surviving arm bent at 90° in centre, blade tip missing. L.(originally) 130mm
RF 11278, Unstratified.
- 2882 Bow and stems only. Bow has internal nibs. L.99mm
RF 12147, Context 6499, Phase 6ii–6iii.
- 2883 Complete, but in two pieces. Blades have sloping shoulders. L.128mm
RF 12302, Unstratified.
- 2884 Blade and stub of stem only. Concave shoulder. L.60mm
RF 12311, Unstratified.
- 2885 Complete, but one stem bent outwards below the bow. Blades have concave shoulders. L.146mm
RF 12332, Unstratified.
- 2886 One blade incomplete. Blades have stepped shoulders. L.124mm
RF 12333, Unstratified.
- 2887 Incomplete blade with stepped shoulder. L.55mm
RF 12627, Unstratified.
- 2888 One arm missing. Surviving blade incomplete and has sloping shoulder. L.105mm
RF 12863, Unstratified.
- 2889 Blade and stub of stem only. Shoulder concave. L.53mm
RF 13371, Unstratified.
- 2890 One arm missing. Surviving blade has concave shoulder. Stem has three grooves around it below the bow and two in the centre. L.115mm
RF 13503, Unstratified.
- 2891 Blade and stub of stem only. Concave shoulder. L.54mm
RF 13510, Context 10772, Phase 2–4ii.

- 2892 Blade and stub of stem only. L.81mm
RF 13759, Unstratified.

NEEDLES (FIG. 9.14)

Copper alloy (FIG. 9.14): (7 needles, plus 3 probable shank fragments)

- 2893 Needle
Incomplete. Broken across the eye, which is set in a tapered groove. Circular section.
L.47mm D.2mm
RF 1771, Context 1671, Phase 5a.
- 2894 Needle
Incomplete, point missing, round section, flattened head, oval eye set in tapering groove, 11mm long. L.41mm, D.1.5mm.
RF 5542, Context 5503, Phase 4ii.
- 2895 Needle
Fragment, shank and head, round section, head slightly flattened, eye oval, set in tapering groove 10mm long. L.19mm, D.1.3mm.
RF 5615, Context 3758, Phase 4ii.
- 2896 Needle
Complete, round section, flattened head, oval eye set in long tapering groove, 15mm long. L.55mm, D.1.6mm. (FIG. 9.14)
RF 5687, Context 3758, Phase 4ii.
- 2897 Needle
Complete, round section, flattened head, punched oval eye set in long tapering groove 10mm long. L.52mm, D.1.6mm. (FIG. 9.14)
RF 8497, Context 8108, Phase 5a.
- 2898 Needle
Complete, round section, flattened head, punched lop-sided oval eye set in groove 8mm long. L.43mm, D.2.0mm. (FIG. 9.14)
RF 11878, Context 11876, Phase 3bv.
- 2899 Needle
Complete, round section, flattened head with long oval eye set in groove 11mm long. Double groove on one side. L.58mm, D.1.8mm.
RF 14063, Unstratified.

In addition to the seven needles with extant eyes, two probable needle shanks were recovered from context 3758 (RFs 5450 and 6009) and a third was unstratified (RF 348).

BONE (FIG. 9.14) (6)

- 2900 Needle
Complete, round section, sharp and slender, oval eye, slight polish, most at tip, none at eye. Medium-sized mammal longbone.
L.65mm Th.4.5mm (FIG. 9.14)
RF 766, Context 463, Phase 2–3bv.
- 2901 Needle
Complete, sturdy, rounded section, flattened head, circular eye, some polish, but not especially at eye. Medium-sized mammal longbone.
L.93mm Th.7.5mm (FIG. 9.14)
RF 6037, Context 6036, Phase 5b.
- 2902 Needle
Near-complete (tip missing), oval section, slightly curved

- along length, circular eye, no special wear. Medium-sized mammal longbone.
L.67mm Th.7mm (FIG. 9.14)
RF 6047, Context 6036, Phase 5b.
- 2903 Needle
Complete, sub-rectangular stem, flattened head, sharp tip, oval eye, some polish, not especially at eye. Medium-sized mammal longbone.
L.70mm Th.6mm (FIG. 9.14)
RF 6089, Context 6028, Phase 3bii–3bv.
- 2904 Needle
Complete, stem round, head wedge-shaped section, eye small and circular, no special wear. Pig fibula (small/young individual).
L.63mm Th.6mm (FIG. 9.14)
RF 7196, Context 7109, Phase 6ii.
- 2905 Needle
Needle, complete, round stem, flared and flattened head, sharp tip, oval eye, no special wear. Medium-sized mammal longbone.
L.71mm Th.6mm (FIG. 9.14)
RF 10180, Context 3758, Phase 4ii.
- IRON (FIG. 9.14). (68)
The eyes are round and have been punched through an elongated countersinking unless stated. The shanks have a rounded cross-section and are c.2–3mm thick unless stated.
- 2906 Needle, fragment, shank only, angular section, part of a long eye visible at one end. L.34mm, D.2.0mm.
RF 413, Context 400, Phase 2i–4ii.
- 2907 Needle, fragment, shank only, rounded rectangular section. L.28mm, D.1.7mm.
RF 436, Context 429, Phase 5a–5b.
- 2908 Needle, incomplete, shank and head, angular section, flattened head, circular eye 0.9mm set in groove 5mm. L.21mm, D.2.8mm.
RF 1643, Context 1454, Phase 6iii.
- 2909 Needle, incomplete, shank and head, rounded section, fine long eye set in long groove. L.19mm, D.2.1mm.
RF 1909, Context 1891, Phase 6ii–6iii.
- 2910 Needle, incomplete, shank and head, oval section, long rectangular eye 2.0×0.8 mm, ?Y-eyed. L.16mm, D.1.9mm.
RF 2535, Context 2492, Phase 5b.
- 2911 Needle, complete, rounded section, slightly flattened head, oval eye 1.4×1.0 mm set in groove 4mm long. L.40mm, D.2.2mm. (FIG. 9.14)
RF 3154, Context 3107, Phase 4ii.
- 2912 Needle, incomplete, point missing, rounded section, flattened head, oval eye 1.5×0.8 mm set in groove 7mm. L.37mm, D.2.2mm.
RF 3155, Context 3107, Phase 4ii.
- 2913 Needle, incomplete, shank and head, rounded square section flattened towards tip, long eye 3mm long. L.32mm, D. 3.0mm.
RF 4062, Context 3891, Phase 6ii.
- 2914 Needle, incomplete, head and shank, rounded section, flattened head, oval eye 1.6×1.2 mm set in groove. L.31mm, D.2.5mm (FIG. 9.14).
RF 4077, Context 3891, Phase 6ii.
- 2915 Oval eye. Tip missing. L.36mm. (FIG. 9.14).
RF 4107, Context 3107, Phase 4ii.
- 2916 Needle, fragment, shank with end of eye, rounded section. L.33mm, D.1.8mm.
RF 5315, Context 4647, Phase 2–3a.
- 2917 Needle, fragment, shank only, round section, flattened at head and end of groove for eye. L.22mm, D.2.7mm.
RF 5673, Context 3758, Phase 4ii.
- 2918 Head incomplete, shank bent. L.39mm
RF 5764, Context 3989, Phase 6iii.
- 2919 Needle, fragment, shank only, rounded section. L.30mm, D.2.3mm.
RF 6057, Context 6053, Phase 5b.
- 2920 Needle, complete, rounded section, head only slightly flattened, oval eye 1.0×2.0 mm in long groove. L.31mm, D.2.5mm.
RF 6107, Context 3758, Phase 4ii.
- 2921 Oval eye, shank incomplete. L.19mm
RF 6855, Context 6300, Phase 6iii–7.
- 2922 Needle, near-complete; tip missing. Rounded section, flattened at head, oval eye 1.8×1.0 mm, groove both side. L.36mm, D.2.1mm (FIG. 9.14).
RF 6904, Context 6300, Phase 6iii–7.
- 2923 Needle, fragment, shank only, heavily corroded. L.13mm, D.2.2mm.
RF 7635, Context 677, Phase 5a–5b.
- 2924 Needle, incomplete, shank and eye, rounded rectangular section, head not flattened, small round eye 0.8mm. L.16mm, D.1.4mm.
RF 7781, Context 4914, Phase 4i–4ii.
- 2925 Needle, incomplete, shank and head, rounded section, head barely flattened, oval eye 1.2×0.8 mm, ?Y-eyed. L.33mm, D.2.3mm.
RF 8301, Context 3989, Phase 6iii.
- 2926 Needle, complete, rounded section. L.25mm,
RF 8931, Unstratified.
- 2927 Needle, incomplete, shank and eye, near-round section, punched triangular eye 0.5mm wide in conical depression. L.18mm, D.1.6mm.
RF 8989, Context 3107, Phase 4ii.
- 2928 Needle, incomplete, shank and eye, rounded section, head slightly flattened, rectangular eye 1.5×0.8 mm. L.41mm, D.3.0mm.
RF 9049, Context 3107, Phase 4ii.
- 2929 Needle, fragment, head and part of shank, flat rounded rectangular section, punched round eye. L.12mm, D.3.8mm.
RF 9325, Context 3107, Phase 4ii.
- 2930 Needle, fragment, head and shank, rounded section, flattened at head, long eye 0.6×0.3 set in groove (Y?). L.13mm, D.1.3mm.
RF 10199, Context 953, Phase 2–3a.
- 2931 Needle, incomplete, shank and head, rounded section, head slightly flattened, long eye 1.2×0.5 set in groove. L.16mm, D.1.8mm.
RF 10584, Context 3417, Phase 5b–6i.
- 2932 Needle, incomplete, shank and head, rounded section, head slightly flattened, oval eye 1.1×0.5 mm set in groove (Y).

- L.27, D.1.8mm.
RF 11475, Context 11442, Phase 5a.
- 2933 Needle, incomplete, shank and head, rounded section, flattened head, irregular oval eye 1.0×0.5 set in groove (Y). L.40mm, D.2.1mm.
RF 11772, Context 12241, Phase 5a–6ii.
- 2934 Needle, complete, rounded section, head not flattened, circular eye 1.1mm diam. set in groove. L.47mm, D.3.4mm.
RF 12421, Context 10772, Phase 2–4ii.
- 2935 Shank curved. L.36mm
RF 12595, Unstratified.
- 2936 Needle, incomplete, shank and head, rounded section, head slightly flattened, long eye 2.0×0.6 mm set in groove. L.29mm, D.1.9mm.
RF 13023, Context 10772, Phase 2–4ii.
- 2937 Needle, incomplete, head and shank, rounded section, head not flattened, long eye 1.0 long. L.21mm, D.2.1mm.
RF 13273, Context 2562, Phase 5b.
- 2938 Head incomplete, tip missing. L.30mm
RF 13302, Unstratified.
- 2939 Head and shank incomplete. L.26mm
RF 13622, Unstratified.
- 2940 Head incomplete, point missing.
RF 13629, Context 12243, Phase 5a–6ii.
- 2941 Oval eye, point missing. L.28mm
RF 13656, Unstratified.
- 2942 Point missing. L.65mm
RF 13771, Unstratified.
- NEEDLE SHANKS (IRON)
- 2943 Needle, fragment, point only, rounded rectangular section. L.25mm.
RF 471, Context 458, Topsoil.
- 2944 Needle fragment. L.47mm
RF 897, Unstratified.
- 2945 Needle fragment. L.26mm
RF 1190, Context 1182, Phase 6iii.
- 2946 Needle, incomplete, shank and point, rounded section. L.28mm, D.1.9mm.
RF 1435, Context 1464, Phase 6iii.
- 2947 Needle fragment. L.26mm
RF 2122, Context 1672, Phase 5b–6i.
- 2948 Needle fragment. L.36mm
RF 2228, Context 767, Phase 1b–2.
- 2949 Needle, incomplete, shank and point, rounded rectangular section. L.38mm, D. 3.0mm.
RF 2502, Context 2491, Phase 5b.
- 2950 Needle, fragment, shank only, rounded section, beginning to flare for head. L.25mm, D. 2.7mm.
RF 2545, Context 2488, Phase 5b–6ii.
- 2951 Needle, incomplete, shank and point, angular section. L.23mm, D.2.8mm.
RF 2702, Context 2611, Phase 5a.
- 2952 Needle, fragment, point only, circular section. L.11mm.
RF 3289, Context 1727, Phase 5b.
- 2953 Needle, incomplete, head missing, angular section. L.41mm, D.3.6mm.
RF 3860, Context 3989, Phase 6iii.
- 2954 Needle, fragment, shank only, rounded section. L.20mm, D.2.0mm.
RF 5158, Context 5193, Phase 4ii–5a.
- 2955 Needle fragment. L.25mm.
RF 5471, Context 3758, Phase 4ii.
- 2956 Needle, incomplete, shank and point, rounded square section. L.32mm, D.1.4mm.
RF 5475, Context 4195, Phase 5b–6i.
- 2957 Needle, incomplete, shank and point, rounded triangular section. L.27mm, D.2.2mm.
RF 6326, Context 6325, Phase 4i.
- 2958 Needle, incomplete, point and part of head missing, round section. L.43mm, D.2.7mm.
RF 6418, Context 5617, Phase 3bv.
- 2959 Needle, incomplete, shank and point, rounded section. L.42mm, D.2.4mm.
RF 7069, Context 7055, Phase 6ii–6iii.
- 2960 Needle, fragment, shank only, rounded rectangular section. L.21mm, D.2.2mm.
RF 7074, Context 7054, Phase 6ii–6iii.
- 2961 Needle, fragment, shank only, rounded rectangular. L.23mm, D.2.1mm.
RF 7180, Context 7123, Phase 6iii.
- 2962 Needle, incomplete, shank and tip, triangular section, end of groove for eye. L.26mm, D.1.4mm.
RF 7895, Context 7891, Phase 5b.
- 2963 Needle fragment
RF 9001, Context 3107, Phase 4ii.
- 2964 Needle fragment. L.39mm.
RF 9119, Unstratified.
- 2965 Needle fragment. L.31mm.
RF 9216, Unstratified.
- 2966 Needle, incomplete, shank and point, round section, tip ?chamfered. L.41mm, D.2.1mm.
RF 9289, Context 2860, Phase 2i–4ii.
- 2967 Needle, incomplete, shank and point, rounded section, end of groove for eye. L.28mm, D.2.5mm.
RF 9310, Context 3107, Phase 4ii.
- 2968 Needle, fragment, shank only, broken lengthways, flattened towards one end. L.35mm.
RF 9522, Context 3107, Phase 4ii.
- 2969 Needle, fragment, point only, rounded section, very sharp. L.10mm.
RF 9575, Context 3891, Phase 6ii.
- 2970 Needle fragment. L.41mm.
RF 9646, Unstratified.
- 2971 Needle, incomplete, shank and point, rounded section. L.33mm, D.3.3mm.
RF 9799, Context 3989, Phase 6iii.
- 2972 Needle, fragment, shank only, rounded square section, flattened towards one end. L.31mm, D.3.5mm.
RF 9915, Context 6300, Phase 6iii–7.
- 2973 Needle, fragment, point only, rounded section. L.21mm.
RF 10196, Context 6300, Phase 6iii–7.
- 2974 Needle, fragment, shank and ?point, rounded section. L.25mm, D.1.3mm.
RF 10517, Context 1891, Phase 6ii–6iii.

- 2975 Needle, fragment, shank only, rectangular section. L.20mm, D.2.5mm.
RF 10539, Context 10394, Phase 6ii–6iii.
- 2976 Needle, fragment, tapering shank only, rounded section. L.25mm, D.1.9mm.
RF 12059, Context 1658, Phase 1a–2.
- 2977 Needle fragment. L.20mm.
RF 12514, Unstratified.
- 2978 Needle fragment. L.31mm.
RF 12676, Unstratified.
- 2979 Needle fragment. L.48mm.
RF 13121, Unstratified.
- 2980 Needle fragment. L.23mm.
RF 13143, Unstratified.
- 2981 Needle, fragment, shank and point, round section. L.25mm, D.1.4mm.
RF 13507, Context 6235, Phase 3bv.
- 2982 Needle, fragment, shank only, rounded section. L.15mm, D.2.1mm.
RF 13876, Context 11699, Phase 3bii.
- 2982a Needle, incomplete, shank and head, sub-square section, flattened head, circular eye 2.5mm, no groove. L.35mm, Th.8.0mm.
RF 2811 Context 51, Phase 4ii.

RUBBING STONES (FIG. 9.15)

(Lithological identifications by Geoff Gaunt)

- 2983 Rubber or burnisher.
Material: Chalk, white, fine-grained. Ferriby Chalk Formation of Chalk Group.
Form: Bar-shaped, elongated oval, tapered towards one end and rounded at both ends. Of rectangular section, with sharp right-angled corners. Bears a series of c.20 transverse parallel scratches at 0.5mm spacing along one edge. These are possibly from the original manufacture of the object as they are overlain by subsequent wear. The two lateral surfaces are highly polished through use. (FIG. 9.15).
Size: L.58mm, Max. W.11mm, Th.9mm.
RF 6267, Context 5503, Phase 4ii.
- 2984 ?Slick stone.
Material: Uncertain, too fine-grained for identification of constituents or texture, but probably highly compacted siltstone or very fine-grained impure sandstone (i.e. greywacke); probably Lower Palaeozoic from southern Scotland or Cumbria, and if so correlates with hone-petrography group IIB or C of Ellis (1969).
Form: Fragment from edge of rubbing stone, with a smooth curved corner. Highly and uniformly polished on unbroken surfaces.
Size: L.30mm, W.25mm, Th.13mm.
RF 3162, Context 2488, Phase 5b–6ii.
- 2985 Rubber or burnisher.
Material: Chalk, greyish-white, very fine-grained, Chalk Group. Partly tufa-coated.
Form: Bar-shaped, tapering towards one end and broken at the other. Sub-rectangular in section, edges rounded by wear. All surfaces except the broken end are smoothed. The tufa appears to have been deposited post-usage, possibly from immersion in water.
Size: L.650mm, W.26–32mm, Th.17mm. (FIG. 9.15)
RF 1999, Context 1995, Phase 6i–6ii.
- 2986 Rubber or burnisher.
Material: Limestone. Basal part of Scunthorpe Mudstones. Partly tufa-coated.
Form: Plano-convex fragment with a polished base bearing fine scratches. The upper part of the stone bears a sheen from handling. The curved edge bears ?rasp marks from manufacture. Tufa probably post-usage.
Size: L.46mm, W.45mm, Max. Th.21mm.
RF 5290, Context 3891, Phase 6ii.
- 2987 ?Slick stone.
Material: Uncertain, possibly a haematite-rich silty mudstone or a 'cherty ironstone' that has been heated.
Form: Sub-rectangular fragment with one highly polished flat surface, and traces of similar finish on an adjacent edge. All other edges broken. The flat surface bears fine diagonal striations. These are comparable to the scratches on a stone slick-stone from Coppergate (Walton Rogers 1997, fig. 828b).
Size: L.56mm, Max. W.34mm, Th.41mm.
RF 244, Unstratified.
- 2988 Rubber or burnisher.
Material: Chalk, white, fine-grained. Ferriby Chalk Formation of Chalk Group.
Form: Bar-shaped, with one end worn to a 45° chamfer and the other to a blunt off-centre point. Sub-rectangular in section. Smoothed and rounded by wear overall, with polish along edges and at end ?from handling. Areas of the edges show narrow facets from the manufacture of the bar. (FIG. 9.15).
Size: L.110mm, Max. W.31mm, Max. Th.22mm.
RF 342, Unstratified.

10 Ironworking

Patrick Ottaway, David Starley and Christopher Loveluck

The site produced copious evidence for ironworking from Periods 2 to 6, both in the form of industrial debris, and in various tools and objects associated with this type of metalworking. Significant quantities of slag and other debris were present from Period 3 onwards, with the greatest concentration of material being found in Period 6 contexts.

The artefacts included metalworking tools (e.g. tongs, punches, tanged punches, a mandrel and files), whilst a range of bars, plates and strips (including spirally twisted strips, and plated plates and strips) all typically attest the work of a blacksmith.

The manufacturing debris comprised about 180kg of various forms of ironworking slags, hearth bottoms, and pieces of roasted ore. Both smithing and smelting were clearly taking place on the site. This is discussed at greater length in Volume 4, Ch. 6.

10.1 Artefacts and objects relating to ironworking

by Patrick Ottaway

Bars, plates and strips (FIG. 10.1)

There are c.460 iron objects of no apparent specific function, which may be classified for purposes of discussion according to their form and size as bars, plates or strips (as in Ottaway 1992, 492–502). A plate is defined as a thin, flat piece of iron, with a width to thickness ratio greater than c.4:1, while a strip is defined as having a width to thickness ratio of c.4:1 or less. A bar has a product of width and thickness of over 300 square mm. Some of the objects which come under this heading may be iron straight from the smelting process, others incomplete forgings, and others again broken parts of finished objects which are no longer identifiable.

The objects classified as bars form a heterogeneous group of six items, of which two are stratified in Anglo-Saxon contexts, two in Period 7, and two are unstratified. The most interesting is no. 2990 (RF 957) from a phase 2–3a context. It is a large flat bar 212 × 70mm. One side is slightly convex, and the other is pinched out in the centre to form a rounded protrusion which is pierced (FIG. 10.1). No practical function can be suggested for this object, but it may be a newly forged piece of iron, pierced to allow transportation, suspended on a wire or cord. No. 2991 (RF 1906; Phase 6ii–iii) is, perhaps, more the sort of bar that would have been supplied to smiths; it is similar to, if slightly smaller than, one from York (Ottaway 1992, fig. 180, 1472).

Although the majority of the strips have a rectangular or rounded cross-section and are more or less straight, others are unusual or irregular in form. A group of about 25 (12 unstratified) share the possession of a looped end; some could be broken objects such as bell clappers, key stems or pot hook stems, or they could be incomplete forgings.

There are nine broken strips which are spirally twisted. It is not possible to say if they are broken objects, such as handles, or incomplete forgings.

In addition to those already mentioned, there are 21 objects classified as strips (seven unstratified) which form a heterogeneous group with little in common. The most puzzling item is no. 3050 (RF 11662; Phase 3b) which consists of a strip, 193mm long, of rounded cross-section, which tapers towards each end, although one is broken off (FIG. 10.1). About one-third of its length from the broken end, it is stepped in and pierced. A rivet holds a second strip, now fragmentary, in place. It is hard to see what this object's function could have been, especially as the second strip cannot pivot on its rivet. One can only assume this is an incomplete forging of some sort.

Metalworking tools

Tongs (FIG. 10.1; PL. 10.1)

No. 3063 (RF 12169; Phase 4ii) is a well-preserved pair

of metalworker's tongs, 162mm long (Fig. 10.1). Tongs were used for holding pieces of metal at all stages of the fabrication process. A distinctive feature of this pair is the keeper, a plate attached to the rebated end of one arm. It has four holes, in which the other arm could be set to hold it in tension, while the smith carried out sustained or repeated actions, and the tongs could be set down without the forging slipping from the jaws.

No. 3063 (RF 12169) is smaller than two large pairs of Anglo-Saxon smithing tongs from London (Wheeler 1927, 22, fig. 1, 15; Pritchard 1991, fig. 3.13, 21 and *MOLA23506*), but may be compared, in terms of size and form, with two pairs of Middle Anglo-Saxon date from Ramsbury, Wilts. (Evison 1980, 37, fig. 21, 7–8), and a pair from the 7th-century grave at Tattershall Thorpe, Lincs. (Hinton 1993, 154, fig. 9a; 2000, 24–6, fig. 15.5 and fig. 16, 5).

Punches (Fig. 10.1)

There are 12 punches or parts of punches (seven unstratified). They were used in metalworking for piercing, but also for chasing and other decorative work.

The largest punch (196mm long) is no. 3067 (RF 7852; unstratified), with a pointed tip which is a blacksmith's tool used for piercing hot metal. Nos 3068–9 (RFs 7864 and 8694; both unstratified) are similar, but slightly shorter tools; the latter has a wedge-shaped tip.

The head of a relatively sturdy punch, no. 3074 (RF 13506; Phase 5a–b), is missing, but it clearly had a neck above the shaft, which would allow it to be gripped by wire or tongs, when struck by a smith working with hot metal. No. 3075 (RF 13783; unstratified) is a complete, but smaller example of a punch with this feature, which can also be seen on a punch from an Anglo-Scandinavian context at 16–22 Coppergate, York (Ottaway 1992, 516–17, fig. 197, 2204).

Tanged punches (Fig. 10.1)

Members of a group of 15 similar objects (seven unstratified) have been classified as tanged punches. They have two tapering arms, one of which served as a tang, and the other as the working arm. The arms are usually, but not always, of equal length. These objects are similar to awls, but distinguished from them, as, although they vary a good deal in size, they are larger and more robust.

In some cases, both arms have a rectangular cross-section, although in others a distinction may be made between the tang with a rectangular cross-section, and the working arm, which has wholly, or in part, a rounded cross-section. On three punches, nos 3086 and 3089–90 (RF 10485, Phase 6ii–iii; RF 12625, unstratified; and RF 13674, phase 2–4ii), there is a shoulder between the arms to prevent the handle slipping down (Fig. 10.1).

The longest member of the group is no. 3082 (RF 5385; 158mm long; Fig. 10.1), and other relatively long examples are no. 3085 (RF 10139; 147mm) and no. 3081 (RF 5266;

133mm). At the other end of the scale, are no. 3080 (RF 3745; 72mm) and no. 3090 (RF 13674; 68mm). Variation in size may relate to function, but it is not clear on what basis. Although some tanged punches were probably used in metalworking, and no. 3082 (RF 5385; phase 2–3a) has copper alloy adhering to the tip, they could also have been used for working other materials.

Mandrel (Fig. 10.1)

No. 3091 (RF 10985; Phase 5b–6i) is an object, 115mm long, for which no ready parallel can be found, but it may be a hand-held mandrel used in metalworking for forming rings, collars, hoops and other curved objects. It consists of a cone-shaped element, with a tapering tang attached to the centre of its base, which was presumably set in a wooden handle (Fig. 10.1). Although there are no other Anglo-Saxon mandrels, no. 3091 (RF 10985) is similar to medieval hand-held mandrels from Dyserth Castle, Clwyd (Glenn 1915: National Museum of Wales accession nos: 15–248/14 and /21; I. H. Goodall 1980b).

Files (Fig. 10.1)

There are two small metalworking files: nos 3092–3 (RF 4877, Phase 6iii; and RF 12305, unstratified), which were both originally tanged, and parts of a horn handle survive on no. 3093 (RF 12305). Both files have fine teeth; no. 3092 (RF 4877) has 16 per 100mm, and lodged in them were traces of copper alloy, suggesting a function in the finishing of castings. It may be compared with small files of Anglo-Scandinavian date from Beverley (I. H. Goodall 1991, 135, fig. 102, 298) and York (Ottaway 1992, 522, fig. 200, 2246).

Catalogue

by Patrick Ottaway, with comments on mineral-preserved organic materials by Jaqui Watson, Penelope Walton Rogers and Glynis Edwards†

BARS (Fig. 10.1)

Rectangular cross-section unless stated.

- 2989 Tapers to a point (?punch). L.210, W.25, Th.20mm
RF 23, Context 1, Topsoil.
- 2990 One side slightly convex, other is pinched out in the centre to form a rounded protrusion, which is pierced. L.212, W.70, Th.4mm. (Fig. 10.1)
RF 957, Context 956, Phase 2–3a.
- 2991 L.59, W.30, Th.13mm
RF 1906, Context 1890, Phase 6ii–6iii.
- 2992 Obscured by corrosion, but one end appears flattened. Rounded cross-section? L.159, Th.25mm
RF 4724, Context 3334, Phase 4i–4ii.
- 2993 Broken at one end, and tapers at the other, triangular cross-section. L.57, W.23mm (modern?)
RF 8697, Unstratified.
- 2994 D-shaped cross-section. L.43, W.24, Th.15mm
RF 9892, Unstratified.

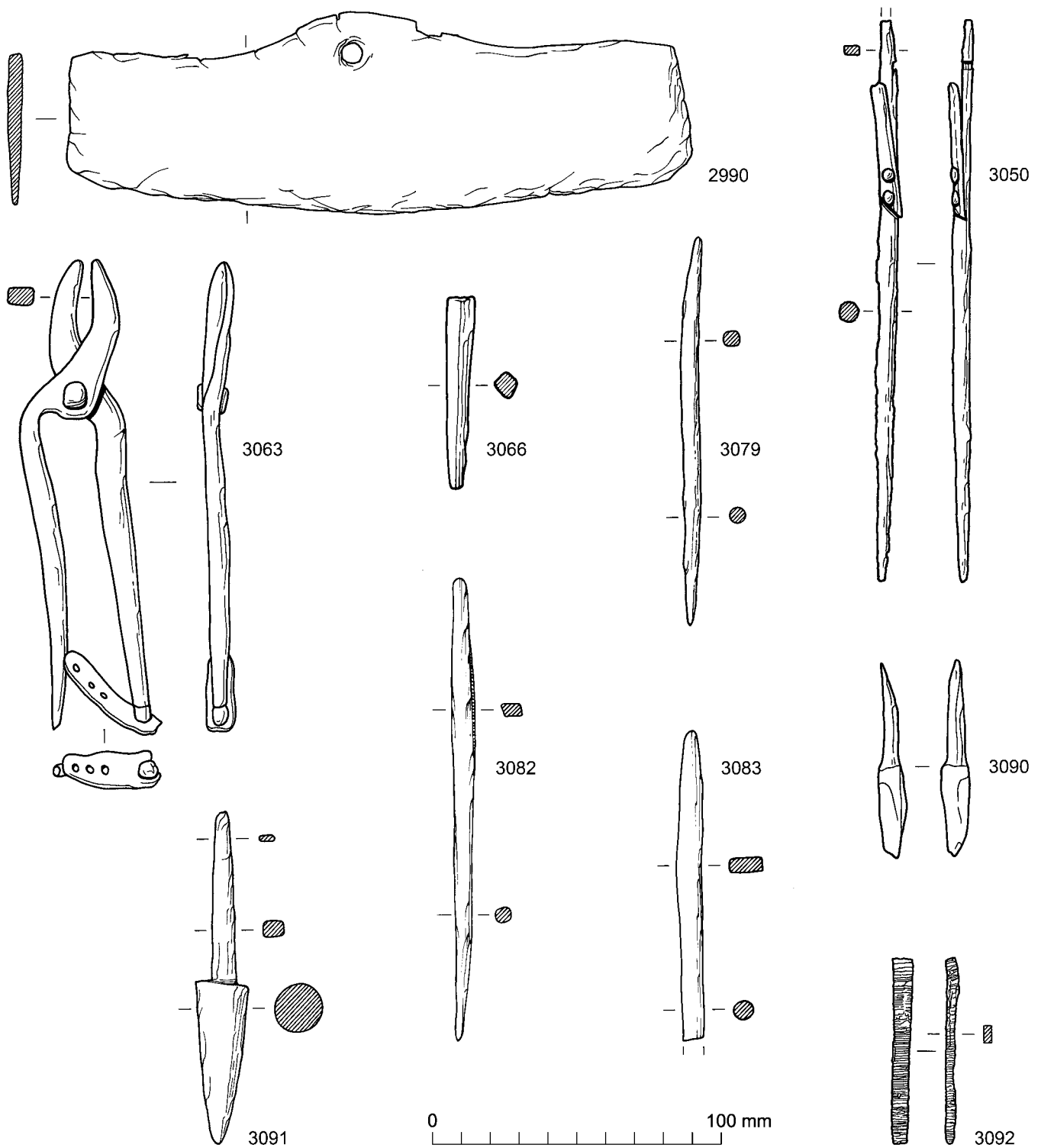


FIG. 10.1. Iron bar, strip, and various metalworking tools (tongs, a punch, tanged punches, a mandrel, and a file). Scale 1:2.

STRIPS WITH LOOPED ENDS

Rectangular cross-section, unless stated

- 2995 L.106mm
RF 1568, Unstratified.
- 2996 Curved. Rounded cross-section in the upper part; widened and flattened towards the base where it is broken. L.78, Th.3mm
RF 1778, Context 1728, Phase 5b.
- 2997 Slightly curved and tapers, tip missing. L.99, T.6mm
RF 2268, Context 72, Phase 5a.
- 2998 Widens below the loop, but little survives. L.24mm
RF 3416, Context 3417, Phase 5b–6i.
- 2999 L.48mm
RF 3786, Unstratified.
- 3000 Incomplete. Looped end has a tip curved back on itself. L.69mm
RF 4109, Unstratified.
- 3001 Rounded cross-section. L.59mm
RF 6814, Context 6797, Phase 6ii.
- 3002 Stub of strip with rolled end. Plated (tin-lead). L.22, W.13, Th.2mm
RF 7010, Context 6300, Phase 6iii–7.
- 3003 L.82, Th.7mm
RF 7883, Unstratified.
- 3004 Looped end only. L.20, W.19mm
RF 8263, Context 3989, Phase 6iii.
- 3005 Rounded cross-section (?bell clapper). L.60mm Also another strip curved over at one end, which does not join. L.80mm
RF 8481, Context 8461, Phase 6ii.
- 3006 Incomplete; rounded cross-section (?bell clapper). L.69, Th.11mm
RF 8785, Context 8644, Phase 3a.
- 3007 Looped end has tip curved back on itself. L.28, W.11mm
RF 9032, Unstratified.
- 3008 Tapers to wedge-shaped tip. L.51mm
RF 9194, Context 3989, Phase 6iii.
- 3009 Looped end only. L.17, W.19mm
RF 9451, Context 3107, Phase 4ii.
- 3010 L.48, Th.5mm
RF 9656, Unstratified.
- 3011 L.30, Th.3mm
RF 9659, Unstratified.
- 3012 Slightly curved and incomplete. L.101, Th.6mm
RF 11265, Context 10772, Phase 2–4ii.
- 3013 Incomplete. L.82, Th.13mm
RF 12536, Unstratified.
- 3014 L.23, Th.2mm
RF 12638, Unstratified.
- 3015 Tapers to a wedge-shaped tip. L.55, Th.5mm
RF 12684, Unstratified.
- 3016 Tapers, and is bent near tip, and broken. L.42, Th.5mm
RF 12687, Unstratified.
- 3017 Starts to curve at tip, and is broken. L.59, Th.5mm
RF 12942, Unstratified.

- 3018 Incomplete (?part of handle). L.140, Th.7mm
RF 12999, Unstratified.

- 3019 Plated (lead copper). L.43, Th.4mm
RF 13166, Context 10772, Phase 2–4ii.

- 3020 Slightly curved and tapers to a point. L.56, Th.5mm
RF 13331, Unstratified.

PLATES AND STRIPS WITH NON-FERROUS PLATING

Plating metal given, if analysed

Plated plates

- 3021 Plating is copper (from bell?). L.32, W.13mm
RF 12399, Context 10772, Phase 2–4ii.

- 3022 U-shaped, tip of one arm bent outwards, and widens before being broken. L.22, W.18mm
RF 12618, Unstratified.

- 3023 Triangular, but broken along the widest side. Sides nipped in just before the opposing tip. Plating is copper (from bell?). L.37, W.12mm
RF 12663, Unstratified.

Plated strips

- 3024 Broken at each end. One face has bevelled edges. L.61, W.6mm
RF 12716, Unstratified.

- 3025 Curved. L.19, W.3mm
RF 12894, Unstratified.

- 3026 Curved slightly. L.36, W.2mm
RF 13125, Unstratified.

- 3027 L.62, W.7mm
RF 13154, Unstratified.

- 3028 L.22, W.4mm
RF 13298, Unstratified.

- 3029 Curved slightly. Plating is copper-tin. (possible padlock bolt fragment). L.26mm
RF 13405, Unstratified.

- 3030 Curved. L.20, W.10mm
RF 13476, Context 10772, Phase 2–4ii.

PLATES AND STRIPS OF IRREGULAR AND UNUSUAL FORM

(FIG. 10.1)

Plates

- 3031 Curved and looped over at each end. L.61, W.15mm
RF 6783, Context 6300, Phase 6iii–7.

- 3032 Narrows towards one end, which is crank-shaped. It may also begin to curve over at wider end. Random organic material. L.163, W.24mm
RF 7853, Unstratified.

- 3033 Broken at each end. On one side, near one end, there are two small projections, and another is near the other end. Random organic material and charcoal. L.115, W.15mm
RF 9953, Context 6885, Phase 4ii.

- 3034 At one end, it starts to curve over, before it is cut straight; at the other end, it narrows and terminates in a short curved prong. L.111, Random organic material; large area of wood survives. W.24, Th.4mm
RF 11646, Context 11631, Phase 3biii.

- 3035 Curved slightly and narrows from one end to the other. Both ends are looped over, but in opposite directions. L.106, W.25mm
RF 12377, Unstratified.

- 3036 Thick and curves over at both ends, but at one it is also tapered. L.102, W.25, Th.8mm
RF 13603, Unstratified.

Strips (Fig. 10.1)

- 3037 Crank-shaped; longest part tapers to a point. L.106mm
RF 55, Context 1, Topsoil.
- 3038 L-shaped. One arm curved, the other widens sharply at the end. Arms: L.30, W.13mm
RF 1179, Context 1170, Phase 6iii.
- 3039 Curved and divides into two arms at one end, both of which are rolled over. L.38mm
RF 2532, Context 2491, Phase 5b.
- 3040 C-shaped cross-section. L.60, W.12mm
RF 3688, Context 3451, Phase 6iii.
- 3041 Tapers, and at the wider end widens out into a plate with convex sides, now incomplete. Random organic material on the wider part; possible handle traces on the tapered end (or tang), and also charcoal. L.93, W.24mm
RF 3805, Context 3758, Phase 4ii.
- 3042 L-shaped. Shorter arm triangular, larger has rounded cross-section. (? Bent stylus) Arms: L.70 and 34mm
RF 3838, Context 3989, Phase 6iii.
- 3043 Curved. One face divided into three parts length-wise: a central channel between raised elements, with D-shaped cross-sections. L.76, W.8mm
RF 4684, Context 4679, Phase 3bi–3bv.
- 3044 Consists of short tapering part, which at the thicker end is widened into a wedge-shaped element (a tang?). Small tool? L.34, W.7mm
RF 7947, Unstratified.
- 3045 Broken at one end, two short projections from one side. Plated (copper, lead, tin). L.23, W.12mm
RF 8935, Context 3989, Phase 6iii.
- 3046 Main part is an elongated asymmetrical lozenge shape. At one end curved over at 90°, and at other curved into a U-shape. L.63, W.10mm
RF 9238, Context 3107, Phase 4ii.
- 3047 Stub which is widened and flattened into an element, now incomplete, with convex sides. L.35mm
RF 9655, Unstratified.
- 3048 A small tapering projection at each end. L.64, W.9mm
RF 10435, Context 1892, Phase 6ii–6iii.
- 3049 Broken at one end, and at the other steps in, and then tapers to a point; this latter part has a rounded cross-section. At the step, the base of the tapered section is set in a small disc. L.83; disc: D.22mm
RF 11450, Context 11412, Phase 5a.
- 3050 It has a rounded cross-section and tapers towards each end, although one is broken off. About one-third of the way from the latter end, it is stepped in and pierced. A rivet holds a second strip, now incomplete, in place. L.193, Th.7mm. (Fig. 10.1)
RF 11662, Context 5983, Phase 3biv.
- 3051 Curved. One end has a rounded, spatulate tip, and the other is widened a little, before being broken. L.99, W.13, Th.6mm
RF 13330, Unstratified.
- 3052 One end broken, the other widens into a triangular plate

(stylus?). L.49, W.15mm
RF 13450, Unstratified.

- 3053 Tapers and at the thicker end is stepped in before being broken. Wood traces are probably random, and not enough to identify the species. L.34, Th.5mm
RF 13540, Context 12243, Phase 5a–6ii.

Spirally-twisted strips

- 3054 Has looped end. L.46mm
RF 184, Context 70, Phase 5a.
- 3055 L-shaped strip, with the longer arm spirally-twisted, and tapering to a point. Arms: L.73 and 34
RF 3231, Context 2718, Phase 5a–6ii.
- 3056 L-shaped, ends of both arms broken. Arms: L.78mm
RF 3424, Context 3421, Phase 5b–6.
- 3057 A tight loop at one end. L.108, Th.10mm
RF 3559, Context 3541, Phase 3bv.
- 3058 Curved over and broken at one end; curved over in opposite direction and flattened at other. L.83mm
RF 9257, Context 3107, Phase 4ii.
- 3059 Curved (originally a ring?). L.37mm
RF 9402, Unstratified.
- 3060 Curved and broken at both ends (?handle). L.61mm
RF 9881, Context 6300, Phase 6iii–7.
- 3061 L.79mm
RF 12682, Unstratified.
- 3062 Curved into a U-shaped loop at one end, after which it is broken. Other end has a wedge-shaped tip. L.145mm
RF 13392, Unstratified.

METALWORKING TOOLS

Tongs (Fig. 10.1; Pl. 10.1)

- 3063 Jaws slightly curved with rounded tips. The end of one arm is rebated, and attached to it is a keeper, in form of a plate which is pierced four times. L.162, W.36; keeper: L.40, W.13mm. (Fig. 10.1; Pl. 10.1)
RF 12169, Context 3758, Phase 4ii.

Punches (Fig. 10.1)

All have a rectangular cross-section, unless stated

- 3064 Lower part only, pointed tip. L.71, Th.17mm
RF 1228, Unstratified.
- 3065 Incomplete piece of shaft, pinched in centre. Random organic material, some fibrous. L.55, Th.15mm
RF 3006, Unstratified.
- 3066 Incomplete and tip is missing. Sub-rounded cross-section. Flattening-marks from a hammer on the upper half. L.67, Th.10mm. (Fig. 10.1)
RF 6509, Context 6489, Phase 6ii–6iii.
- 3067 At the base tapers to a point. L.196, W.21, Th.17mm
RF 7852, Unstratified.
- 3068 Pointed tip. L.144, W.15, Th.11mm
RF 7864, Unstratified.
- 3069 Sub-rounded cross-section, wedge tip. L.135, Th.10mm
RF 8694, Unstratified.
- 3070 ?Incomplete shaft, rounded cross-section. L.70, Th.13mm
RF 10438, Context 1892, Phase 6ii–6iii.
- 3071 Incomplete and broken at the tip. L.54, Th.13mm
RF 11312, Context 10772, Phase 2–4ii.

- 3072 Obscured by corrosion. Broken at the top. L.78, Th.15mm
RF 11520, Context 3758, Phase 4ii.
- 3073 Tapers at the base only. L.56, Th.9mm
RF 13435, Unstratified.
- 3074 Head missing, but a neck survives above the shaft. L.88, W.14, Th.9mm
RF 13506, Context 461, Phase 5a–5b.
- 3075 Shaft expands in the centre, tip pointed, head flared. L.57, Th.7mm
RF 13783, Unstratified.

Tanged punches (Fig. 10.1)

Tanged punches consist of two arms, both of which taper towards the tips. The arms are usually of equal length, but where the arms are of unequal length, it is assumed that the tang is the shorter arm, and the working arm the longer. In addition, where one arm has a rectangular cross-section, and the other a rounded cross-section, it is assumed that the former is the tang and the latter the working arm.

- 3076 Working arm has a rounded cross-section near the tip. Compacted corrosion at one end could be the remains of an organic handle, but it is not well enough preserved to identify the material. Also some random organic material. L.97, W.9, Th.8mm
RF 830, Unstratified.
- 3077 One arm tip missing. L.80, W.10, Th.10mm
RF 2521, Context 2179, Phase 6iii.
- 3078 Short tang which is incomplete; working arm tapers to a point. L.130, W.8mm
RF 3020, Unstratified.
- 3079 Working arm has a rounded cross-section. L.134, W.7, Th.7mm. (Fig. 10.1)
RF 3513, Context 3479, Phase 3bi–3bv.
- 3080 Working arm has a rounded cross-section. L.72, W.8, Th.4mm
RF 3745, Unstratified.
- 3081 Cross-section rounded near the tip of the working arm. L.133, W.9, Th.7mm
RF 5266, Context 5252, Phase 4ii–5a.
- 3082 Tang has a wedge-shaped tip. Traces of a possible wooden handle are present, but not enough to identify the species; also some random organic material. Working arm has a rounded cross-section, copper alloy on the tip. L.158, W.8, Th.5mm. (Fig. 10.1)
RF 5385, Context 5314, Phase 2–3a.
- 3083 Working arm has a rounded cross-section, tip missing. L.106, W.11, Th.11mm. (Fig. 10.1)
RF 7715, Context 6472, Phase 5b–6i.
- 3084 Working arm has a rounded cross-section. Area of ZZ textile, weave not clear, and very damaged, on tang; also area of random organic material. L.141, W.15, Th.11mm
RF 7859, Unstratified.
- 3085 Working arm has a rounded cross-section. L.147, W.12, Th.12mm
RF 10139, Context 6235, Phase 3bv.
- 3086 Working arm incomplete, shoulder between the arms. Random organic material present. L.105, W.11, Th.9mm
RF 10485, Context 1838, Phase 6ii–6iii.

- 3087 Working arm has rounded cross-section at the tip. L.85, W.8, Th.8mm
RF 11775, Unstratified.
- 3088 Working arm has rounded cross-section at the tip. L.89, W.8, Th.8mm
RF 11776, Unstratified.
- 3089 Tang has wedge-shaped tip, and is longer than the working arm. There is a slight shoulder between the arms. L.68, W.8, Th.8mm
RF 12625, Unstratified.
- 3090 There is a shoulder between the arms. L.68, W.10, Th.9mm. (Fig. 10.1)
RF 13674, Context 10772, Phase 2–4ii.

Mandrel (Fig. 10.1)

- 3091 Consists of a cone-shaped element, with a tapering tang attached to the centre of its base. L.115, Th. of cone 19mm. (Fig. 10.1)
RF 10985, Context 6472, Phase 5b–6i.

Files (Fig. 10.1)

- 3092 Tang missing. Blade of rectangular cross-section. Teeth on all faces – c.16 per cm. Traces of copper detected in teeth. L.64, W.6mm. (Fig. 10.1)
RF 4877, Context 2024, Phase 6iii.
- 3093 Flattened and narrowed towards one end, broken at the other, where there are remains of a horn handle, overlain at one point by random organic material. Fine teeth on one (?) face and both edges. L.62, W.6, Th.3mm
RF 12305, Unstratified.

10.2 Ironworking debris and manufacturing processes

by David Starley and Christopher Loveluck

A range of methods was used to investigate material remains, and interpret the significance, of ironworking activities at Flixborough. Firstly, all slag and other metallurgical debris were examined piece by piece. Much slag is visually diagnostic, and it was possible to distinguish different processes, particularly iron smelting (i.e. the initial production of iron from the ore); from smithing (when the iron was worked either from bloom to bar, or from bar to artefact). During this examination, a small range of material was selected for physico-chemical analysis. These samples included possible ores to test their viability as a source of iron, and a range of slags. As well as large lumps of slag, another characteristic waste product of iron smithing is hammerscale. This comprises small flakes and spheres of iron oxide and iron silicate, which are scattered around the anvil as the iron is worked at heat. These are too small to be seen during excavation, but are regarded as important evidence of the exact location of smithing activity, if the actual ironworking activity surface is excavated (Mills and McDonnell 1982). At Flixborough, however, the ironworking debris was recovered as re-deposited components of dumps and ditch fills, which had been imported, and discarded amongst refuse within the excavated area. Nevertheless, while ironworking

	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
Debris type						
Smithing						
Smithing hearth bottoms		160	4270	1470	4820	7425
Hammerscale	present	present	present	present	present	present
Smelting						
Tap slag			200	2170	420	3065
Furnace bottoms				15480		2220
Furnace slag				1440	260	5190
Slag blocks						7940
Roasted ore	15		110	9	60	301
Possible ore						180

FIG. 10.2. Summary of diagnostic iron smithing and smelting debris from Flixborough, by weight (in grammes) and period.

was not undertaken in the excavated zone, the abundant evidence shows that ironworking was an important and constant activity undertaken for the support of daily life on the settlement.

Visual examination of the slags and metalworking debris

About 180kg of metalworking debris were recovered from the Flixborough excavations. It was assumed that this comprised 100 percent of all debris identified on the site. With the exception of 8kg recovered as unstratified finds, all the material was examined visually to identify diagnostic material. A quantified summary of diagnostic smithing and smelting debris by weight and period is presented in FIG. 10.2 above.

Evidence for the smithing, i.e. hot-working of iron, comes in two main forms: bulk slags and micro-slugs. Of the bulk slags produced during smithing, only the smithing hearth bottoms are unlikely to be confused with the waste products of smelting, and are, therefore, considered to be diagnostic of smithing. A total of 148 smithing hearth bottoms were identified in the material from Flixborough. Although the hearth bottoms show a very wide range of sizes, the large number of very small hearth bottoms has given rise to a mean weight and dimensions which are untypically small for Anglo-Saxon smithing debris (see FIG. 10.3 above).

In addition to bulk slags, iron smithing also produces micro-slugs of two types, namely flake, and spheroidal hammerscales. Flake hammerscale consists of fish-scale-like fragments of the oxide/silicate skin of the iron dislodged during working. Spheroidal hammerscale results from the solidification of small droplets of liquid slag expelled during working, particularly when two components are being welded together, or when a slag-rich bloom of iron is first worked into a billet or bar. Because the bulk slags from Flixborough had been cleaned before

N = 148	Range	Mean	δ
Weight (g)	20–1056	166	194
Length (mm)	35–180	74	25
Width (mm)	30–130	56	19
Depth (mm)	10–80	27	12

FIG. 10.3. Dimensions of smithing hearth bottoms.

bagging, there was generally no opportunity to examine attached soil for hammerscale, the one exception being the general finds from the pit fill 221 (phase 2–4ii), which contained a small amount of flake hammerscale. During the post-excavation analysis stage of research, a basic control exercise, examining the presence of hammerscale, in general, within deposits, was also undertaken. A magnet was run over all the soil samples and processed ‘flot’ samples from the excavation, and hammerscale was found to be present in every deposit sampled from the site (see excavation archive). Care was taken to clean the magnet after running it over each sample, to avoid contamination, and residual presence of hammerscale.

Iron smelting was responsible for an unusually wide range of diagnostic debris: tap slag, furnace bottoms, furnace slag and slag blocks. On many sites, the presence of iron-rich stone, labelled as possible ore, might be regarded as further proof of iron smelting. Because of the proximity of Flixborough to the Frodingham ironstone deposits, however, the presence of this material may well be incidental. Traditional ‘bloomery’ iron smelting methods, as used in the Anglo-Saxon period, require much richer ores than the blast furnaces, which have used the Frodingham ironstone as an ore in recent centuries.

The fragments of dense, fayalitic (iron silicate) tap slag show a characteristic ‘ropy’, flowed, morphology on their upper surface, and low vesicularity at their fracture

surfaces. These are typical waste products of the tapped bloomery furnace, from which the molten slag was run out, rather than collecting within its interior. A less frequent but weightier class of smelting slags were the slag blocks. The two complete examples weighed 3.7kg and 7kg. It seems probable that these derived from some form of slag pit furnace, where large masses of slag collect in a pit below the furnace. However, it is possible, although, without a surviving furnace, unprovable, that the slag blocks were the contents of a pit(s) outside the furnace, into which the slag had been tapped. Furnace bottoms are formed when some slag solidified in the base of the furnace, when the furnace has no underlying pit. Further support for tapping comes from the protrusions of slag from the side of some furnace bottoms, where the slag had solidified in the narrow tapping channel. Similar to the furnace bottoms, were furnace slags, which were also large dense masses, but showed impressions of the side walls of the furnace, rather than the bottom.

The tendency for some of the large masses of slag to fragment on cooling (and on deposit movement, and re-deposition, in the case of the Flixborough material), gave rise to an undiagnostic category termed 'dense ironworking slags'. It is thought that these mostly derive from one of the four categories of smelting slag (see FIG. 10.2). However, as large-scale smithing can also give rise to substantial, low-porosity slag, it is not possible to be certain of the origin of the individual fragments. Similarly, material identified as 'fayalitic runs' most probably relates to smelting, being either small fragments of tap slag, or small quantities of slag that had trickled down within a furnace, and solidified, before being incorporated into the more distinctive forms. Care must be taken, however, in associating this material with smelting, because experimental work has shown that small slag runs are occasionally formed in smithing hearths.

The largest category of material found at Flixborough was that recorded as general undiagnostic ironworking slags. Irregularly shaped slags are produced by both iron smelting and iron smithing, and it was not possible to distinguish from which process they were derived. Detailed presentation of the non-diagnostic slags can be seen in the site archive and the ADS archive. A single fragment of coal was also recovered from deposit 555, from Period 6, but given the common occurrence of charcoal fragments and flecks within the archaeological deposits at Flixborough, charcoal was undoubtedly the main fuel used on the site.

Distribution of metalworking debris by period within the occupation sequence

by Chris Loveluck

Period 1 of the occupation sequence was entirely without any diagnostic ironworking debris, although 60g of undiagnostic slags were recovered. Only 160g of diagnostic smithing evidence, in the form of a hearth bottom, was found in Period 2, together with further undiagnostic slag.

The absence of larger quantities and more diagnostic debris probably relates to the character of deposits encountered early in the occupation sequence, being internal floor or external yard deposits, rather than large refuse dumps. The small quantities from the 7th-century phases are limited, to the extent that they were certainly imported from another part of the settlement, and their high degree of fragmentation reflects considerable re-deposition, prior to finally coming to rest. From Period 3, especially phases 3bii to 3bv, significant amounts of iron-smithing waste were discarded in the excavated area (Loveluck and Atkinson, Volume 1, Ch. 4). The same was also true in Period 4, Phase 4ii, and Period 5, Phase 5a–b, with smithing debris discarded in the central dumps, and especially the ditch in 4ii, and again in the central dumps in Phase 5a (Loveluck and Atkinson, Volume 1, Chs 5 and 6). Particularly notable in Phase 4ii is the appearance of significant smelting debris for the first time, within the fills of ditch 50. This reflects the imported nature of the vast majority of material in this ditch fill, which originated from another part of the settlement (see Loveluck and Atkinson, Volume 1, Ch. 5). From the quantification, it would be hard to suggest smithing within the excavated area, except perhaps on a very small scale. The presence of the debris mirrors the occurrence of large refuse dumps, rather than smithing activity areas. Furthermore, the smelting evidence from ditch 50 also reflects smelting beyond, and not within, the excavated area.

Period 6 saw a clear rise in ironworking, indicated by material which was demonstrably contemporary within refuse deposits of phases 6ii and 6iii, especially dumps 3891 and 6300 (Loveluck and Atkinson, Volume 1, Ch. 7). Not only were the largest quantities of smithing and smelting debris found in these 10th-century deposits, the range of types of debris was also the widest, and the individual fragment sizes were again the largest – suggesting smelting and smithing much closer to the excavated area in the 10th century, than in preceding periods, since a greater level of fragmentation would have been expected, if the material had been extensively redeposited. Yet, despite the rise in the quantity of ironworking debris in Period 6, the remains are still likely to reflect a level of ironworking to support the needs of the inhabitants of the settlement alone (Loveluck, Volume 4, Ch. 6). At no point in the occupation sequence does the quantity of ironworking debris and tools suggest any significant production for exchange.

Physico-chemical analysis of debris

by David Starley

A range of pieces of slag was selected and analysed. This was intended to clarify the nature of the debris, and to chemically characterise it, so as to provide data against which future assemblages could be compared. A high priority was given to looking at the 'possible ores', to determine whether they were sufficiently pure to have been a viable source of iron for Anglo-Saxon iron-

smelting technology, rather than stray pieces of the local Frodingham Ironstone (Gaunt, Volume 1, Ch. 1 and FIG. 1.13). As far as possible, deposits containing both ore and slag were selected. Analysis was undertaken on a LEO 440i scanning electron microscope (SEM), fitted with Oxford ISIS energy-dispersive X-ray analyser (EDXA), with thin window. This was able to detect all elements above boron in the periodic table. The advantages of SEM-based EDX analysis lie in the ability of the technique to undertake analysis at high magnifications on selected small areas. The technique detects elements, and not compounds. Minimum detectable levels vary from element to element: for oxides of sodium (Na), magnesium (Mg), aluminium (Al), silicon (Si), phosphorous (P), sulphur (S), potassium (K), calcium (Ca) and titanium (Ti), these would be approximately 0.1%; for manganese (Mn), about 0.15%, and cobalt (Co), nickel (Ni) and copper (Cu), between 0.15 and 0.25%.

Fourteen samples were selected from a range of contexts. Sample preparation involved standard metallurgical procedures. The pieces were sliced with a diamond saw, ground flat using abrasive papers, and then polished with one micron-grade diamond paste. The mean composition of each sample is presented in FIG. 10.4 on p. 326).

Within the samples a limited number of ironworking phases were visually identified:

Wüstite (FeO), generally present as dendrites (white).

Fayalite ($2\text{FeO} \cdot \text{SiO}_2$), often as laths (mid grey).

Glassy matrix (dark grey-black).

Haematite (Fe_2O_3), (light grey).

Magnetite (Fe_3O_4), generally cuboidal (light grey – distinguishable from haematite at maximum contrast).

Metallic iron particles (white).

Quartz (SiO_2) grains, often in a partly dissolved condition (sketchy, sub-round particles).

Proportions of each phase were estimated by volume.

Sample 980008: Tap slag, Context 51 (ditch fill), Phase 4ii.

The cut sample was dense, and of dark grey appearance. It was moderately attracted to a bar magnet, and gave a scratchy grey streak on an unglazed porcelain. SEM examination showed about 1% porosity, and the solid phases comprised 60% fayalite laths, 20% wüstite dendrites, with the remaining matrix being a glassy phase, containing silicates of aluminium, calcium, potassium and a significantly high (7–10%) phosphorous pentoxide content.

Sample 980009: Roasted ore, Context 51 (ditch fill), Phase 4ii.

The central band of this sample was more compact than the powdery outsides. It was moderately magnetic, and gave a blood-red streak. At high magnification, the structure was seen to comprise angular lath-like grains. Microanalysis showed these to be predominantly haematite. The main

contaminant was small grains of quartz, which contributed to a silica content of 16.7% weight, thus showing this to be a viable, if not particularly rich ore.

Sample 980010: Tap slag, Context 221 (pit fill), phase 2–4ii.

A dense, low-porosity slag, which was found to be weakly magnetic, and gave a grey streak. The sample contained about 2% porosity, and 1% iron prills, the bulk comprising the three common phases – fayalite laths (60%), wüstite dendrites (25%) and glassy matrix (15%).

Sample 980011: Dense slag, Context 221 (pit fill), phase 2–4ii.

Another dense, low-porosity slag, fractured and blocky in appearance. It was strongly attracted to a magnet and gave a grey streak. Occasional pores were unusual in being lined with fine crystalline growths. The slag contained wüstite dendrites, and cuboidal grains of magnetite, in similar quantities (totalling 60%). At high magnification, the matrix between these was resolved into ferny, fayalite growths, and glassy phase.

Sample 980012: Furnace slag, Context 221 (pit fill), phase 2–4ii.

A dense slag with occasional pores, weakly magnetic, and giving a grey streak. Very occasional (less than 1%) metallic iron prills were identified. The main constituents were fayalite laths (45%), wüstite dendrites (20%), and a large proportion of glassy phase (35%).

Sample 980013: Roasted ore, Context 223 (ditch fill), Phase 4ii.

This material had clearly been thoroughly heated, was hard but friable, strongly attracted to a magnet, and gave a red-brown streak. Layers of different density became visible when the sample was polished. In the SEM, only very occasional (less than 0.5%) inclusions of quartz were identified, the remainder of the sample being haematite.

Sample 980014: Smithing hearth bottom, Context 223 (ditch fill), Phase 4ii.

A highly porous slag, moderately magnetic, and giving a grey streak. Very occasional iron prills, and a single copper prill, were identified by microanalysis. Most of the structure (75%) comprised wüstite dendrites of very globular appearance. The remaining structure was fayalite (20%), with occasional (5%) pockets of glassy phase.

Sample 980015: Fayalitic run slag, Context 223 (ditch fill), Phase 4ii.

This dense and slightly porous (5%) slag was only weakly magnetic, and gave a scratchy grey streak on the unglazed porcelain tile. SEM examination and microanalysis showed an unusual structure, lacking wüstite or magnetite, but being made up of 70% fayalite laths in a glassy matrix.

Sample No.	Context No.	Debris type	Na ₂ O	Mg	Al ₂ O ₃	SiO ₂	P ₂ O ₅	S	Cl	K ₂ O	CaO	TiO ₂	MnO	FeO	Fe ₂ O ₃	FeO
980008	51	Tap slag		0.3	3.7	21.1	2.2			0.4	2.4		2.1	67.6		
980009	51	Roasted ore	0.6	0.3	6.1	16.7	0.3			1.2	0.8	0.3			73.7	
980010	221	Tap slag	1.0	0.3	5.9	18.6	1.1			0.7	1.9	0.1	0.2	70.0		
980011	221	Dense slag	0.9	0.6	4.7	8.6	0.8			0.3	1.9	0.2		82.0		
980012	221	Furnace slag	0.9	0.8	7.9	21.0	1.1			1.2	2.7	0.2	0.1	64.1		
980013	223	Roasted ore			0.9	2.1	0.3			0.1	0.7		1.5		94.4	
980014	223	Smithing hearth bottom	0.5	0.3	1.3	9.7	1.2			0.5	1.7		0.2	84.5		
980015	223	Fayalitic run slag	0.7	0.1	5.1	30.0	1.2			1.4	3.1	0.1	0.3	57.9		
980016	223	Vitrified hearth lining (outer)	0.9	1.1	4.1	61.0	3.0	2.4		5.4	8.0	0.4	0.3	13.5		
980016	223	Vitrified hearth lining (inner)	1.2	0.5	15.0	67.5	1.5			3.2	2.1	1.1		6.8		
980017	1889	Roasted ore	1.0	0.2	1.9	14.0	0.4			0.5	0.6	0.1	0.3		81.0	
980018	3891	Furnace bottom		0.2	3.4	27.8	1.3	0.2		0.7	1.9		1.4	63.2		
980019	3891	Smithing hearth bottom	0.8	1.7	2.3	22.3	1.1	0.1		2.1	6.7	0.2	0.2	62.6		
980020	5139	Possible ore	0.7	0.5	2.6	5.4	0.7	0.1		0.1	0.3	0.1	0.2		89.4	
980021	6472	Smithing hearth bottom	0.6	0.3	0.8	26.2	0.3	0.5		0.3	0.7	0.1	0.1	70.1		

Fig. 10.4. Mean analyses of ores and slags.

Sample 980016: Vitrified hearth lining, Context 223 (ditch fill), Phase 4ii.

The inner surface of this specimen was orange (oxidised) fired clay, whilst the outer was bloated, glassy, and porous, with a yellow crust. The sample was weakly magnetic, and gave no coloured streak. Area analysis of the clay showed it to be low in iron oxide (6%), but rich in alumina (15%), titanium dioxide (1.1%), and silica (67%). Enhancement of lime and potash in the outer regions was undoubtedly due to high temperature reaction with fuel ash, and the silica content was slightly lowered by this. At higher magnification, the clay was found to contain small quantities of fayalite, and small quartz particles were visible throughout the sample.

Sample 980017: Roasted ore, Context 1889 (dark soil), Phase 6iii.

An unusually large (120g) fragment of roasted ore with a layered structure. Weakly magnetic, with a blood-red streak. Microanalysis showed the sample to be largely haematite, but with about 10% inclusions. Some of the latter were quartz with some iron contamination, whilst others contained significant quantities of alumina (15.5% wt) and potash (26.8% wt), suggesting a potassium feldspar.

Sample 980018: Furnace bottom, Context 3891 (dump), Phase 6ii.

A dense, non-porous slag, very weakly magnetic, with a scratchy grey streak. SEM examination and microanalysis identified the three common components: fayalite laths (70%), wüstite dendrites (5%), and glassy phase (25%).

Sample 980019: Smithing hearth bottom, Context 3891 (dump), Phase 6ii.

A heterogeneous, porous (5%) slag, strongly magnetic, and giving a grey streak. The microstructure was also very variable, showing a range of coarse and fine structures. White dendrites of iron oxide comprised 65% of the sample. When viewed at high magnification, the back-scattered image showed individual dendrites to be composed of two phases, identified as wüstite and magnetite. The remaining structure comprised fayalite laths (20%), and a glassy matrix (15%), occasional metallic iron prills, and a single metallic copper particle. The last may indicate that copper or copper-alloy was also worked in the hearth.

Sample 980020: RF 9153 Possible ore, Context 5139 (occupation deposit), Phase 5b–6i.

The iron-rich stone with banded structure gave no response to a bar magnet, and only a scratchy orange streak on a porcelain tile. Analytical results gave totals significantly below 100%, suggesting that light elements were also present. Most of the iron is present as iron hydroxide, or hydrated iron oxides. Little (5%) silica was present, and although the microstructure showed layered nodules in an homogeneous matrix, there was no significant compositional difference between the two. Very occasional

zircon grains were identified, but no analyses were recorded.

Sample 980021: Smithing hearth bottom, Context 6472 (dump), Phase 5b.

A dense specimen, containing many voids. The sample was moderately magnetic, and gave a grey/orange streak. Examination on the SEM showed the structure to be largely (90%) fayalite, but a thin envelope of wüstite surrounded the voids. The matrix appeared to contain two finely divided phases. Although too small to be individually resolved, their appearance and overall composition suggested a mixture of fayalite and glassy material. Occasional iron prills were also noted.

Overview of analysis results

The slags analysed derived from the smelting of iron and the smithing of iron. Two of the smithing slags, samples 980014 and 980019, contained very occasional prills of copper. The latter may indicate occasional use of a smith's hearth for non-ferrous metalworking, perhaps for composite artefacts such as non-ferrous inlays on iron objects.

The most frequent slag microstructures from both smithing and smelting slags comprised wüstite dendrites, and fayalite laths, in a matrix of glassy phase. Analytically, the bulk composition of the three combined *phases* is close to fayalite.

The scanning electron microscope is not an ideal tool for analysing ores. Nevertheless, using back-scattered electron-imaging to check the homogeneity of individual grains within the roasted ores, the oxygen to iron ratios were sufficiently distinct to allow the stoichiometry of the iron oxides to be deduced, i.e. to differentiate the wüstite, haematite and magnetite composition of each sample. Thus, the roasted ores were all shown to be of haematite. The composition of the unroasted 'possible ore' was less easily determined. The ore may be a form of limonite, either an hydrated iron oxide, or an iron hydroxide.

In terms of viability of the ore, the proportion of gangue (in this case silica is the main impurity mineral) that has to be removed is as crucial as the iron content. In the traditional 'self-fluxing' bloomery furnace, much of the iron will combine with the silica to form the slag. Silica contents in the three roasted ores, and the 'possible ore', were very variable. Calculating the best and worst cases, and assuming a slag of typical composition (such as tap slag, sample 980008) is produced, then 100kg of the poorest ore (980009) would produce only 10kg of iron, whilst the richest ore (980013) would produce 61kg of iron. The amounts of slag for the two examples would be in the order of 80kg and 10kg respectively. The figures for the unroasted 'possible ore' are also impressive, suggesting that 100kg of ore (weighed after roasting to oxides) would yield 56kg of iron, and produce 26kg of slag as a waste product. All the ores analysed can, therefore, be considered as viable for iron production. Two of the roasted

ore samples, however, 980009 and 980017, would have provided a far lower yield, than roasted ore 980013, and possible ore 980020.

Having shown that the ores were viable, it was hoped that comparison of compositions of ore and slag would show similarities, which would add further weight to the argument that these were in fact the ores used. During smelting, certain trace elements from the ore, such as cobalt, copper and nickel, tend to be reduced into the metal, whilst other minor elements pass into the slag. Two exceptions are manganese, and phosphorous, which partition between the two, depending on furnace conditions (although in the bloomery furnace, most would be expected to pass into the slag). The Flixborough results are notable,

in their lack of consistency for minor elements between the ores, between the slags, and between ores and slags. This may simply be due to the heterogeneity of the original ore source, for example manganese oxide contents vary from below detection limits, to above 1.5%. It may be worth considering, however, that whether deliberately, or fortuitously, raw materials of different compositions were being smelted, possibly using different furnace types, which could have led to a wide range of alloy types. The metallographic analysis of selected knife blades recovered from the site (see Starley, Ch. 5, this volume) showed that the makers of those knives made a deliberate selection of alloy types, allowing the manufacture of high quality composite artefacts.

11 Non-Ferrous Metalworking

Lisa M. Wastling, Nicola Rogers and Catherine Mortimer

The site produced copious evidence for metalworking in both copper alloys and in lead. The former was attested throughout the life of the settlement (Periods 1–6), whereas most of the stratified evidence for lead-working came from Periods 4 and 6.

Craft-working in copper alloys was attested by numerous finds of moulds, crucibles, associated fired-clay objects, copper alloy casting debris, offcuts, and fragments of bars, sheet and strips.

The lead-working evidence comprised two lead ingots, and a collection of small fragments of lead offcuts, melt and scrap.

All of this evidence for craft-working is discussed more extensively in Volume 4, Ch. 6.

11.1 The crucible and mould fragments

by Lisa M. Wastling

Introduction

A total of 41 moulds, four crucible fragments, and four objects possibly related to metalworking, were found during the excavation. Most were recognised during the analysis phase, and were extracted from other artefact types such as the daub and the pottery. Though the amount of material is not large, it nevertheless enhances the evidence for non-ferrous metalworking during the Middle to Late Saxon period.

The moulds (FIG. 11.1)

Due to the friable nature of the fabric and possibly the process of breaking open clay moulds to retrieve the cast object, all the moulds are incomplete. The high level of fragmentation has precluded the identification of diagnostic features on many of the fragments; unfortunately, the form of the objects being cast therefore remains unknown.

Two clay mould techniques could be used to cast small

non-ferrous objects. The first is the lost wax or *cire perdue* method. During this technique, the object was modelled in wax, around which the clay mould was formed, initially as a slip to preserve the fine detail and subsequently in standard mould clay. The mould was then heated, resulting in both the firing of the fabric and the melting of the wax model. This created the void into which the molten metal was poured.

The second method is that involving piece-moulds. A template/pattern of the object to be cast was made in bone, wood, lead or wax, and the clay mould, consisting of two or more pieces, was constructed around the template; conversely, an existing object may have been used. The mould was constructed one section at a time, each section being added as the previous air-dried; also adding a funnel-shaped former to mould the sprue-cup. The separate pieces were then removed. Knife-marks, or lugs and corresponding depressions, were used to register the separate pieces accurately, when re-assembling. Gaps between the mould pieces were often sealed with clay luting.

The piece-mould technique was probably the prevalent casting method of the first millennium AD (Lamm 1977, 107). Two possible reasons for this are that the model can be reused many times without loss of detail, and the length of time used to create another clay mould for each new object is short, in comparison with the time used to manufacture an intricately decorated model. If the lost wax method were used, then the decoration would need to be carved anew for each casting, needing more time and effort. The piece-moulds themselves were, however, rarely re-used (Craddock 1989, 171).

The lost wax process appears to have been more suitable for the casting of complex three-dimensional, and larger objects, such as church bells, which were probably introduced in the 6th century AD (Blair and Blair 1991, 90).

The four mould fragments from Flixborough which display diagnostic characteristics all appear to be piece-moulds. These show flat ‘mating’ surfaces, one of which

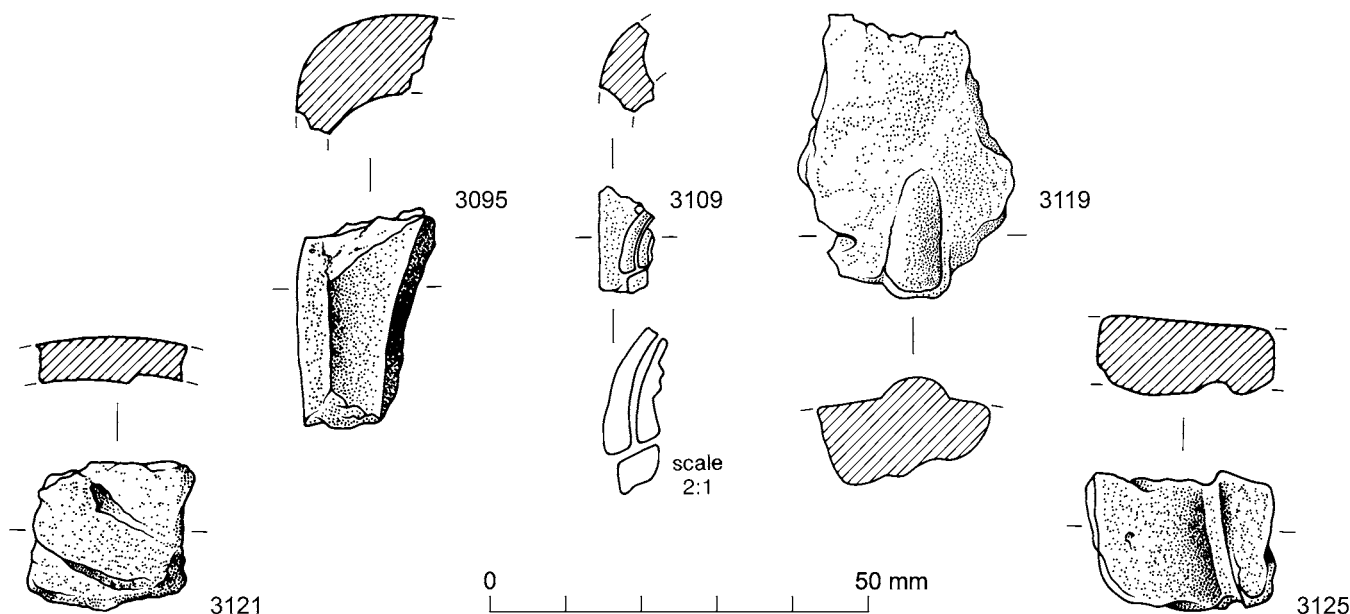


FIG. 11.1. Mould fragments. Scale 1:1.

bears a sub-triangular locating lug (FIG. 11.1, no. 3119). Fragments of luting clay have not been identified; this may be due to the small size of the mould fragments, and the fact that the clay seals may have been broken away from the mould when the cast object was retrieved.

The maximum thickness of the luting clay from Ribe was 10mm in depth, though the majority of fragments were between 2 and 4mm (Madsen 1984, 34). However, the piece-moulds from the Anglo-Saxon monastery at Hartlepool show no evidence of luting, and had been made using a slightly different technique, whereby the back was formed and attached to the front valve of the mould in a single operation (Bayley 1988, 186). The lack of identified fragments from Flixborough could possibly be due to either tiny fragments of fired clay being overlooked, or the use of a similar technique to that at Hartlepool; however, against this latter interpretation, it should be noted that the presence of a lug on no. 3132 (RF 14388) would seem to indicate that this was not the method used at Flixborough.

Further material evidence from the site would be necessary to answer this question with any certainty. A single fragment, no. 3109 (RF 14403; FIG. 11.1) has a small area of fine linear decoration, though not enough to identify the form of decoration or the object.

Surface x-ray fluorescence (XRF) analysis of two of the mould fragments indicates that copper alloy was being cast (Mortimer, below, p.335).

All the mould fragments from Flixborough were of a micaceous, fine sandy fabric, with some organic temper. This occasionally contained sparse larger quartz and small ferrous inclusions. Most were part-reduced, part-oxidised,

with the darker reduced areas near the object matrix. The rest were wholly reduced.

Micaceous, sandy clays were used to manufacture moulds at St Chads, Barrow-on-Humber (Bayley, forthcoming), Carlisle (Taylor and Webster 1984, 178), Ribe (Denmark) and Hedeby / Haithabu (Schleswig-Holstein, North Germany), Birka (Sweden), Birsay (Orkney), and Lincoln (Madsen 1984, 32).

The mica-containing clays appear to have been selected specifically for this purpose. At Ribe the clays were brought a distance of 15km, in preference to the local boulder clay some 3km south of the town (Madsen, *ibid.*).

Mica has been noted for its resistance to heat (Cook and Kirk 1995, 112–13), although Madsen (1984, 32), states that it is not particularly fire-proof, and may just be a constituent part of clays with good moulding properties.

In comparison with some of the other fragments, those from occupation deposit 6465 are mostly unabraded, with crisp fractures (as is the daub). This may indicate that mould fragments were not lying around on the workshop floor for long periods of time, before being moved and deposited; or, conversely, they might represent the final phase of work, prior to demolition – if this deposit can be interpreted as a demolition deposit – which seems likely, given its incorporation of large amounts of daub. Unfortunately, there are no mould fragments with identifiable decoration to offer any indication of their date of usage.

The crucibles (FIG. 11.2)

The four small fragments of crucible all appear to be hand-made, and all are reduced fired and light to dark grey in

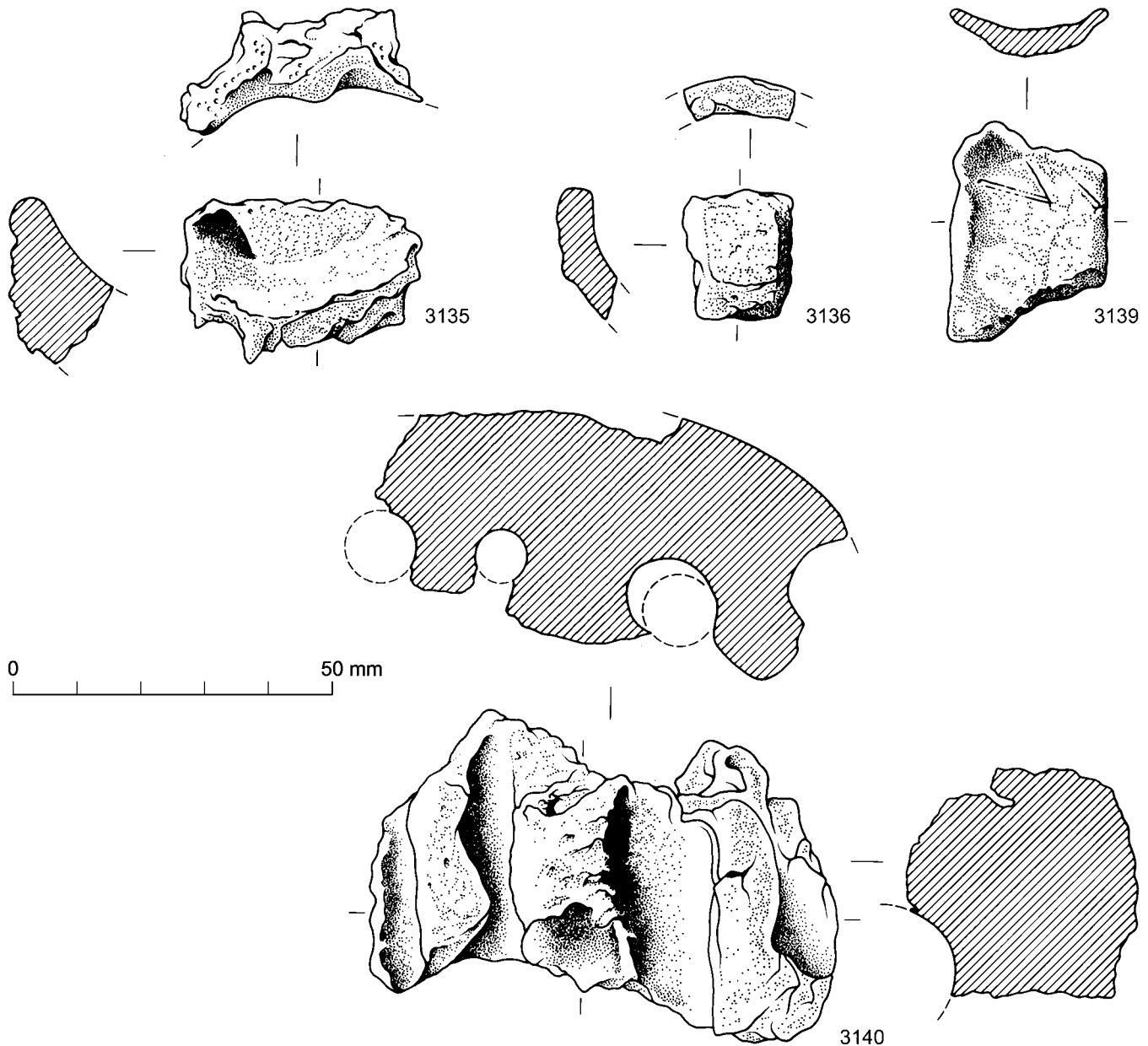


FIG. 11.2. Crucible fragments. Scale 1:1.

colour, with one example showing a white area. They are made of a clay containing abundant fine sand and some mica, and incorporating some larger quartz inclusions. The quartz was probably chosen to enhance the refractory properties of the fabric, making it more able to withstand the high-temperature processes involved in melting metals.

Despite this, two of these fragments are heavily vitrified (one of these has softened, lost its shape and developed fissures in the surface), a third shows small areas of vitrification, and another has a fuel-ash 'glaze' on its exterior.

The presence of a small amount of mica may indicate

that the same clays as the moulds were used, though with the addition of further quartz sand to the mix.

None of the fragments was large enough to give any indication of the diameter or form of these crucibles. Only one example, no. 3136 (RF 14354a), showed any visible residues – with a black slaggy droplet on the rim, and traces of a shiny black and red deposit on its interior. This red colour indicates the presence of copper, though the small amounts of copper present in precious metal can also cause this effect (Bayley 1992, 755).

Analysis by x-ray fluorescence (XRF) was undertaken on the four fragments, to determine whether any traces

of metal remained. The results of this work indicate the casting of copper alloys on the site, and can be seen in the report by Catherine Mortimer (below, p.335).

The associated objects and fragments (Fig. 11.2)

One fragment of finger-shaped clay, no. 3139 (RF 14352), which may have been part of the non-ferrous metalworking process, has been found – though it is of a different clay from that used for the moulds. It is in the form of a rough half-cylinder, and possibly acted as a pouring duct (Fig. 11.2). This object showed traces of copper and zinc when subjected to surface XRF. It is unlikely to have been a luting fragment, as luting clay (where found) is normally of the same clay as moulds.

Three fragments show characteristics of both the daub and the moulds, in that they have what appear to be roundwood impressions, but they have been constructed with the same micaceous clay used for the moulds. These may belong to a structure associated with high-temperature processes, as the mould clays appear to have been specially selected, either for their moulding qualities or the recognition of the heat-resistant properties of mica.

Catalogue

Mould fragments (Fig. 11.1)

- 3094 Mould fragment with flat smooth ?internal mating surface. Very dark grey. Abundant mica, sparse organic temper. L.23mm; W.19mm; Th.8mm
RF 14389, Context 4889, Phase 1a.
- 3095 Mould fragment with a curved external surface, internal smooth surface, slightly concave. The external surface has striations, possibly due to being wiped with a cloth. Possible runner or object matrix, ?upper valve. Mostly oxidised to reddish-brown. Reduced to dark grey on the internal surface and part of the exterior. Moderate mica, sparse chaff temper, occasional quartz temper, and occasional fragments of grog and red-brown ?ferrous inclusions. L.27mm; W.16mm; Th.12mm. (Fig. 11.1).
RF 14269, Context 221, Phase 2i–4ii.
- 3096 Two joining fragments of the same mould. Flat internal surface dark grey-brown to a depth of 1–2mm, the rest pinkish-orange. Abundant mica, moderate fine organic temper, sparse grog. L.36mm; W.22mm; Th.8mm
RF 14273, Context 4616, Phase 3bi–3bv.
- 3097 Mould fragment. Flat, light grey, original ?external surface. Part-reduced to mid grey, part-oxidised to mid pinkish-brown. Moderate mica, moderate organic inclusions. L.27mm; W.20mm; Th.7mm
RF 14274, Context 7964, Phase 3bi–3bv.
- 3098 Mould fragment. ?Lower valve. Small area of external convex surface, with a white deposit post-breakage. Mid to dark grey, with a small area of mid reddish-brown on the external surface. Moderate mica, moderate chaff temper. L.52mm; W.35mm; Th.17mm
RF 10721, Context 6465, Phase 3bii.
- 3099 Mould fragment. Has a small curved impression, possibly a runner or part of the object matrix. No other original surfaces present. Dark grey. Moderate mica, sparse to moderate chaff temper, sparse ferrous ?iron ore inclusions, red and ochreous in colour. L.28mm; W.17mm; Th.11mm
RF 14393, Context 6465, Phase 3bii.
- 3100 ?Mould fragment. No original surfaces. Dark grey. Moderate mica, sparse chaff temper. L.22mm; W.13mm; Th.9mm
RF 14394, Context 6465, Phase 3bii.
- 3101 Mould fragment. Small area of ?external surface. Mid to dark grey. Moderate mica, sparse organic temper. Partly vitrified and bloated, post-breakage. L.31mm; W.13mm; Th.4mm
RF 14395, Context 6465, Phase 3bii.
- 3102 Mould fragment. Area of original ?internal surface. Dark grey. Moderate mica, sparse chaff inclusions. L.17mm; W.15mm; Th.5mm
RF 14396, Context 6465, Phase 3bii.
- 3103 Mould fragment. Small area of external convex surface. Mid grey-brown to dark grey. Abundant mica, moderate organic temper. Partly vitrified and bloated, post-breakage. L.36mm; W.26mm; Th.12mm
RF 14397, Context 6465, Phase 3bii.
- 3104 Mould fragment. Small area of external convex surface. Mid grey-brown to black. Moderate mica, moderate chaff temper. L.23mm; W.17mm; Th.5mm
RF 14398, Context 6465, Phase 3bii.
- 3105 ?Mould fragment. No original surfaces extant. Mostly reduced to mid to dark grey, with a small area of mid pink oxidisation. Abundant mica, moderate chaff inclusions. L.39mm; W.18mm; Th.13mm
RF 14399, Context 6465, Phase 3bii.
- 3106 Mould fragment. ?Internal dark grey surface, slightly concave, the rest mid grey. Moderate mica, sparse organic temper. L.22mm; W.14mm; Th.4mm
RF 14400, Context 6465, Phase 3bii.
- 3107 ?Mould fragment. No original surfaces. Black, with a patch of mid grey-brown. Moderate mica, sparse organic temper. The black area is glossy, with a fuel ash glaze where it has been heated post-breakage. L.22mm; W.13mm; Th.5mm
RF 14401, Context 6465, Phase 3bii.
- 3108 Mould fragment. Original ?external convex surface. Reduced to dark grey. Abundant mica, sparse organic inclusions. L.21mm; W.19mm; Th.6mm
RF 14402, Context 6465, Phase 3bii.
- 3109 Mould fragment. ?Upper valve. Small area of internal surface, with fine linear decoration present, though not enough to identify the form. Black near the object matrix, the rest dark grey. Moderate mica, sparse organic temper. L.14mm; W.11mm; Th.12mm. (Fig. 11.1).
RF 14403, Context 6465, Phase 3bii.
- 3110 ?Mould fragment. No original surfaces. Dark grey, with a patch of ochreous reddish-brown iron oxide inclusions,

- or ferrous-rich clay. Abundant mica, sparse chaff temper.
L.22mm; W.20mm; Th.11mm
RF 14404, Context 6465, Phase 3bii.
- 3111 Mould fragment. Small area of original dark grey ?internal surface; the rest dark brown. Abraded. Abundant mica, sparse organic temper.
L.15mm; W.14mm; Th.8mm
RF 14405, Context 6465, Phase 3bii.
- 3112 Mould fragment. Small area of original ?external surface; one-third dark grey, the rest dark brown. Abundant mica, sparse chaff temper.
L.32mm; W.8mm; Th.6mm
RF 14406, Context 6465, Phase 3bii.
- 3113 ?Mould fragment. No original surfaces. Mid grey-brown to dark grey. Abundant mica, moderate chaff temper.
L.27mm; W.12mm; Th.9mm
RF 14407, Context 6465, Phase 3bii.
- 3114 Mould fragment. External convex surface. Mid to dark grey. Moderate mica, sparse organic temper. Partly vitrified and bloated, post-breakage.
L.30mm; W.20mm; Th.12mm
RF 14408, Context 6465, Phase 3bii.
- 3115 Mould fragment, area of depression, possibly the object matrix. Displays ridges possibly formed when the wet mould was removed from the object model. Reduced to mid to dark grey. Abundant mica, sparse organic temper.
L.33mm; W.12mm; Th.7mm.
RF 14418, Context 5653, Phase 3biv.
- 3116 Mould fragment. External convex surface. Mid to dark grey. Abundant mica, sparse ?chaff temper. Has a single wood or charcoal fragment impression (3 × 5mm)
L.25mm; W.21mm; Th.12mm
RF 13926, Context 6710, Phase 3biv–3bv.
- 3117 Mould fragment. External convex surface. Dark grey with a margin of pinkish-brown oxidation at the outer surface. Abundant mica, moderate ?chaff and other organic temper, including a flat ?leaf impression. Contains one ochreous brown (7 × 6mm) red iron ore fragment, and the occasional black iron ore inclusion <1mm. (3 × 5mm).
L.49mm; W.42mm; Th.21mm.
RF 14409, Context 7388, Phase 4i.
- 3118 Mould fragment. Small area of smooth slightly concave ?internal surface. Possibly part of object matrix or runner. Mid grey, slightly darker on the original surface. Moderate mica, sparse chaff temper.
L.42mm; W.21mm; Th.7mm
RF 14413, Context 10064, Phase 4i.
- 3119 Mould fragment with flat smooth ?internal mating surface, slightly convex. There is a slight tapered concave impression leading to a sub-triangular locating lug, possibly used to register the mould components. Black with a small area of dark reddish-brown away from the surface. Abundant mica, moderate chaff temper. XRF revealed copper, zinc and ?lead traces.
L.34mm; W.27mm; Th.12mm. (Fig. 11.1)
RF 14304, Context 2739, Phase 4i–5a.
- 3120 Mould fragment with flat smooth internal mating surface. This carries a small shallow tapered impression, possibly of the object matrix or runner. The internal surface is black to a depth of 2mm, the rest is reddish-brown with a small area of pinkish-orange (possibly an exterior surface). Abundant mica, sparse organic temper.
L.21mm; W.16mm; Th.11mm.
RF 14355, Context 51, Phase 4ii.
- 3121 ?Mould fragment. Concavo-convex. Dark grey, with a mid orange-brown to dark brown exterior. Sparse mica, frequent translucent and opaque quartz grains <1mm.
L.20mm; W.18mm; Th.7mm. (Fig. 11.1)
RF 14271, Context 2611, Phase 5a.
- 3122 ?Mould fragment. One side is the ?external surface with a light grey-brown margin, the rest is dark grey. Moderate mica, moderate chaff temper.
L.16mm; W.14mm; Th.5mm
RF 14390, Context 5139, Phase 5a.
- 3123 ?Mould fragment. Partly dark grey, partly light orange-brown. Moderate mica, moderate chaff temper, sparse translucent and opaque quartz temper, occasional black shiny, rounded iron ore fragments. One side is the ?internal surface, which is flat with a small ridge in the centre.
L.25mm; W.15mm; Th.7mm
RF 14268, Context 190, Phase 5a–5b.
- 3124 Mould fragment. External surface light to mid grey-brown, the rest dark grey to black. Abundant mica, moderate organic temper. Sparse black, and reddish-brown rounded, shiny iron ore fragments.
L.29mm; W.21mm; Th.8mm
RF 14270, Context 256, Phase 5a–5b.
- 3125 Mould fragment. Mid-grey, the internal mating surface dark grey. Has a curved channel on the interior surface, which is possibly part of the object matrix. Sparse mica, moderate translucent and opaque quartz, moderate organic temper. XRF shows copper, zinc, and ?lead traces.
L.24mm; W.17mm; Th.11mm. (Fig. 11.1).
RF 14272, Context 2858, Phase 5a–5b.
- 3126 ?Mould fragment. Dark grey. Small area of concave black internal surface, possibly part of the runner, sprue cup, or undecorated area of the object matrix. Moderate mica, sparse organic temper.
L.17mm; W.11mm; Th.8mm
RF 14357, Context 669, Phase 5a–5b.
- 3127 Mould fragment. Reduced to black. Abundant mica, moderate organic temper. Bears the straight edge of the depression for the object matrix.
L.16mm; W.13mm; Th.10mm
RF 14416, Context 2562, Phase 5b.
- 3128 ?Mould fragment. No original surfaces. Part dark grey, part light grey. Abundant mica, sparse organic ?chaff temper.
L.25mm; W.23mm; Th.19mm
RF 14410, Context 6490, Phase 5b–6i.
- 3129 Mould fragment. ?Exterior surface extant. Has two flat planes meeting at an angle of 135 degrees. Moderate mica, sparse opaque and translucent quartz. Occasional white, flat and curved ?shell fragments. Mostly reduced to mid to dark grey, with a small patch of oxidation on the interior.
L.25mm; W.22mm; Th.8mm
RF 14392, Context 5871, Phase 6i.
- 3130 ?Mould fragment. Reduced to dark grey, with a thin layer of light grey-brown on the exterior convex surface. Abundant

- mica, moderate organic temper, occasional black, shiny and ochreous red iron ore fragments.
L.20mm; W.19mm; Th.8mm
RF 14391, Context 5871, Phase 6i.
- 3131 ?Mould fragment. The internal surface is reduced to black to a depth of 3mm, whilst the external surface is oxidised and mid-orange brown in colour. Moderate mica, moderate organic ?chaff temper.
L.17mm; W.16mm; Th.6mm
RF 14412, Context 6797, Phase 6ii.
- 3132 Mould fragment. Dark grey. With two flat surfaces, one of which bears a raised ?locating lug. Abundant mica, sparse organic temper, occasional red-brown iron ore fragments.
L.26mm; W.21mm; Th.7mm.
RF 14388, Context 3610, Phase 6ii.
- 3133 Mould fragment. Reduced light to mid grey. With post-breakage fuel ash vitrification on the exterior. Internal surface not extant. Abundant mica, moderate organic temper, occasional red-brown iron ore fragments visible under $\times 20$ magnification. XRF shows copper, zinc, and lead traces.
L.46mm; W.36mm; Th.7mm.
RF 14353, Context 6499, Phase 6ii–6iii.
- 3134 ?Mould fragment. Slightly concavo-convex. Dark grey on the convex surface to a depth of 2mm, the rest mid orange-brown. Moderate mica, sparse chaff temper, sparse translucent well-rounded quartz, occasional black shiny, rounded ?iron ore fragments.
L.32mm; W.18mm; Th.13mm
RF 14411, Context 7123, Phase 6iii.

Crucibles (Fig. 11.2)

- 3135 ?Crucible rim sherd, vitrified and blown; vesicular exterior, with a glossy surface. Some of the exterior has lost shape as it has softened, and fissures have appeared in the fabric. Mid grey interior, dark grey exterior. Moderate mica, sparse quartz inclusions, sparse iron oxide inclusions, mid ochreous brown in colour, sparse black ?iron ore inclusions. XRF shows copper and zinc traces.
L.35mm; W.20mm; Th.8–15mm. (Fig. 11.2).
RF 14351, Context 6465, Phase 3bii.
3136. Crucible sherd, vitrified and blown throughout. Light grey to white, and glassy in appearance. Slightly concavo-convex. The rim has a glossy black slag deposit, and there are traces of a shiny black and red deposit on the interior. Too small to measure diameter. XRF shows copper and lead traces.
L.19mm; W.17mm; Th.7mm. (Fig. 11.2).
RF 14354a, Context 51, Phase 4ii.
- 3137 Crucible sherd, vitrified and blown throughout. Dark grey, with abundant translucent and white quartz grains visible under $\times 20$ magnification, in the fabric. Too small to measure diameter. XRF shows copper and lead traces.
L.23mm; W.18mm; Th.8–10mm
RF 14354b, Context 51, Phase 4ii.
- 3138 ?Crucible fragment, Reduced to mid grey, though has a small area of oxidation on the fabric core. Moderate mica, moderate translucent and opaque rounded quartz grains. Convex exterior has sparse, small, round patches of vitrification, seen under $\times 20$ magnification.
L.32mm; W.17mm; Th.7mm
RF 14415, Context 5553, Phase 5b.

Associated objects and fragments (Fig. 11.2)

- 3139 Fragment of fired clay which has been pressed around a curved object. Hard fired (ceramic). Retains marks on the outer surface where finger pressure has been applied. Mid-brown, with moderate fine organic temper. XRF shows copper and zinc traces.
L.34mm; W.23mm; Th.3–5mm. (Fig. 11.2).
RF 14352, Context 10236, Phase 2.
- 3140 Two adjoining fragments with characteristics of both moulds and daub. The fabric is that of the moulds, though the object has three parallel cylindrical impressions: two of these are 11 and 8mm in diameter (the third is not complete enough to measure), and are 18mm and 10mm apart respectively. On the reverse is a larger impression, at right-angles to the three, measuring 25mm in diameter. The three parallel impressions are along the same plane, and do not weave around the larger impression as impressions in daub. External convex surface. Mid to dark grey. Part of the surface of the impression measuring 8mm is black. Abundant mica, sparse chaff temper. Probably not a mould, but fabric different from daub fabrics – possibly some unidentified structure related to metalworking?
L.63mm; W.37mm; Th.36mm. (Fig. 11.2).
RFs 10350 and 10351, Context 6304, Phase 3bv.
- 3141 Abraded fragment with characteristics of both moulds and daub. The fabric is that of the moulds, whereas the object has two parallel, roughly cylindrical, impressions; these are not measurable, but are 3mm apart. Partially reduced to light grey, but mostly oxidised to mid greyish-brown. Part of the surface of the impressions shows small diagonal undulating ridges – possibly bark impressions. Abundant mica, sparse chaff temper. Not a mould, but with a fabric different from daub fabrics – possibly some unidentified structure related to metalworking?
L.27mm; W.24mm; Th.11mm
RF 14356, Context 467, Phase 4i–4ii.
- 3142 Abraded fragment with characteristics of both moulds and daub. The fabric is that of the moulds, whereas the object has two parallel, roughly cylindrical, impressions of 15 and 20mm; these are 10mm apart. Dark grey to black, with a dark greyish-brown surface to the two impressions. The surface of the impressions is very smooth. Abundant mica, sparse organic temper. With translucent, well-rounded, sparse quartz inclusions, and occasional red-brown iron ore fragments. Not a mould, but with a fabric unlike daub fabrics – possibly part of a structure related to metalworking.
L.30mm; W.27mm; Th.23mm
RF 4039, Context 3891, Phase 6ii.

11.2 Other fired clay objects

by Lisa M. Wastling

Two further objects of fired clay were recovered. The cup-like object, no. 3143 (RF 959; Fig. 11.3), was initially thought to be a crucible, though XRF analysis showed no metalworking residues present. On examination with a $\times 20$

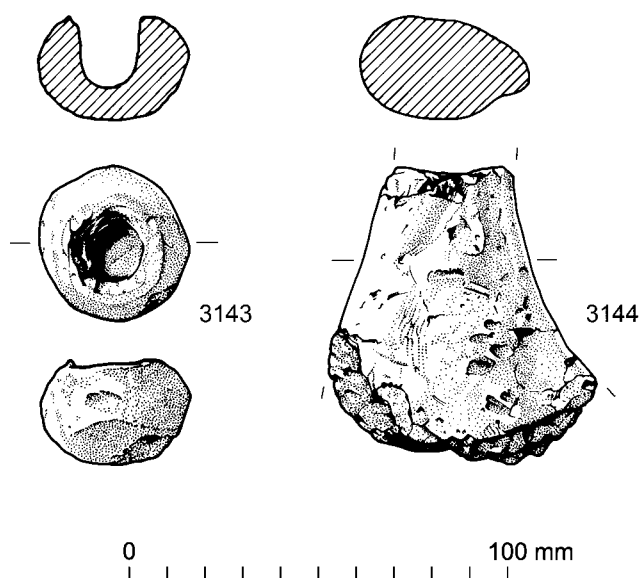


FIG. 11.3. Other fired-clay objects. Scale 1:2.

binocular microscope, this object was seen to have a thin white deposit on the upper interior and on the lip; this may be the remnant of a substance possibly heated in the cup. A similar object with flattened surfaces and a hollow centre, described as a half-ball, was found during excavation at Meare Village East (Coles and Avery 1987, fig. 3.9, D9).

The tapered bar (no. 3144; FIG. 11.3) was found in a subsidence fill, of Phase 3a–3bi. This object bears similarities to the narrow ‘T-headed’ briquetage props such as the Iron Age and Roman examples from Studland, Dorset (Farrar 1975, fig. 8b, 18) and the Red Hills of Essex (de Brisay 1975, fig. 3j).

Catalogue (FIG. 11.3)

3143 Small cup-like object. Complete. Made by hand, and hollowed out, post-firing. The external surface shows evidence of being heated to high temperatures after the initial firing. In addition, small slivers of the external surface have been pared off with a knife, after heating. Much of the exterior has become burnished through use. The fabric is identical to that of the sling-shot (see Ch. 14, below, pp.431–3), though slightly harder. The colour varies from dusky red (2.5 YR 3/2), through red (10R 4/6), to light-yellowish brown (10YR 6/4).

L.38mm; W.35mm; Height 27mm; Wt.43g. (FIG. 11.3).
RF 959, Context 636, Phase 6iii.

3144 Object, incomplete, possibly briquetage. A tapering bar of fired clay with concave sides, roughly oval in section, and expanding in thickness towards its widest part. Of clay, with abundant grass/chaff temper. The surface bears finger marks, and one good example of a finger-print, showing the object was formed in the hand. Slightly sooted in places. Light red (10R 6/6) to light brown (7.5YR 6/4), in colour.

L.74mm; W.67mm; Th.36mm. (FIG. 11.3).

RF 11189, Context 2740, Phase 3a–3bi.

11.3 Surface analysis of crucible and mould fragments

by Catherine Mortimer

Normally, XRF analysis would be carried out on visible metallic deposits, but none of the fragments identified as crucible or mould fragments from Flixborough had such deposits. This is not surprising for two reasons. First, there were only a few ceramic samples, identifiable as being associated with metalworking, which were large enough for analysis. Secondly, on crucibles, metals are often present only within voids and cracks in the walls, or in the form of vitrification, and metalworkers would aim to ensure that metals would not ‘stick’ to their moulds.

Instead, general surface XRF analysis was carried out on several areas of the fragments. Such analysis will give some rather indirect clues as to the metals being melted or cast, with some elements over- or under-represented in the composition, due to their chemical characteristics. For instance, lead has a low melting point and easily forms lead-rich glasses through contact with silicates and fluxes, hence lead is frequently detected within vitrified areas on crucibles. Similarly, zinc is volatile (driven off in a gaseous form), therefore zinc compounds may be trapped within the walls of crucibles and moulds. Hence zinc may be detected in misleadingly high proportions. Copper, being the major component of copper alloys, is often present in detectable quantities, but tin is particularly difficult to detect.

Analysis of six fragments (see FIG. 11.4 below) demonstrated the presence of copper in each sample, together with zinc in five samples, and lead in four samples. In each case, the non-ferrous elements were detected only at very low levels; iron was present throughout, probably from iron minerals in the clay. This analysis confirms that copper alloys were being cast at the site, and that most of the alloys contained some zinc and some lead. Such compositions are compatible with the copper alloys used to make artefacts of the period.

11.4 Copper alloy manufacturing debris

by Nicola Rogers

Copper alloy

Bars

Three bar fragments were recovered, two being unstratified (RFs12450, 13039) and the third (RF13565) coming from a Phase 3bii–iii occupation deposit. These fragments are the offcuts from ingots which have been hammered down into bars, which in turn would be hammered further to form sheet and strips.

RF	Context	Description	Identification	Cu	Zn	Pb
14353	6499	Slight vitrification on outside	Mould	Tr	Tr	Tr
14272	2858	Reduce-fired with area of object impression	Mould	Tr	Tr	Tr?
14352	10236	White 'slip' inside?	Ceramic	Tr	Tr	
14354a & b	51	Two heavily bloated fragments	Crucible	Tr		Tr
14304	2739	Reduce-fired with ?white 'slip'	Mould	Tr	Tr	Tr?
14351	6465	Bloated and vitrified exterior	Crucible?	Tr	Tr	

Key: Tr = trace presence; Tr? = possible very small trace.

FIG. 11.4. Table showing the presence of non-ferrous metals on crucible and mould fragments.

	1-3a	3	3-4	4	4-5	5	5-6	6	7	U/S	Nat.	Total
Bar		1								2		3
Debris		1		1		2	1	3		8	1	17
Total		2		1		2	1	3		10	1	20
Sheet	7	8	1	8		7	3	6	2	38	1	81
Strip		1		1			1	2		1		6
Total	7	11	1	10	-	9	5	11	2	49	2	107

FIG. 11.5. Copper alloy manufacturing debris by Period/phase.

Casting debris

Waste from the casting of copper alloy objects was found in deposits ranging from Periods 3 (no. 3148; RF 10660) to 6iii (nos 3153 and 3155; RFs 3848, 4347); an almost equal amount was found unstratified.

Sheet and strip fragments and offcuts

Sheet and strip fragments and offcuts, resulting from the working down of bars into sheet, or collected for future recycling after use, were recovered from contexts of a similar range to the other debris; once again, almost half (c.49%) of the total was from post-Saxon and unstratified deposits, and there were no apparent concentrations in any one period. Most of these fragments were very small.

Catalogue of stratified copper alloy debris

BARS

- 3145 One end broken, tapering slightly to rounded end. L.28.6, W.4.3, Th.2.6
RF 12450, Unstratified.
- 3146 RF 13039, Unstratified.
- 3147 RF 13565, Context 10179, Phase 3bii-3biii.

CASTING DEBRIS

- 3148 RF 10660, Context 6465, Phase 3biii.
- 3149 RF 12208, Context 3758, Phase 4ii.
- 3150 RF 7896, Context 6497, Phase 5a.
- 3151 RF 1779, Context 1728, Phase 5b.

3152 RF 12159, Context 4195, Phase 5b-6i.

3153 RF 3848, Context 3989, Phase 6iii.

3154 RF 3886, Context 3891, Phase 6ii.

3155 RF 4347, Context 3989, Phase 6iii.

SHEET FRAGMENTS

(by Period/phase, No RF numbers assigned)

- 3156 Context 4055, Phase 1b-3a.
- 3157 Context 3279, Phase 2.
- 3158 Context 5512, Phase 2-3a.
- 3159 Context 11142, Period 2.
- 3160-3163 Contexts 5215, 5378, and 5117-8 – all Phase 2-3a.
- 3164 Context 10127, Phase 3a-3bi.
- 3165 Context 10662, Phase 3bii.
- 3166 Context 12003, Phase 3bii.
- 3167 Context 7789, Phase 3biii.
- 3168 Context 10224, Phase 3biii.
- 3169 Context 10308, Phase 3biv.
- 3170 Context 10135, Phase 3bv.
- 3171 Context 13275, Phase 3bv.
- 3172 Context 6452, Phase 3biv-v.
- 3173 Context 3253, Phase 4ii.
- 3174 Context 3107, Phase 4ii.
- 3175 Context 4113, Phase 4ii.
- 3176 Context 4599, Phase 4ii.

- 3177 Context 5670, Phase 4ii.
- 3178 Context 11531, Phase 4ii.
- 3179 Contexts 5488, Phase 4ii.
- 3180 Context 5430, Phase 4ii.
- 3181 Context 13790, Phase 5a.
- 3182 Context 13954, Phase 5a.
- 3183 Context 633, Phase 5a–5b.
- 3184 Context 939, Phase 5b–6i.
- 3185 Context 4236, Phase 5a.
- 3186 Context 11416, Phase 5a.
- 3187 Context 6288, Phase 5a.
- 3188 Context 12142, Phase 5b–6i.
- 3189 Context 13285, Phase 5b–6.
- 3190 Context 3707, Phase 5a.
- 3191 Context 969, Phase 6i–6ii.
- 3192 Context 79, Phase 6ii.
- 3193 Context 10443, Phase 6ii–6iii.
- 3194 Context 604, Phase 6iii.
- 3195 Context 238, Phase 6iii.
- 3196 Context 3829, Phase 6iii.
- 3197 Context 4259, Phase 6iii.
- 3198 Contexts 104 and 111, Topsoil.

STRIPS

(by Period/phase, No RF numbers assigned)

- 3199 Context 11554, Phase 3bv.
- 3200 Context 6263, Phase 4ii.
- 3201 Context 12161, Phase 5b–6ii.
- 3202 Context 5306, Phase 6ii.

11.5 Evidence for leadworking by Lisa M. Wastling

Ingots (FIG. 11.6)

Two rough lead ingots were found (FIG. 11.6). Both were cast – one into a possible flat-sided mould (no. 3204; RF 60022), and the other into a soil or sand hollow, to produce a rough plano-convex disc (no. 3203; RF 7988). A rough ingot of a similar shape to the latter was recovered from a 10th- to early 11th-century phase at Lurk Lane, Beverley (Foreman 1991b, fig. 119, 820), and another from a 12th-century context at Winchester (Biddle 1990, fig. 368, 4342).

Scrap, melt and offcuts (FIG. 11.7)

The majority of lead from Flixborough consisted of small fragments of lead offcuts, melt and scrap. By far the largest group was the melt, comprising 79% of the lead assemblage (by RF numbers allocated) and 854 in total, whereas sheet offcuts and scrap fragments comprised 11%. Melt was mainly in the form of solidified small droplets, and spills of once molten lead, though two fragments were possibly sprue from the casting of objects.

The low melting point of lead enabled the frequent recycling of old lead when new objects were needed. The two ingots (no. 3203; RF 7988, and no. 3204, RF 60022) may have been made as part of this process. Due to the low melting point, it is possible that at least some of the lead melt resulted from the burning of structures *in situ*; the same process resulted in the preservation of the structural daub.

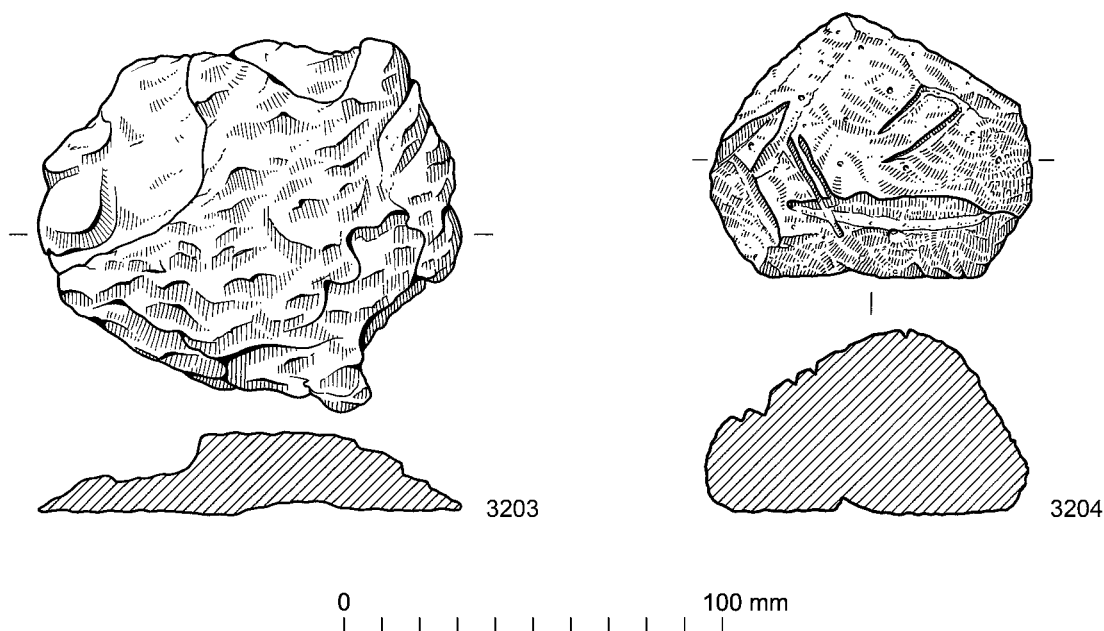


FIG. 11.6. Lead ingots. Scale 1:2.

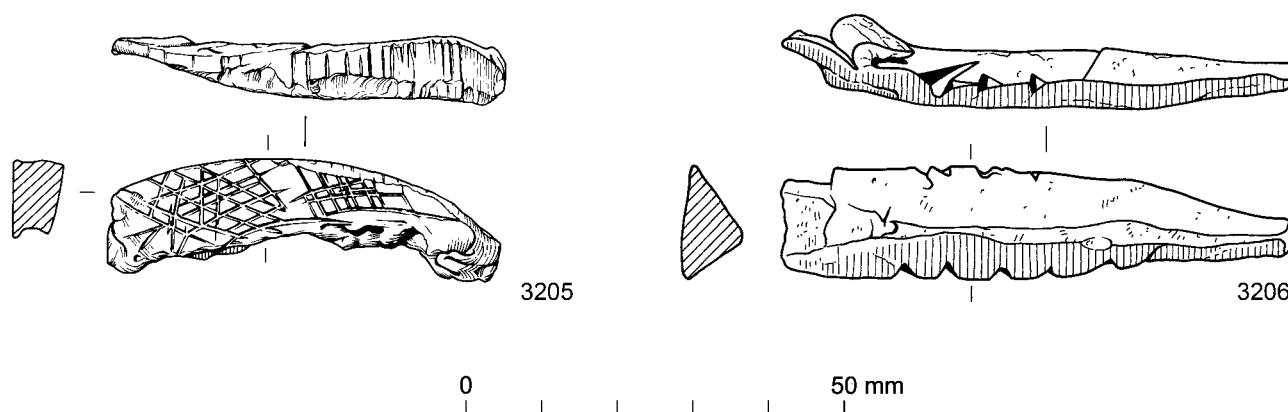


FIG. 11.7. Lead objects or offcuts. Scale 1:1.

Use of lead on a wider scale is attested in documentary evidence of the 9th century, and is apparent in excavated evidence from secular, as well as ecclesiastical sites in Winchester in the 10th century (Biddle and Petersen 1990, 89).

Although Flixborough, as a high-status rural settlement, would not at first seem comparable, there is a corresponding increase in the amount of lead found from the early to mid 9th century onwards, with only 3% of the lead melt coming from deposits prior to the 9th century, and 97% of the stratified melt from 9th-century and later deposits.

For a discussion on the lead industry in the East Midlands and the Humber region see Cowgill (Ch. 7.3, pp.273–4).

The sheet fragments comprised 80 offcuts and 38 fragments of broken sheet. The broken sheet pieces may represent fragments of lost material from the re-melting process, whereas the offcuts are trimmings, probably resulting from structural plumbing and the manufacture of sheet objects. 85% of the stratified lead melt and 82% of the sheet was also recovered from contexts of the 9th century and later.

Two triangular-sectioned objects or offcuts are worthy of mention, as they appear to be decorated, though whether this decoration relates to the objects' usage, or is merely the result of idle doodling, is unclear. No. 3206 (RF 13399) bears a very regular row of knife-cut V-shaped nicks, which might be decoration – alternatively, this could have been a tally, or have served some other purpose (FIG. 11.7). No. 3205 (RF 994) bears a lattice of cross-hatched lines and irregular parallel grooves (FIG. 11.7).

Catalogue

POSSIBLE INGOTS (FIG. 11.6)

3203 Ingot?

Form: Irregular plano-convex. Formed by pouring lead melt into a hollow in the soil, or sand. Quartz grains adhere to the lower convex surface.

Size: L.105mm, W.20mm. Wt.1022.3g. (FIG. 11.6)

RF 7988, Site Area C middle. Unstratified.

3204 Ingot

Form: Polyhedral ingot, with two original cast faces, the rest cut by axe or saw. Bearing ten axe- or saw-marks from removal of lead for use. Diagnostic fine tool-marks are unfortunately obscured by the corrosion products.

Size: L.80.5mm, W.66mm, Th.42mm. Wt.1132.5g. (FIG. 11.6).

RF 60022, Unstratified.

SCRAP, MELT AND OFFCUTS (FIG. 11.7)

3205 Offcut?

Form: Curved strip, of sub-rectangular section, with smoothed sides and 'top', and rough 'base'. One side bears incised cross-hatched diagonal lines, with four vertical incised lines at one end; perhaps all representing a trial-piece or doodle. The curved top bears 25 unevenly spaced lateral nicks, mostly towards the thicker end of the object. Where densest, these are spaced at c.8 per cm.

Size: L.52mm, Max. W.13mm, Max. Th.8mm. Wt.30.0g. (FIG. 11.7)

RF 994, Unstratified.

3206 Offcut?

Form: Slightly curved strip of triangular section, fairly smooth sides, bearing evidence of knife-cutting, except one side which is rough. One arris bears five evenly spaced, V-shaped, knife-cut notches (Max. W.3.5mm, Max. D.c.2mm). The opposite bears three rough nicks. The wide end has been longitudinally cut into three, as though slivers have been pared from the object. The notches may have acted as a tally.

Size: L.66mm, Max. W.14.5mm, Max. Th. 8mm. Wt.36.5g. (FIG. 11.7)

RF 13399, Context: 10772, Phase 4ii.

12 The Anglo-Saxon Pottery

Jane Young and Alan Vince[†]

with a contribution by Paul Blinkhorn

This chapter examines the evidence for pottery usage in the Middle and Late Saxon periods. All other ceramic material is dealt with separately in other parts of the volume. For the Iron Age, Romano-British and medieval pottery, see Ch. 14 below.

The introduction sets out the range of material, the scope of the report and the methodology used in the study, followed by a definition of the type series. The authors then discuss, in turn, the Early to Middle Saxon Anglo-Saxon handmade wares, the Middle Saxon wares (including imports), and Late Saxon pottery. A section on the site pottery sequence is followed by a catalogue of the illustrated vessels. The chapter closes with a comprehensive discussion of the Anglo-Saxon pottery from the site, seen in the context of pottery usage and distribution in the East Midlands of England between AD 650 and 1000.

The Saxon wares from the site comprise 5,700 sherds (93.36%) of the pottery assemblage. The remainder, comprising prehistoric (0.16%), Romano-British (3.84%), medieval (1.81%) and post-medieval wares (0.95%), are discussed in detail in Chapter 14.

12.1 Introduction

by Jane Young

Quantity

The excavated Anglo-Saxon settlement remains from Flixborough produced an assemblage of 6,105 sherds of pottery, weighing 62283gm with rims giving an estimated vessel equivalent of 60.18. The site produced a wide variety of pottery types, although shell-tempered wares predominate. The pottery ranged in date from the Iron-Age to the post-medieval period, although the bulk of the material was of Middle Saxon date. The Middle Saxon pottery includes handmade Anglo-Saxon types, Maxey-type

ware, Ipswich ware and a limited range of imports. Smaller quantities of Late Saxon types, including Torksey and Lincoln wares are also important to the understanding of the development of the site. The largest quantities of stratified pottery were recovered from Period 6 'Dark Soil' refuse and other dump deposits (see Volume 1, Ch.7, Fig. 7.11).

Group	Sherd count	Wt. (g.).	EVEs
Early Fine-shelled	144	1668	2.31
Handmade Anglo-Saxon	261	2871	1.66
Import	51	346	0.59
Ipswich	384	8011	2.28
Iron-Age/Roman	244	3175	2.00
Late Saxon	160	873	2.41
Maxey-type	4604	43714	47.56
Medieval or later	159	917	0.24
Middle Saxon	31	381	0.96
Misc.	67	327	0.17
Total	6105	62283	60.18

FIG. 12.1. Table of broad ceramic groups recovered from Flixborough.

Scope of the report

The pottery described in this report comes from the main excavation on the site at Flixborough between 1989 and 1991. Material from other archaeological interventions in the immediate area was appraised as part of the comparative study (Section 12.3, below) but is not presented in detail here. This comparative study extended work carried out by the East Midlands Anglo-Saxon Pottery Project in the early 1990s, in order to provide a wider context for the understanding of pottery use on the site in its local and regional settings (Vince and Young 1991).

Methodology

The approach to the analysis of the pottery from Flixborough was structured to provide a framework for future analysis of Mid to Late Saxon assemblages in north Lincolnshire. This should enable chronological development and provenance to be investigated in future research. The entire stratified assemblage was laid out in stratigraphic order by site area (Loveluck, Volume 1, Ch. 2, Fig. 2.3). The pottery was recorded on pro-forma sheets from the lowest phase upwards across all areas. Extensive searches were made for cross-context vessels and these were given individual vessel numbers (Vessels 1–93). All attributes considered useful for constructing chronological development (e.g. rim type and decoration) or assisting in functional or taphonomic interpretation (e.g. wear marks and soot or residue patterns) were recorded. Identification of most fabric types was accomplished visually; sample sherds from the different types were checked regularly under $\times 20$ magnification; and all material considered to lie outside of the mainstream Maxey-type fabrics, A and B, was examined under a $\times 20$ binocular microscope.

Quantification

The varying methods of quantification and their relative values have previously been discussed by several authors (Orton 1982, Orton and Tyers 1992 and Hamerow 1993). It was possible to quantify the entire stratified assemblage by four measures. The following measures were used:

- Sherd count: all individual fragments not freshly broken were counted as individual sherds. The direct proportion of sherd number to actual vessels varied considerably throughout the site sequence, although the majority of the vessels in each deposit are represented by single sherds.
- Weight: each vessel or sherd group within a single context was weighed in grammes to the nearest gramme.
- Minimum vessel count: sherds were assembled into sherd groups considered to have come from the same vessel. Note was taken of form, colour, temper frequency and condition in forming these groups. Each individual vessel within a context was entered in the database as a separate record.
- Estimated Vessel Equivalents (EVEs): the percentage of completeness of rims was recorded for each sherd group or vessel within a single context. As Hamerow (1993, 23) notes, this is not a method suited for use on handmade vessels, and consequently no attempt was made to measure base diameters. An EVE as given in the tables represents 100% of a vessel rim.

Form type series (see Figs 12.2–3)

During the analysis of the shell-tempered wares at Flixborough a vessel typology embracing all the handmade shell-tempered fabrics was defined (Figs 12.15–12.16). A separate rim-type series was also constructed with basic divisions into flat-topped, everted, round and rolled-rim

types. Further subdivisions of rim types were made, but during analysis it became evident that this was over-classification, since the rim of a single vessel often changed dramatically and could be classified as up to three different types. Despite this, some tightly defined rim types were often exclusive to individual fabric or form types. The rim type series is available in archive but has not been presented here as it is felt that it requires refining and testing on further assemblages before general use. Vessel and rim types were not always exclusively linked so that it is not always possible to predict the form of a vessel from its rim, and *vice versa*. The sample of form types is too small in most cases to be used statistically and this typology too needs to be tested on other assemblages. A hierarchical system was used with seven main classes of vessel: large (Type I), medium (Type II) and small (Type III) jars; large (Type V), medium (Type VI) and small (Type VII) bowls and a wide jar or bowl form with thrown or turntable rims (Type IV). Each of these classes was sub-divided, after drawing, into more precise types based mainly on overall profile. These subdivisions were to some extent influenced by rim types. There is inevitably a degree of overlap between forms; the very nature of simple handmade pottery made over a long period of time makes rigid classification impossible.

Large jars (Type I: Figs 12.2–3)

These are jars with rim diameters of 140mm or over and estimated heights of more than 120mm. Similar vessels are often termed cooking pots (e.g. Mainman 1993a, fig. 242, 2420–2422).

TYPE IA (FIG. 12.2)

These are almost straight-sided vessels with flat-topped rims having diameters of between 150mm and 200mm. Two of the vessels have upright lugs; these may have been present on some of the other vessels where little of the rim circuit was present. Four of the Flixborough vessels are in Maxey-type Fabric B and one is in Fabric E. The earliest vessel occurs in a Period 2 to 3a deposit.

TYPE IB (FIG. 12.2)

The sides of this type of jar are more curved than those on type Ia, the rims are all flat-topped and diameters vary between 190mm and 220mm. Four of the vessels have lugs and one has a post-firing hole (FIG. 12.19, no. 45). All vessels, except for two examples (one in Fabric U and one in Fabric E), are in Maxey-type Fabric B with the earliest occurrence in a Period 2 to 3a deposit.

TYPE IC (FIG. 12.2)

A single vessel of this type, in Maxey-type Fabric U, was found on the Flixborough site. This narrow-necked jar has a diameter of 140mm and first occurs stratified in a Phase 3bv deposit. A similar form has been noted in Ipswich ware (Hurst 1976, fig. 7.7:3).

TYPE ID (FIG. 12.2)

A single Early Fine-shelled ware vessel from Flixborough has been classified as this type. The vessel has a diameter

of 190mm, curved sides and is restricted at the neck below an everted rim. The multi-context vessel first appears in deposits in phases 5b to 6i.

TYPE IE (FIG. 12.2)

This is a loose grouping of large jars with flat but slightly everted rims. Diameters range between 190mm and 260mm and four vessels have lugs. With the exception of four vessels (two each in Fabrics U and E) all vessels are in Maxey-type Fabric B. The earliest occurrence is in a Period 2 to 3a deposit.

TYPE IF (FIG. 12.3)

These large jars in Maxey-type Fabrics B and E, have slightly restricted necks below flat or rounded rims. Four vessels have lugs and diameters vary between 160mm and 200mm. None of the vessels occurs before Phase 6ii deposits.

TYPE IG (FIG. 12.3)

This is a loose grouping of three similar vessels from Flixborough with rolled rims. Each vessel is in a different fabric (Early Fine-shelled ware and Maxey-type Fabrics B and E) and all occur in Phase 5a or later deposits.

TYPE IH (FIG. 12.3)

This is a loose grouping of large jars with everted rims. Vessels are in Maxey-type Fabric E or Early Fine-shelled ware. Three of the vessels were found in Period 4 deposits.

TYPE II (FIG. 12.3)

These jars have round rims and diameters of 200mm to 210mm. Two vessels are in Maxey-type Fabric C and one in Fabric E. The earliest occurrence is in a Period 2 to 3a deposit.

Medium-sized jars (Type II: Figs 12.2–3)

This is the most common form type identified at Flixborough; vessel walls tend to be thinner than those of the large jars.

TYPE IIA (FIG. 12.2)

These jars are straight-sided, have flat-topped rims and diameters of between 130mm and 160mm. One vessel has a possible upright lug. Most vessels are in Maxey-type fabric B with one example each in fabrics A and U. The earliest occurrence is in a Phase 1b deposit. This type can be difficult to distinguish from Type VIa straight-sided bowls.

TYPE IIB (FIG. 12.2)

This type of jar has flat-topped or slightly everted rims and curved sides. Diameters range between 130mm and 160mm and two vessels have upright lugs. The earliest vessel occurs in a Phase 3b deposit. Most vessels are in Maxey-type Fabric B with single examples in Fabrics E and U.

TYPE IIC (FIG. 12.2)

This is a globular shaped jar, mainly with rounded rims and diameters of between 110mm and 150mm. Most

vessels are in Maxey-type Fabric B with a smaller number in fabrics E and U. A single vessel has an upright lug. The earliest occurrence is in a Phase 3b deposit.

TYPE IID (FIG. 12.2)

These jars have restricted necks and flattened rims with diameters of between 130mm and 170mm. One vessel from the Flixborough site has finger-pressed decoration to the rim edge. Vessels are mainly in Maxey-type Fabric E, but a small number of examples occur in Fabrics B, G and U and Non-local fabrics. The earliest stratified vessel is from a Period 2 to 3a deposit.

TYPE IIE (FIG. 12.2)

This type of jar has a globular profile with a rolled or flattened everted rim. Diameters vary between 120mm and 180mm. Three vessels appear to have had upright lugs; all have rim diameters of 150mm. This type of jar is found mainly in Maxey-type Fabrics E and B with a smaller number of vessels occurring in Fabric U and Early Fine-shelled ware. The earliest stratified examples come from Phase 3b deposits.

TYPE IIF (FIG. 12.3)

These vessels are similar to type IIE with a more squat profile. Diameters are between 130mm and 200mm with two of the smaller vessels possibly having lugs. Most vessels are in Maxey-type fabrics (Fabrics B, E and U), although four vessels are in Early Fine-shelled ware. The form first occurs in Phase 3b deposits.

TYPE IIG (FIG. 12.3)

This is a loose grouping of jars with diameters of between 140mm and 160mm that have everted rims.

TYPE IIH (FIG. 12.3)

This is a loose grouping of jars with narrow necks, only one vessel is securely stratified in a Phase 6i–6ii deposit.

Small jars (Type III: Figs 12.2–3)

These vessels are often difficult to distinguish from Type VII small bowls. The walls of the vessels are mainly thin, although some thicken appreciably towards the base. These small jars have rim diameters of between 90mm and 130mm.

TYPE IIIA (FIG. 12.2)

These are small jars with diameters of 100mm to 120mm and restricted necks. Only three examples were found at Flixborough, one each in Maxey-type Fabrics U and E and one vessel in a non-local fabric (Vessel 82). The earliest sherds were stratified in a Period 4 deposit.

TYPE IIIB (FIG. 12.2)

These small jars have a wide base and slightly curved sides with flat or rounded rims. Most vessels are in Maxey-type Fabric A, although single examples in Fabrics B, E and U also occur. One vessel in Maxey-type Fabric A (FIG. 12.18, no. 27) has incised cross decoration on the rim top. The earliest Type IIIB jar occurs in a Phase 3b deposit.

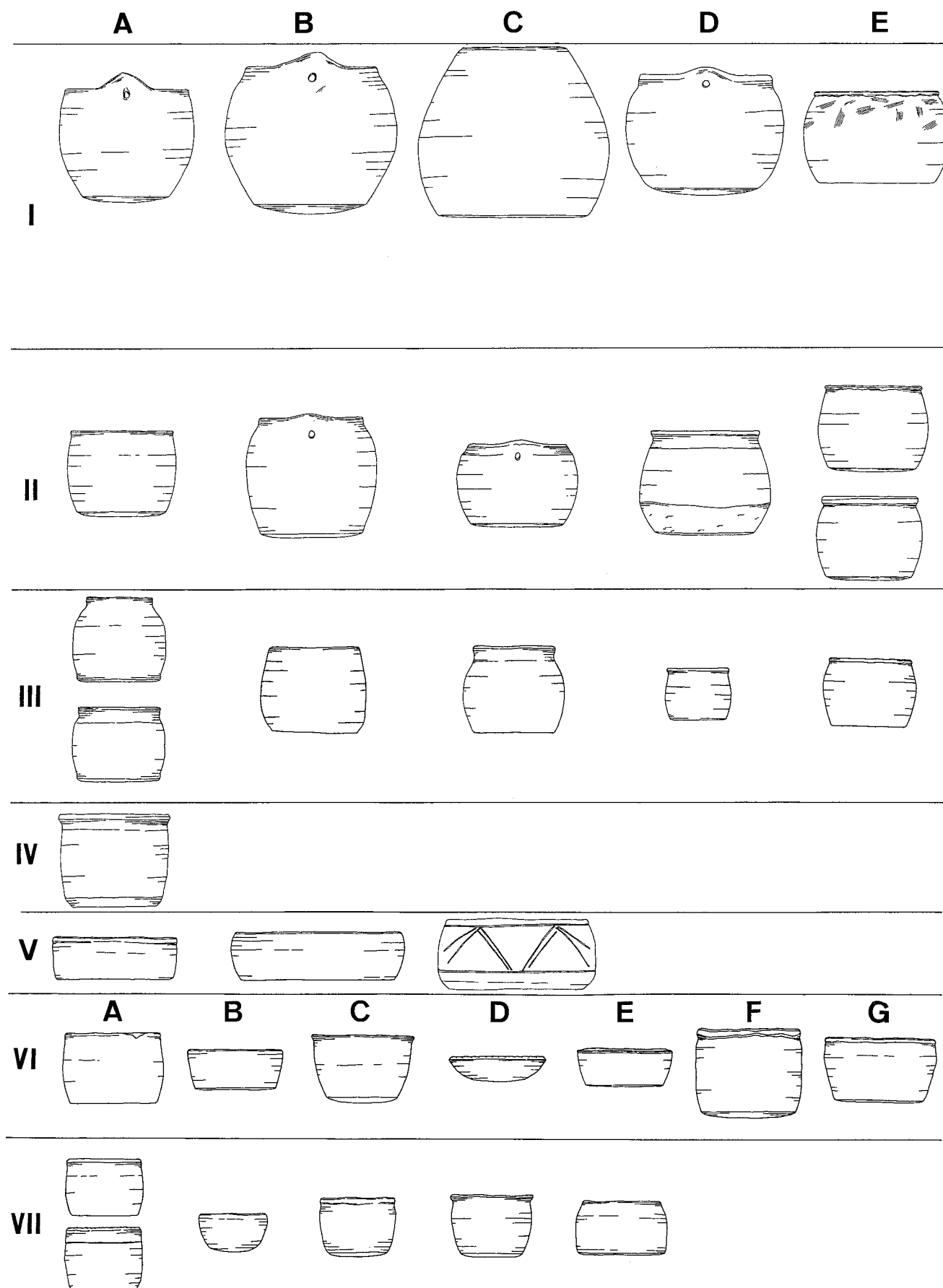


Fig. 12.2. The Flixborough Early to Middle Saxon type series and pottery sequence.

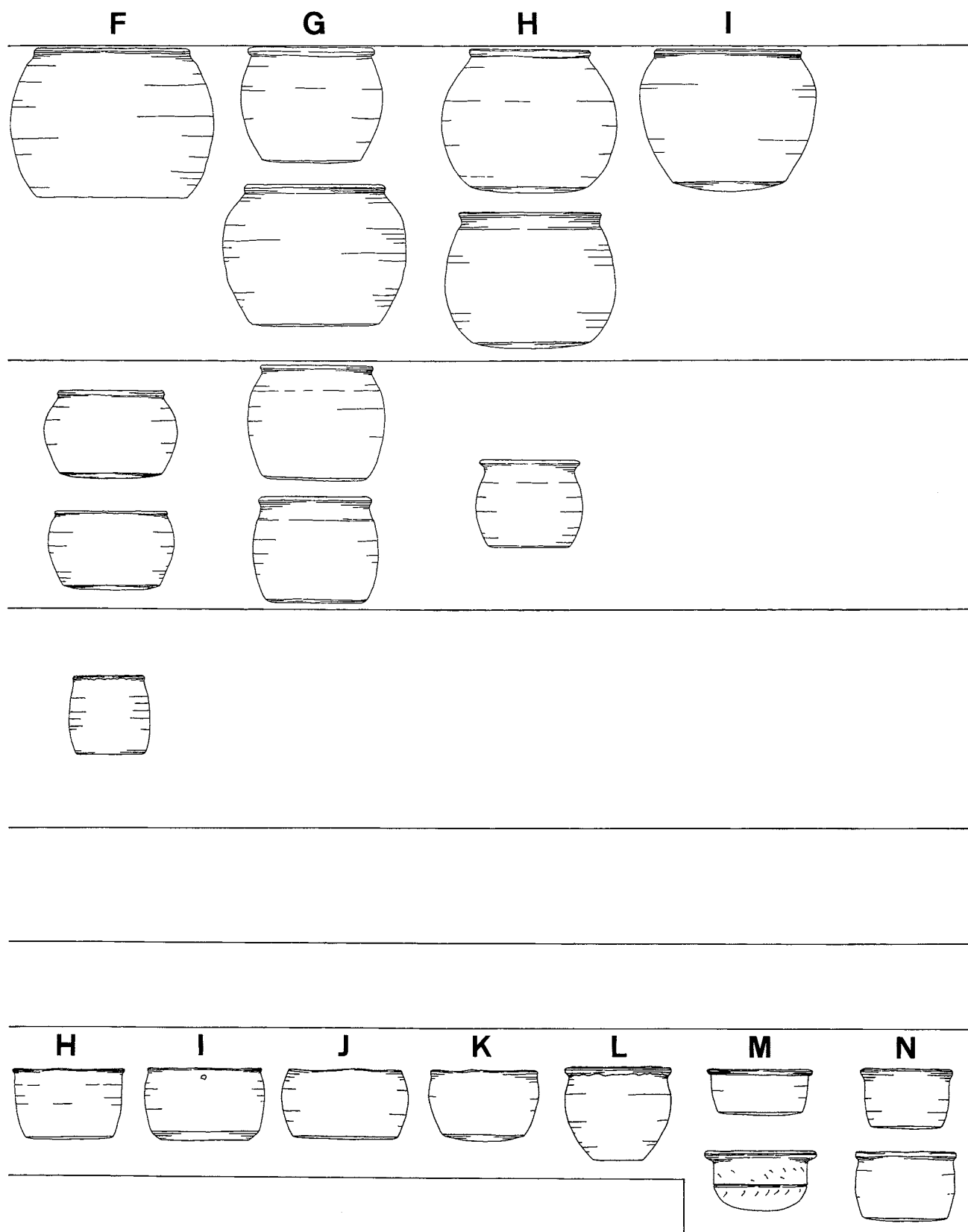


FIG. 12.3. The Flixborough Early to Middle Saxon type series and pottery sequence.

TYPE IIIC (FIG. 12.2)

This is a somewhat loose grouping of small slightly necked jars with everted rims. Vessels occur in Maxey-type Fabrics B, E and U with those in Fabric U being most common. The earliest vessel in Fabric E (FIG. 12.24, no. 154) occurs in a Phase 3b deposit.

TYPE IIID (FIG. 12.2)

These tiny jars, all with different rim types have rim diameters of about 90mm. Examples occur in Maxey-type Fabrics B and U. The earliest example has an upright lug and occurs in a Period 2 deposit, another early example without lugs (FIG. 12.20, no. 81) came from a Period 2 to 3a deposit.

TYPE IIIE (FIG. 12.2)

This small jar has a rim that is slightly wider than the base and has a slight neck restriction. The form is quite common and occurs in Maxey-type Fabrics B, E and U. The earliest vessel occurs in a Period 2–3a deposit (FIG. 12.24, no. 156), two other vessels occur in Phase 3b deposits (FIG. 12.20, no. 79 and FIG. 12.24, no. 155).

TYPE IIIF (FIG. 12.3)

Only two vessels, both in Maxey-type Fabric U have been classified as this type of jar. The jar is similar to type IIIE except that the rim is slightly narrow than the base and the form is taller. The earlier of the two vessels comes from a Phase 5b–6ii deposit.

Wide-mouthed jars or bowls (Type IV: FIG. 12.2)

This form type is so far unique to the Flixborough site. The lower part of the vessels appears to be coil-built, whilst the everted rims are turntable- or wheel-thrown. Vessel walls are thin and well formed, with a high degree of trimming and smoothing to the exterior vessel walls. Individual body and rim sherds are similar to those from vessels in local Late Saxon fabrics. All vessels are in Maxey-type Fabric E with the earliest well-stratified vessels occurring in Phase 3biv deposits.

Large bowls or dishes (Type V: FIG. 12.2–3)

This is not a common form type in Middle Saxon deposits until the mid to late 9th century when a deep form becomes important in Early Fine-shelled ware. Few of the vessels from Flixborough are complete enough to classify, those that are all appear to be shallow bowls or dishes.

TYPE VA (FIG. 12.2)

These straight-sided dishes or shallow bowls may be a late development or an example of a long-lived type as they are reminiscent of a similar form, common in Late Saxon wheel-thrown shell-tempered fabrics until the early/mid 10th century. Two of the five vessels found at the Flixborough site have evidence for lugs, and these are also found on Late Saxon vessels. All examples of this form come from Phase 6ii or 6iii deposits, and are in Maxey-type Fabrics B or U.

TYPE VB (FIG. 12.2)

Only one dish of this type, in Maxey-type Fabric B, was identified at Flixborough. The vessel unlike Type Va has curved sides and came from a Period 4 deposit.

TYPE VC (FIG. 12.2)

Two examples, both in Maxey-type Fabric U came from Phase 5b deposits. The shallow bowls have curved sides and incised horizontal and chevron decoration. One vessel (FIG. 12.26, no. 221a) also has stabbing.

Medium-sized bowl (Type VI: FIGS 12.2–3)

This is the most common type of bowl to be found at Flixborough; it is often difficult to distinguish medium-sized bowls from medium-sized wide-mouthed jars, and there is inevitably a degree of overlap in the typology. Although a variety of types occur, many are represented by only one or two examples.

TYPE VIA (FIG. 12.2)

This is the most common medium-sized bowl type to be found at Flixborough. These bowls have straight or slightly curved sides and flat-topped rims. Vessels occur in Maxey-types Fabrics A, E and U, but are most common in Fabric B. Vessels in Fabrics A and U are decorated with incised and simple circular-stamped decoration. The earliest well-stratified vessels occur in Period 4 deposits.

TYPE VIB (FIG. 12.2)

These are small to medium-sized dishes with sloping sides and flat-topped rims. Vessels occur in Maxey-type Fabrics A, B and E, with the earliest vessel occurring in a Period 2 deposit.

TYPE VIC (FIG. 12.2)

A single Maxey-type Fabric B bowl, with a slightly everted rim, occurred in a Period 6 deposit.

TYPE VID (FIG. 12.2)

A single Maxey-type Fabric A dish, with a slightly rounded base and a flat-topped rim (FIG. 12.18, no. 33), occurred in a Period 6 deposit. The dish has diagonal incised decoration on the rim top.

TYPE VIE (FIG. 12.2)

Two well-executed dishes with hollowed rims, in Maxey-type Fabric B (FIG. 12.21, nos 95–96) came from Period 5 and Period 6 deposits. A base (FIG. 12.22, no. 120) also appears to be from this form.

TYPE VIF (FIG. 12.2)

These straight-sided bowls with everted or rounded rims mainly occur in Maxey-type Fabrics E and U, although one example occurs in Fabric B. The vessel form is crudely made and the rim is left untrimmed. The earliest sherds (FIG. 12.25, no. 174) came from a Period 2 deposit, further sherds from this vessel occurred in a Period 6 deposit.

TYPE VIG (FIG. 12.2)

This bowl type appears to have a shoulder angle and a slight neck restriction below the rim. All examples except

for two vessels (one in Fabric B and one in Fabric E) are in Maxey Fabric U. The earliest stratified vessel occurs in a Period 2 deposit (FIG. 12.27, no. 230).

TYPE VIH (FIG. 12.3)

A single Maxey-type Fabric A bowl with a slightly everted rim (FIG. 12.18, no. 34) occurred in a Phase 3b–4 deposit.

TYPE VII (FIG. 12.3)

This wide-mouthed bowl with a simple flat-topped rim is the earliest vessel profile to occur on the Flixborough site. Six vessels could confidently be assigned to this grouping; the earliest in Maxey-type Fabric U was recovered from Phase 1b deposits. An identical vessel found in Period 4 and 5 deposits has a pre-fired hole beneath the rim. Two vessels in Fabric E have upright lugs. The other two vessels are in Maxey-type Fabrics A and B.

TYPE VIJ (FIG. 12.3)

This bowl type has curved sides and slightly inturned rims. The earliest vessel is from a Period 2–3a deposit in Maxey-type Fabric B (FIG. 12.21, no. 100), the other vessels are all in Fabric E and occur in Period 6 or later deposits.

TYPE VIK (FIG. 12.3)

These wide-mouthed bowls have curved sides, a slight neck restriction and rounded bases. Examples occur in Maxey-type Fabric B and E, first occurring in a Phase 3b–4 deposit.

TYPE VIL (FIG. 12.3)

Only two examples of this wide-mouthed bowl with everted rims and a narrow, flat base occurred at Flixborough. The bowls are in Maxey-type Fabric U and the earliest sherds occur in Phase 3a deposits.

TYPE VIM (FIG. 12.3)

This rounded bowl has a wide everted rim. Only one vessel in Maxey-type Fabric E (FIG. 12.25, no. 181), first occurring in Phase 3b deposits, positively belongs in this group. Two further vessels, one in Early Fine-shelled ware (FIG. 12.28, no. 258) and one in a Local shell-tempered fabric (FIG. 12.28, no. 261) may have similar profiles.

TYPE VIN (FIG. 12.3)

Two bowls with almost straight sides and everted rims belong to this type. One vessel is in Maxey-type Fabric E and the other is in Early Fine-shelled ware, the bowls are from Period 4–5a and Phase 5a deposits.

Small bowls and dishes (Type VII: FIG. 12.2)

A limited range of small bowls and dishes occurs on the site, the most common are the simple straight-sided Type VIIa. This form may have been used as lamps or cups.

TYPE VIIA (FIG. 12.2)

These simple straight-sided bowls almost exclusively have flat-topped rims. The form occurs in a range of Maxey-type fabrics, with one possible example in Early Fine-shelled

ware. The earliest stratified vessel is in Fabric A and occurs in a Period 2 deposit. Three vessels have incised or simple stamped decoration.

TYPE VIIB (FIG. 12.2)

A single small dish with a rounded base occurs in Maxey-type Fabric E. The vessel is from a Phase 5a deposit and may have been used as a lamp.

TYPE VIIC (FIG. 12.2)

These small wide-mouthed bowls have roughly finished flat-topped rims. Vessels are mainly in Maxey-type Fabric B with one vessel occurring in Fabric E. The earliest vessel comes from a Period 3 deposit.

TYPE VIID (FIG. 12.2)

This type of small bowl has a wide everted rim. Vessels are in Maxey-type Fabrics B and E with the earliest well-stratified vessels occurring in Period 4 deposits. One vessel has incised decoration on the rim top.

TYPE VIIIE (FIG. 12.2)

Two wide-based small bowls with slightly inturned rims occur in Maxey-type Fabrics B and E. One vessel appears to have had an upright lug. The earliest vessel occurs in a Period 5–6 deposit.

TYPE VIIIF

A single small bowl with an everted rim came from a Period 6 deposit. The bowl is in a non-local shell-tempered fabric and is decorated with simple circular stamps and incised decoration.

12.2 Early to Middle Anglo-Saxon handmade wares

by Jane Young and Alan Vince†

A range of handmade vessels tempered with a variety of non-shell sand inclusions was present on the site. The fabrics of most of these vessels can be paralleled with Early Saxon types elsewhere in Lincolnshire. It has previously been suspected that there was a chronological overlap between these Anglo-Saxon Handmade fabrics and Middle Saxon shell-tempered wares. However, the stratigraphic distribution of the Anglo-Saxon fabrics at Flixborough showed that apart from an initial few sherds found in early deposits (Periods 1 and 2), the majority of vessels occurred in Phase 3a and later deposits making their Middle Saxon date fairly certain. Comparative analysis of the Flixborough pottery has shown that most of the vessels are similar to material from Fishergate, York (Mainman 1993a) and are, therefore, probably of Middle Saxon date. Eight main fabric types were identified and these are summarised in FIG. 12.4 below. These fabrics have been characterised by the main tempering agent or inclusion following a classification system developed during the East Midlands Anglo-Saxon Pottery Project (Vince and Young 1991). All the sherds were examined under a ×20 binocular microscope and a number of sherds were

subject to further scientific analysis. Of these, four were examined in thin-section and the chemical composition of nine samples was determined using Inductively-Coupled Plasma Spectroscopy. Short descriptions of each main fabric type are given below; more detailed fabric descriptions are given for individual vessels in the archive database.

Code Name	Sherd count	Wt. (g).
CHARN	19	133
ECHAF	17	213
ESAXLOC	74	704
ESAXX	2	14
ESGS	78	1022
FE	2	32
SPARC	1	1
SST	66	752
Total	259	2871

Fig. 12.4. Summary of handmade Anglo-Saxon fabric groups by sherd weight and count.

12.2.1 Charnwood (CHARN)

This type of pottery has been fully discussed elsewhere (most recently by Williams and Vince 1997) and is distributed over a wide area on sites dating from the 5th to the 7th centuries. It is not known how late the fabric continues but evidence suggests that it might still be current during the earlier part of the Middle Saxon period. Vessels in a Charnwood fabric from the site at Riby, Lincolnshire (Didsbury 1994, illus. 9: 13–14) have decoration similar to that found on some Maxey-type ware bowls and one vessel (Didsbury 1994, illus. 9: 20) has a possible elongated triangular lug similar to those on Maxey-type ware vessels from that site (*ibid.*, illus. 11:46). Only 19 sherds representing six vessels (weighing 113 grams) were recovered from the Flixborough site. Thirteen of the sherds are from a single vessel in a variant fabric having abundant carbonised organic inclusions (Fig. 12.17, no. 14).

Fabric

Vessels in this fabric group are characterised by prominent inclusions of angular fragments of acid igneous rock ranging up to 4mm in size together with sparse to abundant biotite. There is a considerable range of secondary inclusions present and these include sandstone, limestone, oolites, iron minerals, greensand quartz and carbonised organic matter.

The one thin-sectioned sample (AG332; see ADS archive) contained angular fragments of acid igneous rock, organic temper, sparse rounded quartz up to 0.4mm across and had a groundmass of anisotropic clay minerals

and sparse quartz silt. It should therefore be classified as CHARN +CHAF.

Manufacture

These vessels are all handmade with varying degrees of competence. Some of the vessels are exceptionally crude, being both poorly made and fired, whilst others are carefully made, well finished and fired to a hard finish. Vessel colours range from oxidised buffs and oranges to a dark grey to black colour, often with patches of lighter colouring on the exterior surface. None of the examples from Flixborough is decorated; the only surface treatment is a slight burnishing to the exterior of two vessels.

Forms

The material from Flixborough is too fragmentary to allow reconstruction of vessel form except for the unusual vessel with abundant organic inclusions which appears to be a small sloping sided bowl (Fig. 12.17, no. 14).

Evidence of use and condition

Only two vessels displayed signs of use. Soot residues, found on both vessels may be post-depositional in one example. The material was very fragmentary, with the average sherd weight of vessels represented by single sherds being 11grams, whilst the average weight of sherds from the bowl is smaller at 8 grams.

Distribution by period

The earliest stratified sherd came from an occupation deposit in Phase 1b to 2 and was found associated with a Local Anglo-Saxon sherd and a small number of Maxey ware sherds. The small bowl (Fig. 12.17, no. 14) was found distributed in deposits ranging from a post-hole of building 2 in Phase 3bi–3bv, to Phase 6iii *dark soils*. The remaining sherds came from Period 5 and Period 6 deposits.

12.2.2 Organic-tempered fabrics (ECHAF)

A total of 17 sherds (weighing 213 grams) and representing a maximum of seven vessels were found on the site. Almost all the sherds were fragmentary and many may be from industrial and not domestic vessels. Organic-tempered fabrics are not a common find on Anglo-Saxon sites in Lincolnshire and little is known about their typology and dating. The custom of adding large quantities of organic matter, either in the form of chaff or animal dung, to pottery seems to have begun in the British Isles in the pre-Roman Iron Age but is not found in the Romano-British period. Opinions differ about when the technique re-occurs and its cultural significance. A review of continental and English evidence recently concluded that the technique was reintroduced or reinvented in Wessex in the 5th or 6th century and spread from there to other parts of Anglo-Saxon England and perhaps thence to Flanders (Hamerow *et al.* 1994). In the east midlands the use of organic temper appears to be rare and late within the Early to Middle Anglo-Saxon ceramic sequence.

Fabric

This grouping includes all vessels that have organic inclusions as the main tempering agent. Few sherds have all the organic inclusions intact, most have mainly voids with a small amount of carbonised vegetable matter being preserved in the centre of the sherds. A wide range of other inclusions is present in the fabrics, including sparse to moderate sub-round quartz, sparse iron-rich minerals, sparse flint and occasional chalk or limestone.

Manufacture

Vessels show signs of two different sorts of manufacture; coil building and pressing from a single lump of clay. Both types of manufacture have resulted in crudely made vessels with little sign of care taken in the manufacturing process. The vessels are poorly fired with most sherds having been oxidised to a light orange-brown with some vessels having patchy areas of reduction. The surface of several sherds has spalled, although it is not possible to determine if this was caused by the firing process or by subsequent use.

Forms

Only three vessel forms were noted, two jars (FIG. 12.17, nos 16–17) and a bowl (FIG. 12.17, no. 15). The small size and curvature of some of the sherds could indicate that they came from a crucible or mould.

Evidence of use and condition

With the exception of the sherds from the bowl, all of the pottery is in poor condition. Most sherds are low-fired and have spalled surfaces. Only two vessels show signs of use: one, a small sherd from a Phase 6iii dark soil, has a fuel ash residue. The bowl has light soot patches on the exterior and a thick carbonised deposit on the interior.

Distribution by period

The earliest stratified occurrence is in a Period 1 pit fill. The two sherds from the bowl were recovered from building 6 deposits in Period 2–3a, the size and condition of the sherds indicates that they may represent initial deposition and therefore may have been associated with this structure. Most of the other sherds came from dumps or dark soils in areas E and G.

12.2.3 Iron-tempered fabrics (FE)

The fabric of two sherds was characterised by the use of ferrous inclusions. Fabrics similar to these are found on several Anglo-Saxon sites in Lincolnshire, including the cemeteries at Castledyke (Didsbury 1998) and Cleatham (personal comm. K. Leahy; Leahy 2007b, 84–5) and an occupation site at Cherry Willingham near Lincoln (Field 1981).

Fabric

The main tempering agent consists of moderate to abundant, rounded and angular fragments of iron up to 2mm in size.

Other inclusions include moderate to sparse sub-round quartz; sparse limestone and sparse burnt-out organic voids.

Manufacture and form

Both sherds are from coil-made vessels, fired to a reasonable hardness in an oxidised atmosphere. The sherds vary in colour from a light orange-brown to a bright red colour. Neither sherd is large enough to determine a form type.

Evidence of use and condition

Both sherds are medium-sized and in a slightly abraded condition. There is no evidence for use on either of the two sherds.

Distribution by period

The sherds were both recovered from Period 6 dumps.

12.2.4 Sandstone-tempered fabrics (SST)

This is the second largest group of the Handmade Anglo-Saxon fabrics found on the site, comprising 26% by sherd count and by weight (a total of 66 sherds representing a maximum of 28 vessels). A wide range of fabrics is present, and comparative analysis with sherds from the Fishergate site at York (Mainman 1993a) has shown that most of the material is likely to be of Middle Saxon date.

Fabric

The fabrics are characterised by the presence of moderate to abundant quartz sandstone varying from 0.2mm (fine) to 2mm (coarse) together with a range of secondary minerals, including iron, muscovite, flint, calcareous grains and organic matter.

Manufacture

All the vessels are handmade and most show evidence of coil building. Some of the vessels with a fine fabric have burnished or semi-burnished exterior surfaces. Poor firing control is shown by the colour variation on some vessels, with colours ranging from light pink through buff to light grey.

Forms

Despite the large number of sherds recovered, few vessel forms are evident. Two of the rims can be reconstructed as coming from medium-sized (FIG. 12.17, no. 23) and large jars (FIG. 12.17, no. 24). The size and curvature of most of the remaining sherds also indicate medium- to large-sized vessels, again probably jars. A few sherds must come from small vessels, possibly bowls.

Evidence of use and condition

A total of 12 vessels have evidence for use in the form of soot deposits and internal carbonised residues. Five of these vessels have internal residues with no evidence for external soot. As the size of four of these vessels is likely to be small, it is possible that they have been used as lamps.

A small number of vessels are represented by more than one sherd and three vessels have multi-context joins.

Distribution by period

The earliest stratigraphic occurrence of a Sandstone-tempered vessel on the site is vessel 4, first found in deposits associated with building 6 in Period 2–3a. Further sherds of this vessel are spread through the stratigraphic sequence up to Phase 6i. Only a small number of sherds were recovered from structural deposits or the Period 6 dark soils; most of the sherds came from Period 2 to Period 6 dump deposits.

12.2.5 Local Anglo-Saxon fabrics (ESAXLOC)

This is the commonest Anglo-Saxon fabric group, forming 28% of the Anglo-Saxon pottery by sherd count (a total of 74 sherds representing a maximum of 52 vessels) and 25% by weight. Sherds in this fabric grouping are characterised by the presence of quartz inclusions that show no evidence of aggregation, however this does not necessarily mean that the quartz is not derived from a sandstone rock. Comparative material was found amongst the Middle Saxon pottery from Fishergate, York (Mainman 1993a).

Fabric

Sherds are mainly tempered with moderate to abundant sub-round to sub-angular quartz, ranging in size from 0.2 mm to 1mm. All fabrics included varying amounts of other inclusions, mainly iron, flint, limestone and carbonised organic matter.

A single sample was thin-sectioned (AG334; see ADS archive) and contained a quartzose sand dominated by rounded quartz with minor quantities of rounded chert and rounded, fine-grained sandstone. The groundmass consisted of anisotropic clay minerals and sparse angular quartz silt. These characteristics are typical of sand-tempered wares produced in the Trent Valley or tempered with blown sand derived from the Trent Valley.

Manufacture

These vessels were similar in manufacture to those with sandstone tempering, although only a small number of vessels show signs of external burnishing or wiping. The colour range although similar to that of the Sandstone-tempered fabrics tends to be darker with more sherds showing signs of reduction.

Forms

It is difficult to determine the vessel type of more than a few vessels, although it is possible to say that most vessels are of medium or small size. Three small-sized bowls (FIG. 12.17, nos 18–20) and one large bowl or dish (FIG. 12.17, no. 22) are the only positive evidence for open forms in this fabric grouping. A single medium-sized, rounded jar (FIG. 12.17, no. 21) gives the only indication of a profile for closed vessels.

Evidence of use and condition

Only 11 vessels showed signs of use with soot or carbonised residues. External soot deposits mainly occurred in patches on the lower wall of the vessel or on the base. Internal carbonised residues were found on several small vessels, probably bowls (e.g. FIG. 12.17, no. 19). Sherd size and abrasion was extremely variable, with only nine vessels being represented by more than one sherd. Four vessels had multi-context joins.

Distribution by period

Four vessels found in Period 1 and Period 2 deposits appear to be of Early Saxon date. Six vessels recovered from Period 3 deposits are comparable to material from Fishergate, York (Mainman 1993a). Vessels found in Period 4 and later deposits may be residual as indicated by the pattern of multi-context joins.

12.2.6 Greensand-tempered fabrics (ESGS)

A total of 78 sherds (the highest number in any fabric group) contained greensand quartz; however, 69 sherds came from a single vessel, Vessel 21. The remaining sherds represent six vessels. The fabric group is characterised by the presence of rounded greensand quartz grains up to 2mm.

Fabric

The fabric includes sparse to common greensand quartz with a background of smaller sub-angular grains (up to 0.4mm), together with varying amounts of aggregated sandstone, calcareous grains, iron-rich grains, flint and carbonised organic matter.

A sample of Vessel 21 was thin-sectioned (AG197; see ADS archive). The temper consists of well-rounded quartz grains, many of which have iron-rich veins running through them. A number of grains were coated with an opaque material, indicating that they were derived from a ferruginous sandstone. The groundmass consists of anisotropic clay minerals, moderate angular quartz silt up to 0.2mm across and sparse muscovite flakes up to 0.3mm long. These characteristics indicate an origin in an area of Cretaceous rocks rather than detrital Cretaceous rocks and minerals deposited at some distance from the Cretaceous outcrop.

Manufacture

The large jar (FIG. 12.17, no. 25) is primarily coil-built, but scraping marks on the interior of the vessel show that great care has been taken to thin the walls out, perhaps in imitation of Ipswich ware vessels. The exterior surfaces of much of the vessel are burnished, especially at the top of the vessel on the shoulder. The other sherds in this fabric grouping are also relatively thin-walled and high-fired.

Forms

The only evident form is the illustrated large jar (FIG. 12.17, no. 25). The vessel is similar to Ipswich ware in appearance and has burnished surfaces below the neck. At the neck

several horizontal rows of burnishing overlap to form an overall burnished zone, below this the burnishing consists of vertical strokes of varying closeness and length.

Evidence of use and condition

None of the vessels shows evidence for use. Sherds of Vessel 21, recovered from dump 3758 in Phase 4ii and from trench fill 5871 in Phase 6i have been badly burnt post-breakage to such an extent that some have actually melted.

Distribution by period

The earliest occurrence of Vessel 21 is in a Phase 3biii dump. The vessel continues to be re-worked through the stratigraphy until Phase 6i. Sherds from this vessel are found distributed in 20 different contexts, although surprisingly no sherds were recorded from the dark soils. The other vessels were recovered from Period 3 and Period 6 deposits.

12.2.7 Sparry calcite-tempered fabrics (SPARC)

A single sherd in a fabric containing moderate calcite crystal inclusions came from the ditch fill (Phase 4ii). Similar fabrics are known from the Saxon site at West Heslerton in the Vale of Pickering (Vince forthcoming), where they are quite common. Sherds in sparry calcite-tempered fabrics are occasionally found on sites in the Lincolnshire Wolds, although seven vessels known from Lincoln (Vince and Young forthcoming) are thought to be of Roman date and imports from the Vale of Pickering.

12.2.8 Anglo-Saxon non-local fabrics (ESAXX)

Two single sherd vessels with a fine quartz temper came from Phase 6iii dark soil deposits. Both vessels were fragmentary and may have dated to either the Early or Middle Saxon period.

Discussion

Handmade vessels in an Anglo-Saxon tradition are found on sites throughout the historic county of Lincolnshire. The majority of these vessels are tempered with fine to coarse quartz sand inclusions, although other inclusions such as acid igneous rock, ironstone and oolitic limestone are also quite common. Evidence from Maxey (Addyman 1964) suggests that handmade Anglo-Saxon types (Groups I and II) gave way to Group III shell-tempered Maxey-type ware possibly with some overlap, some time in the Middle Saxon period. Excavations at Normanby Le Wold (Addyman and Whitwell 1970), Cherry Willingham (Field 1981), Quarrington (Walker and Lane 1996) and Riby (Steedman 1994) have demonstrated that this shell-tempered, Maxey-type ware forms the overwhelming majority of Middle Saxon pottery assemblages in Lincolnshire. At Fishergate, York (Mainman 1993a) Maxey-type ware forms the main regional type of pottery used on the site; however, quartz-tempered wares are almost as common. At Thwing (Mainman forthcoming) and Wharram Percy (Slowikowski

2000) Maxey-type wares are either absent (Thwing) or rare (Wharram) in Middle Saxon assemblages. The evidence from Flixborough shows that quartz-tempered vessels were used on the site in the Middle Saxon period and suggests that this might also be the case at Riby. This occurrence, however, may be particular to Flixborough and may not be geographically influenced, but may instead be the product of the status or function of the site.

12.3 Middle Saxon wares

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with a contribution by Paul Blinkhorn*

The Middle Saxon assemblage at Flixborough provides a picture of ceramic supply mainly from production centres within Lincolnshire, supplemented by regional imports from Ipswich and, more rarely, imports from Continental Europe.

12.3.1 Northern Maxey-type ware

The first evidence for the use of shell-tempered pottery in the Middle Saxon period came from excavations by Addyman (1964) at Maxey in Cambridgeshire (then in Northamptonshire). One of three groups of handmade pottery (Group III) contained a dense shell-filled fabric, mainly in the form of flat-based, bucket- or barrel-shaped vessels. The rims of these vessels were mainly flattened; a few, however, were slightly everted and decorated with finger pressing, giving a frilled effect to the rim edge. This pottery was attributed by the excavator to the Middle Saxon period.

Subsequent fieldwork has shown that this tradition existed over much of Lincolnshire, Northamptonshire and Cambridgeshire, extending to a small number of sites in Yorkshire. Work undertaken as part of the East Midlands Anglo-Saxon Pottery Project led to the isolation of two main fabric types: *Southern* – tempered with a shelly marl, and *Northern* – tempered with a shell limestone (Vince and Young 1991). Further work identified a third grouping, a variant of Northern Maxey-type ware at Quarrington, near Sleaford, Lincolnshire. All of the Maxey-type pottery recovered from Flixborough is of Northern type and for convenience is referred to simply as Maxey-type in this report. An excellent summary of the knowledge of Maxey-type pottery in the county prior to the analysis of the Flixborough material can be found in the account of the pottery from Riby Crossroads (Didsbury 1994).

Northern Maxey-type ware has been divided into several ‘fabric’ categories. These are to some extent formed by visual attributes such as shell size and density, colour, firing temperature, manufacture and form, but are primarily based on fabric differences apparent under ×20 microscopic examination. These differences may reflect different regional production centres or varying sources of clay or temper over a period of time within one workshop.

Twenty percent of the sherds on the site were too small, abraded or leached of their shell temper to enable sub-fabric types to be determined (see FIG. 12.5). In some cases these sherds were found to join to vessels where sherds were in a less abraded condition or showed no signs of leaching (e.g. FIG. 12.19, Maxey B, no. 48 and FIG. 12.27, Maxey U and C, no. 225).

Fabric	Sherd count	Wt. (g.)
Fabric A	101	645
Fabric B	2664	24453
Fabric C	12	110
Fabric E	584	11166
Fabric G	1	17
Fabric U	295	4624
Fabric type Unidentifiable	947	2699
Total Maxey-type	4604	43714

FIG. 12.5. Summary of Maxey-type ware fabric groupings by sherd count and weight

Fabric A

A total of 101 sherds of Fabric group A were identified from the assemblage; only 63 of these occur in closely stratified deposits.

Fabric

Fabric A contains abundant fine fragments of fossil bivalve shell up to 1.5mm, although most fragments are below 0.5mm. Sparse grains of sub-angular quartz up to 0.2mm and sparse iron-rich grains are also present. The fabric is quite hard, and the core of the vessel is always reduced to a dark grey to dark brown colour, with surface colours varying from reddish-brown to black.

Manufacture

The vessels are carefully made with 10 to 20mm high coils that are well smoothed together. Sloping finger impressions, vertically down the vessel are quite common (e.g. FIG. 12.18, no. 28), especially near to the base. Vessel walls are thin and the flat bases are added separately (FIG. 12.18, no. 40). The surfaces of the vessel are usually smoothed, often masking the shell temper. Eight vessels are decorated, mainly with incised diagonal lines or crosses on the rim edge (FIG. 12.18, nos 27, 30–31, 33, 36). Two vessels have simple circular stamps on the rim, and the pitcher or cup handle (no. 41) has an applied strip.

Forms

Most vessels in Fabric A are small to medium-sized bowls or jars with straight-sided walls; evidence for a single-handled vessel, possibly a small pitcher or cup, was also found. No large vessels or lugged vessels occurred. The specific form type of 14 vessels was discernible, the largest

number being type VIIa small bowls (FIG. 12.18, nos 36–9). With the exception of three of the 23 recorded rim types, all were simple flat-topped types, cut with a tool leaving a characteristic inner and outer lip. The three other vessel rim types may have been finished with a finger.

Evidence of use and condition

Fabric A vessels are hard fired, and fragments do not easily crumble. Most vessels have soot residues, and all the small vessels have interior soot or carbonised deposits. Few of the vessels are leached, and it is unlikely that a large number of Fabric A sherds have not been recognised amongst the completely leached material due to their easily recognisable manufacturing technique. The ornate nature of many of the Fabric A vessels, together with the prominence of small forms and internal carbonised deposits, suggest that they may have had a specific function, perhaps as lamps.

Distribution by period

Less than 50% of vessels are stratified in deposits other than the dark soils or general dumps. The greatest number of sherds to occur in well-phased deposits is five, from Phase 1b.

Fabric B

The vast majority of Maxey-type vessels are in Fabric B. This fabric grouping is fairly loose and probably includes vessels made at several centres within the region. Under $\times 20$ magnification there is little variation in the composition of the temper; however, subtle differences in firing, colour and manufacturing techniques between sherds from varying find spots support the theory of a number of production centres.

Fabric

The fabric includes abundant, medium to coarse fossil bivalve shell up to 2.0mm in size. Microscopic examination shows a range of other minerals present including sparse sub-round to sub-angular quartz grains up to 0.2mm in dimensions, limestone, iron-rich grains and carbonised organic material.

Manufacture

Vessels are entirely handmade with coils; vessel walls are thicker than those in Fabric A, usually about 10mm thick. Thinner-walled vessels occur in later phases; these can be easily mistaken for Late Saxon vessels. The surfaces of the vessels are smoothed, occasionally to a burnished finish, although this rarely masks the shell temper. Vessels are mainly reduced to a medium to dark grey colour with oxidised surfaces in the bright orange to red-brown range. Occasional fully oxidised sherds do occur, usually confined to thinner-walled vessels. Competency in manufacture is variable, the earliest stratified vessels on the Flixborough site seem to be more carefully made and finished than vessels occurring in later deposits. Decoration

including incised lines (FIG. 12.22, nos 117 and 119), simple stamps (FIG. 12.22, nos 117 and 122) and applied clay (FIG. 12.22, no. 118), is rare, and is described under the appropriate vessel type.

Forms

Despite the large number of sherds recovered from the site, only about 20% were diagnostic enough to classify within a form typology. It was often possible to determine if sherds belonged to a large, medium or small vessel, but not whether it was a jar or bowl. A wide range of jars and bowl types was manufactured in Fabric B (FIGS 12.19–12.22). A total of 39 vessels can be identified as large jars, of these 20 are lugged. The earliest large jars occur in Period 2 to 3a deposits. The rims of most vessels are flat-topped (FIG. 12.19, nos 42–6), although a few rounded and rolled rims also occur (e.g. FIG. 12.19, nos 50 and 52). Jar shapes include both straight-sided (type Ia, e.g. FIG. 12.19, no. 42) and rounded (type Ib, e.g. FIG. 12.19, no. 45) types. Only two of the illustrated vessels (FIG. 12.19, nos 42 and 45) are not lugged. FIG. 12.19, no. 45 has a pre-fired hole below the rim, a feature seen on other early vessels. Two of the large jars (FIG. 12.19, nos 44 and 46), both recovered from Phase 3bii deposits, have triangular lugs – a rarity in Fabric B. One unusual lug (FIG. 12.22, no. 116) is simply a thickening of the jar rim with a perforation through. The hole was pushed through the vessel from the interior, and the thickening was added after the hole had been formed. Vessels are found with both flat (e.g. FIG. 12.19, no. 56) and rounded (e.g. FIG. 12.19, no. 55) bases. Thinner-walled, sagging bases appear to be a late type. Most large jars are sooted, several vessels show other signs of use: FIG. 12.19, no. 56 has an interior white deposit; FIG. 12.19, no. 46 has a friction-worn interior and FIG. 12.19, no. 50 has a leached interior. No decoration was found on any of the large jars.

Medium-sized jars (FIG. 12.20, nos 57–75) are the most common form found in Fabric B. Vessels with flat-topped rims and straight or slightly curved sides (types IIa and IIb, FIG. 12.00, nos 57–62) are the earliest type to occur in the stratigraphic sequence (in Phase 3a). Only three of these vessels are lugged (FIG. 12.20, nos 59–60) and these appear to be merely an adaptation of the existing rim, rather than an applied part. Vessels with a more rounded profile (type IIc, FIG. 12.20, nos 63–67) first occur in Phase 3biii deposits, these vessels have rounded rims and are fairly thin-walled. Vessel walls are smoothed to such an extent that it is easy to mistake them for Late Saxon vessels. Only one vessel (FIG. 12.20, no. 64) appears to be lugged. Slightly necked jars (type IId, FIG. 12.20, nos 68–9) are similar to vessels found at Cherry Willingham (Young forthcoming) and Lincoln (Vince and Young forthcoming). This is the only medium-sized jar type known to be decorated with finger-tipped pressings to the edge of the rim (FIG. 12.20, no. 68). Medium-sized globular jars (type IIf, FIG. 12.20, nos 70–71) do not appear until Period 4 deposits at Flixborough, although the squatter type IIg vessels (FIG. 12.20, nos 72–3) appear slightly earlier in Phase 3bii to

3biii features. Two jar types, one with everted rims (FIG. 12.20, no. 74) and one with narrow necks (FIG. 12.20, no. 75) are only represented by rim sherds.

Eleven small jars were found in this fabric group (FIG. 12.20, nos 76–82). The vessels are not closely classifiable as each jar has a different profile. Two vessels appear to be lugged (FIG. 12.20, no. 82); however, only part of the lug on each vessel is present. FIG. 12.20, no. 82 appears to be a smaller version of a type IIf jar and is the only small jar to be decorated.

Only seven large bowls were found in Fabric B (FIG. 12.21, nos 83–8), all except one (FIG. 12.21, no. 88) have flat-topped rims. The smallest bowl (FIG. 12.21, no. 83) appears to be lugged and is the only large bowl not to have soot residues. One of the bowls (FIG. 12.21, no. 84) has small post-firing holes drilled through the body below the rim. The earliest stratified large bowl (FIG. 12.21, no. 85) comes from a Phase 4ii deposit. A total of 29 vessels are medium-sized bowls (FIG. 12.21, nos 89–102). Nearly 50% of these (14 examples) can be identified as type VIa bowls (FIG. 12.21, nos 89–92). Six of the Flixborough examples have internal soot or carbonised deposits, and this is a common occurrence on other sites.

Few other bowl types were found in Fabric B. These include Type VIb (FIG. 12.21, no. 93); Type VIc (FIG. 12.21, no. 94); Type VIe (FIG. 12.21, nos 95–96); Type VIg (FIG. 12.21, no. 97); Type VIh (FIG. 12.21, no. 98); Type VII (FIG. 12.21, no. 99); Type VII (FIG. 12.21, no. 100) and Type VIk (FIG. 12.21, nos 101–2). All the bowls are undecorated, and most have flat-topped rims. The earliest stratified medium-sized bowl (FIG. 12.21, no. 100) has a wear mark on the rim; it appears to have been caused by an attempt to drill through the rim. Only one other bowl (FIG. 12.21, no. 93) is stratified in an early deposit, from Phase 3bv. Typologically, the type VIh bowl (FIG. 12.21, no. 97), from a Phase 5a deposit, is the latest type to be found on the site. This type has an everted rim similar to those found on Fabric E and Early Fine-shelled ware vessels. A single Type VI bowl has evidence for a lug. Type VIc bowls (FIG. 12.21, no. 94) are the largest in this class and can perhaps be seen as an overlap between a jar and a bowl form with a slightly curved upper wall and straight sides. The medium-sized bowl with side lugs (FIG. 12.22, no. 111) can be paralleled by a vessel from St Chad's, Barrow-on-Humber (Hayfield 1985, fig. 12, 6).

Nineteen vessels could be identified as Type VII small bowls. Six are straight-sided Type VIIa (FIG. 12.21, nos 103–5), and five are Type VIIc (FIG. 12.21, nos 106–8) with curved sides. The earliest stratified vessels occur in Period 3 deposits. Nine of the vessels have thick soot or carbonised deposits on the interior of the vessels, and a further three have external soot. One vessel is decorated (FIG. 12.21, no. 103); it has stamped circular impressions on the rim top similar to those found on Fabric A vessels. The shell tempering of this vessel falls within the fine end of the range for Fabric B, and it remains possible that this is just a coarse Fabric A bowl.

The presence of three handles indicates that a small number of handled vessels occur. Two are simple, small strap handles (FIG. 12.22, nos 123–4), and it is impossible to determine if these are from pitchers, cups or handled jars. The decorated side handle (FIG. 12.22, no. 122) is unique and probably comes from a large bowl. An unusual restricted base may be from a pitcher, cup or jar form.

Evidence of use and condition

The condition of vessels in Fabric B is extremely variable; little of the material is un-abraded and a high percentage of the material has partial leaching of the shell inclusions. The average sherd weight is low, at 10gm, and this shows little variation by phase. The highest ratio is in Phase 3a at 14gm and the lowest in Phase 5b at 7gm. Only 7% of sherds (5% of vessels) have soot deposits. A further 2% have internal carbonised deposits. This indicates that 91% of sherds in Fabric B have no visible soot or carbonised deposits; however, this may not reflect the number at deposition, as evidence for soot on the smooth surface of this fabric can be removed at the pot-washing stage. Nevertheless, this is a much higher percentage than is to be expected, perhaps indicating that many vessels were used for storage rather than cooking. Six vessels had wear marks through use, or attempts to adapt the vessel, and two vessels had post-firing holes. Eight vessels had white interior deposits, caused either by the storage or heating of water or urine.

Distribution by period

Vessels in Fabric B first appear in Phase 1a–b deposits, and continue to be the most common fabric type found in every phase, although the ratio to the other Maxey-type fabrics is variable.

Fabric E

This fabric group was first recognised during initial work on the Flixborough assemblage, and has since been noted at several other sites in Lincolnshire, mainly in the north of the county. A total of 584 sherds were recovered from the site, 425 of which came from reasonably stratified deposits.

Fabric

The fabric contains dense medium-sized shell up to 2mm in size. The fabric is characterised by the presence of fossil echinoid spines in the shell sand. These are by no means common, and often only one may be visible in any one or two fresh breaks. Minor inclusions such as sub-angular quartz and occasional rounded limestone are also present. The fabrics are hard-fired, with reduced grey to dark grey cores, and dark red to grey surfaces.

Manufacture

Most vessels are entirely coil-made, although one class of vessel, Type IV, has turntable- or wheel-finished rims. Vessel walls are usually quite thick, except for those

of some Type III smaller jars and the Type IV vessels. Vessel bases and walls are mainly formed together, although occasionally bases are applied separately (e.g. FIG. 12.26, no. 188). The joins between the coils are well joined together, and the exterior surface of vessels is smoothed, occasionally to a burnished finish. The lower walls are occasionally trimmed (FIG. 12.24, no. 140). Decoration is rare; only four vessels, all bowls (FIG. 12.25, nos 181, 5), are decorated with incised lines. One vessel has incised zigzags, another has crosses on the rim top, and the others have incised grooves around the body. One vessel appears to have applied decoration (FIG. 12.26, no. 191), although this may just be part of an applied lug or handle.

Forms

A wide range of both jar and bowl types are found in Fabric E. Jar profiles are almost always rounded or globular, with few straight-sided vessels (e.g. FIG. 12.24, no. 151) occurring. Large jars (FIG. 12.23, nos 125–36) are the second most common form found in this fabric. A wide variety of rim types occur, ranging from flat-topped (FIG. 12.23, nos 125, 8 and 133) to everted (FIG. 12.23, nos 127, 9 and 131). Six of the large jars have upright lugs; examples of both the rounded and triangular types are present. The sample is too small to be certain, but the triangular lugs seem to be associated with the simple flat-topped rims. From Period 4 onwards everted or rolled rims are often left untrimmed, leaving an uneven, often ragged, edge. This trait is more common on smaller vessels, but sometimes occurs on the larger jars (FIG. 12.23, no. 131). Medium-sized jars (FIG. 12.24, nos 137–9) are the most common form found. Only one vessel (FIG. 12.24, no. 138) has a flat-topped rim, all the other Type II vessels have everted (e.g. FIG. 12.24, nos 144–6) or necked rims (e.g. FIG. 12.24, no. 149). Small jars are relatively common in Fabric E; the smallest vessel has a rim diameter of 100mm. A few of these jars have flat-topped rims (e.g. FIG. 12.24, nos 155 and 157), the remaining rim types are everted (e.g. FIG. 12.24, nos 152–4) or less commonly necked (e.g. FIG. 12.24, no. 150). Vessel Type IV is unique to Fabric E; the type includes vessels classifiable as either jars or bowls. The lower part of vessels appears to be coil-built, but the upper part and the everted rims are wheel- or turntable-finished. The lower wall, above the basal angle was trimmed, probably whilst the vessel was being rotated. Twelve of these vessels were found at Flixborough; they have not been noted elsewhere. One vessel is obviously an open bowl form (FIG. 12.25, no. 164), the others are wide-mouthed jars. One vessel has a large upright lug that is probably rounded in shape.

Only a single large-sized bowl (FIG. 12.25, no. 170) occurred in this fabric type. Medium-sized bowls (FIG. 12.25, nos 171–182) are the third most common form to be found in Fabric E; both straight-sided (e.g. FIG. 12.25, no. 174) and rounded (e.g. FIG. 12.25, no. 180) types are present. The straight-sided bowls (Types VIb and VIc) are the earliest stratified form type to be found in Fabric E. Several of these bowls have simple flat-topped rims

(e.g. FIG. 12.25, 171–2). Two medium-sized bowls are decorated. One (FIG. 12.25, no. 181) has two rows of incised lines around the lower body of the vessel, and the other vessel (not illustrated), a flat-topped type VIa bowl, has incised crosses on the rim top. Small bowls (FIG. 12.25, nos 183–7) are not a common form; all five bowls are illustrated. One small bowl (FIG. 12.25, no. 186) with a slightly inturned flat-topped rim, appears to have had a lug. The everted rim bowl (FIG. 12.25, no. 185) has incised zigzag lines on the inner rim flange.

Evidence of use and condition

This fabric type is quite hard fired and fragments tend not to crumble. Only 33 vessels identified as Fabric E showed signs of leaching. Eleven of these vessels had internal leaching only, probably caused by the acidic contents of the vessel. Five vessels had burnt beyond their original firing temperature causing much of the shell temper to burn out, the echinoid spines, being slightly denser than some of the other shell fragments, had remained. A total of 150 vessels had soot or carbonised residues, many of which may have been post-depositional. However, about 25% of these vessels had only internal residues caused by usage. Some vessels had specific sooting patterns (e.g. FIG. 12.26, no. 190) indicating specific use. One large jar (FIG. 12.23, no. 131) has a worn inner edge to the rim indicating the possible use of a lid.

Distribution by period

The earliest vessels in Fabric E appear in Period 2 occupation deposits, one a floor of Building 20. Until Phase 4ii, less than ten vessels are recorded from each sub-phase. The fabric appears to peak in phases 4ii to 5a. Sherd joins from multi-context vessels indicate that much of this material may be residual and that the main period of use was in the latter part of Period 3 (3b) and Period 4.

Fabric U (vessels from unidentified sources)

A total of 295 sherds occurred in previously unrecognised Maxey-type fabrics; these were not subdivided for the Flixborough archive. In visual appearance all the vessels fall within the range for Northern Maxey-type ware as defined above. Microscopically, however, they did not match any of the already defined fabric groups and the evidence from the Flixborough assemblage alone was insufficient to group them. Subsequent fabric analysis and comparative form analysis with similar material from other sites in the area have shown that four main groups occur. Descriptions of these groupings, temporarily termed Fabrics U.1 to U.4 are given below. These groups account for the majority of the unclassified sherds found on the Flixborough site, although a significant number of vessels occur in other fabrics (mainly fabrics with a high quartz sand component e.g. FIG. 12.26, no. 221).

Fabric U.1

This fabric contains abundant fine shell together with

occasional subround quartz grains in a low-fired matrix. The surfaces of the vessels appear to have been brushed rather than smoothed. The earliest vessel profile to occur on the site (FIG. 12.27, no. 233) is in this fabric.

Fabric U.2

The fabric has abundant fine shell fragments in a high-fired matrix. It is possible that the grouping merely represents higher-fired vessels of various fabrics or those that have become re-fired by subsequent use. The high firing temperature has caused the shell to start to decompose into a white powder. An example of a vessel in this fabric is the oddly shaped large jar, FIG. 12.26, no. 193.

Fabric U.3

Vessels in this fabric contain abundant fine to coarse shell fragments of a similar appearance to those found in Fabric E, although no echinoid shell fragments are present. Vessels are well fired and usually have a dark reduced fabric which may occasionally have dark red or brown surfaces.

Fabric U.4

This fabric contains abundant fine shell fragments and is microscopically similar to that of Early Lincolnshire Fine-shelled ware, although manufacturing techniques are more typically those of Maxey-type ware. The characteristic parallel striations found on the external surface of Early Lincolnshire Fine-shelled ware vessels are largely absent from vessels in this grouping. Occasional striations are found below the rim but the rest of the vessel is wiped smooth.

Manufacture

All the vessels classified under this fabric type are coil-made. Detailed descriptions of individual manufacturing techniques of vessels not covered by Fabrics U.1 to U.4 are given where relevant in the project archive.

Forms

A wide range of form types occurs within this fabric grouping. Only five vessels could be identified as large jars (FIG. 12.26, nos 192–6). The earliest of these is an oddly shaped vessel in Fabric U.2 with a narrow rim and wide base (FIG. 12.26, no. 193). This vessel (vessel 28) which is first found in a Phase 3bv deposit has been subjected to intense heat and the lower interior of the vessel is both leached, and has the interior colour turned to white. It may have functioned as some sort of industrial vessel, or the discolouration may be due to a reaction with salt. A similar vessel is known in Ipswich ware (Hurst 1976, fig. 7.7:3). The most common form to be found is the medium-sized jar (FIG. 12.26, nos 197–207). The earliest of these (FIG. 12.26, 206) occurs in a Phase 1b deposit and appears to be a straight-sided vessel. Small jars are quite common (FIG. 12.26, nos 208–19) with examples of flat-topped (e.g. FIG. 12.26, nos 216–17), rounded (e.g. FIG. 12.26, no. 209) and everted (e.g. FIG. 12.26, nos 210–12) rims

occurring. A single vessel has a lug with a small punched hole through it.

Five large bowls were noted (FIG. 12.26, nos 220–1), one of which is decorated with incised chevrons on the body, and stabbed decoration on the rim top (FIG. 12.26, no. 221a). Medium-sized bowls are the second most common form in this fabric grouping. Vessel 3A (FIG. 12.27, no. 233) in Fabric U.1 is the earliest profile of any Maxey-type vessel to occur on the site. A similar vessel (FIG. 12.27, no. 234) has a small pre-fired hole below the rim, but no lug. These vessels are typical of what is considered a classic early Maxey-type ware form, with straight sides and a flat-topped rim. Several of the bowls are decorated, either with incised crosses (FIG. 12.27, no. 223 and 225) on the rim top, or incised chevrons on the body (FIG. 12.27, no. 224). Similar decoration is known on Maxey-type vessels from Quarrington (Walker and Lane 1996) and on Charnwood vessels at Riby (Didsbury 1994). Three vessels are small bowls (FIG. 12.27, nos 237–8, and one unillustrated example), one of which is decorated with diagonal incisions on the rim top. One unusual sherd from an unidentified vessel form has stabbed decoration on the body (FIG. 12.27, no. 239). A rod handle (FIG. 12.27, no. 240) is from an unknown handled form.

Evidence of use and condition

The condition of sherds was extremely variable. More than 50% of vessels have soot residues, with 52 sherds having interior soot or carbonised deposits. A small number of vessels had internal leaching and two vessels had interior red pigment deposits.

Distribution by period

Vessels in Fabric group U occur throughout the stratigraphic sequence starting in Phase 1b. There is no obvious concentration of vessels. This is, however, to be expected with such a loose grouping of fabric types; many sherds may just represent an odd mix of one of the other main fabric types.

Fabrics C and G

These fabrics seem to represent the coarse end of Fabric B, and may just be localised variations, or the use of a coarser fabric for certain larger vessels. Neither fabric is common in Lincolnshire. Eleven vessels in Fabric C and one in Fabric G occurred at Flixborough; all are large vessels (FIG. 12.27, nos 241–3). The earliest Fabric C sherds are stratified in Period 2 deposits; the Fabric G vessel is unstratified.

Discussion of Northern Maxey-type ware

The Flixborough excavations have produced the largest collection of Maxey-type wares known. Furthermore, the pottery comes from a site occupied from the 7th century onwards and should therefore span the entire period in which Maxey-type wares were in use. In addition, a survey of all known collections of Northern Maxey ware was carried out

as part of this analysis. This publication, therefore, provides the best opportunity to establish the overall date-range of Northern Maxey ware, the relative and absolute dates of the Fabrics, forms, rim types and other traits. Furthermore, the scientific analysis of pottery from both Flixborough and comparative sites (Thornton-le-Moor, Holton-le-Clay, Fishergate in York and Riby Crossroads) should enable questions of provenance to be considered.

The taphonomic analysis of the pottery from Flixborough, however, shows that only a small quantity is stratified in occupation deposits within the building sequences. Most comes from general dumps, which were deposited in the middle and later parts of the sequence. Northern Maxey wares have been divided visually into several Fabrics, of which two, C and G, are rare and hardly occur at Flixborough. This leaves fabrics A, B and E (together with some vessels in fabric U which are probably also E but where the characteristic spines could not be seen). In a sample of 52 shell-tempered sherds from Fishergate, York, which were examined as part of the comparanda, there were 3 sherds of MAX B; 47 of MAX U; and two ELFS (see below).

There seems little doubt that Maxey A and B are the earlier of the four groups at Flixborough, and this is also a general trend. Fabric A, in particular, often does not occur on sites which are transitional from Middle to Late Saxon (such as Flaxengate, Lincoln, or at Goltho). Neither does it occur at Fishergate in York, which appears to have been first occupied in the early to mid 8th century. The absence from 9th-century sites probably tells us that Fabric A was no longer being used by then. The Fishergate evidence, on the other hand, may tell us that the fabric is confined to the later 7th and early 8th centuries, or it may be that other sources of Northern Maxey ware were supplying York. The likelihood of either of these optional hypotheses being correct depends on whether one imagines that there was a single source of Northern Maxey ware, in which the products of different groups of potters can be recognised, or whether one imagines these groups of potters working independently, with their own defined distribution zones.

Petrological and chemical analysis would favour the first option for the vast majority of Northern Maxey wares. Fabrics A, B, C, G and probably much of Fabric U, are tempered with the products of weathering of a shelly limestone. They differ mainly in the texture of the shell sand rather than in its composition. Fabric E (and parts of U), on the other hand, not only contain echinoid spines which are absent from A/B/C/G, but also have a higher proportion of sparry ferroan calcite matrix to shell than the main group. Similar subtle variations in petrology (and chemistry) were noted in Northern Maxey wares from a site on the Isle of Axholme which had been classified visually as Fabrics B and U.

With minor exceptions, therefore, it seems that most of the Northern Maxey wares were produced in a single area (however one wants to try and define that place). Two of the comparative sites, York and Riby, produced both

'standard' Northern Maxey wares and sherds of vessels which are more globular, where the rim of the vessels is everted (e.g. Mainman 1993a, fig. 242, 2412, 2416–17 and 2420). Initially, it was thought that these belonged to the end of the sequence and reflected, perhaps, the influence of Late Saxon pottery forms. However, the similarity of the profile of these types to Early Anglo-Saxon jars suggests that a further possibility should also be considered: namely, that these are extremely early examples of Northern Maxey ware. In the latter scenario, the absence of Fabric A at York might be due to the use of the more globular vessels in its place.

Nine sites have produced sherds of Fabric A: Bottesford, Caistor, Cherry Willingham, Flixborough, Gosberton, Newark, Normanby-le-Wold, Stow and Thornton-le-Moor. These sites seem to be spread evenly over the entire Northern Maxey distribution area, both north and south of the River Witham, and to the east and west of the Ancholme valley. They do not really support the model of an early, more southerly core distribution, with the more globular vessels supplied to their north. Another possibility is that Fabric A was used for a particular range of forms. It has been noted that nearly all Fabric A vessels are small or medium-sized jars with cut flat-topped rims.

The relationship between Northern Maxey ware and Early Lincolnshire Fine Shelled ware (ELFS) can be elucidated from the Flixborough sequence. A small number of vessels in Fabric U have the form and treatment of Northern Maxey wares, but the texture of ELFS vessels. It is likely, therefore, that the production of this latter ware began with the production of Northern Maxey ware forms. Whether this was a geographically separate area or simply a potter or group of potters within a single centre is unclear, although examples at present have a northerly distribution (Flixborough, Riby Crossroads, the Hatfield Gas Pipeline, and York). The petrological and chemical evidence would support both options (see ADS archive). From ELFS one can see a single thread of development leading to Lincolnshire Fine-shelled ware (LFS) in the later 10th century, then Local Early Medieval Shelly ware (LEMS) in the 12th and early 13th centuries, and from there to Potterhanworth ware. It would not be impossible for all of these wares to have been produced at Potterhanworth, although there is no archaeological evidence for the operation of the potteries there until the later 13th century.

Only a small proportion (approximately 5%) of the excavated Maxey-type vessels could be classified into sub-form types, although classification into broader types (Types I to VII) was possible for c.25% of Maxey-type sherds overall. The lack of large, well-stratified groups makes it difficult to mark detailed chronological developments on the site. Many vessels that appear to be typologically early do not appear in the sequence until Period 6. Despite the problems, it is possible to make some general comments about the development of form types within the Maxey-type ware tradition.

Only two specific form types are present in Phase 1b deposits; both are simple medium-sized vessels with neatly cut, flat-topped rims and flat bases (Types IIa and VII). Vessels in Period 2 are still simple small or medium-sized jars and bowls, although some have wide mouths and untrimmed flattened rims. Large jars are introduced into the sequence in deposits dated to Periods 2–3a; these vessels have rounded bases. Jars with a more curved profile and neck restrictions also appear in these deposits. In Period 4 a wide-mouthed jar or bowl form with a turntable or thrown everted rim appears. This form is only found in Fabric E and has so far only been noted at Flixborough. By this period, few Maxey-type vessels have plain flat-topped rims; they are either roughly flattened, rounded, or slightly everted. Large shallow dishes may be a late form as these are not introduced until Period 4. No new types can be positively identified as belonging to Period 5 deposits. Vessels that are likely to be contemporary with Period 5 are mainly thin-walled with everted rims (e.g. FIG. 12.20, nos 75 and 78) and may have profiles similar to those of the handmade Late Saxon shell-tempered vessels found in Lincolnshire (Adams Gilmour 1988, fig. 45, 7–18).

Most of the more common sub-form types are shared by more than one Maxey-type fabric. It is individual traits such as rim types and finishing techniques that distinguish them. Vessels in Fabric A are well formed and finished; care has been taken to smooth and trim the exterior surfaces, and with only one exception, all the rims are neatly cut, flat-topped types. Form types in this fabric group are limited to simple, small or medium-sized vessels with straight or slightly slopping sides and flat bases. Vessels in Fabric B are much more variable; early examples at Flixborough are well made and also have flat-topped rims. These, however, tend to be smoothed flat rather than cut, giving a more variable rim profile around the vessel. Vessels became less well made by Period 3, with rounded and slightly everted rims more common. By Phase 5a, rim types have become everted or, if flattened, remained roughly untrimmed (e.g. FIG. 12.00, 70–72). Vessels in Fabric E are also variable; many are well made and carefully finished. Others, however, are left untrimmed at the rim and the vessel walls have not been smoothed. Flattened rims are not common; most are at least slightly everted. There is no discernible pattern of development in this fabric, except that later vessel types are similar to Early Lincolnshire Fine-shelled ware examples. Fabric U vessels show the most variation, as is to be expected with such a loose grouping. Everted and untrimmed rims are more common in this grouping than any other. Many of the more unusual vessel types are found in this fabric grouping (e.g. FIG. 12.26, no. 193 and FIG. 12.26, nos 221a–b).

Various other traits seem on first glance to be suitable for chronological study using the Flixborough data. Lugs occur on a number of vessels, and there is a probable progression from added triangular lugs to rounded ones, some of which were added, and others formed by pulling up clay from the body. Triangular lugs occur on some Early

to Middle Anglo-Saxon wares in the area (for example on CHARN at Riby Crossroads) and rounded ones are known on Late Saxon shelly ware from Lincoln (LKT). However, whether there is a sudden change from one form to the other or merely a general trend cannot be determined from the Flixborough data.

The bases of Northern Maxey-type ware vessels also show some variation. Some are sagging, and others completely flat. It seems from the Flixborough data that the sagging bases occur mainly on larger jars and dishes, and the flat bases on the smaller vessels. This trait may, therefore, be unrelated to chronology. Finally, some Northern Maxey-type wares have rough marks on the exterior which must be traces of a finishing process, but they are never as common or clearly visible as the grass-wiping found on ELFS vessels, and cannot at present be linked either to a specific form or date.

Organic residues

A sample of 25 Maxey-type sherds was analysed at The School of Chemistry, University of Bristol, to investigate the potential for the preservation of lipids (unpublished research undertaken in the late 1990s – pers. comm. Professor Richard Evershed). The sample size was not large enough to make more than basic observations. Some vessels showed no evidence for residues (two large jars and one medium-sized bowl), indicating that these vessels may have been used for storage of dry substances or liquids, rather than for cooking processes. A single medium-sized bowl (Type Via) from a Phase 5a/6 deposit contained beeswax mixed with ruminant fat. Two large jars were found to contain what may have been fish oils; both of these vessels came from Period 5 deposits. Remains of dairy fats came from two open forms; both are small to medium-sized vessels, and may have been used for drinking. A range of other medium and large-sized vessels contained fats, possibly derived from cattle, sheep and pig.

12.3.2 Other shell-tempered Middle Saxon fabrics

A total of 31 sherds representing 23 vessels occurred in shell-tempered fabrics that were not considered to be part of the Northern Maxey-type tradition (FIG. 12.6 below).

Code name	Sherd Count	Wt. (g.)
MSAXLOC	21	185
MSAXX	10	196

FIG. 12.6 Summary of Middle Saxon shell-tempered fabrics

Local fabrics (MSAXLOC)

Nineteen vessels were considered to be of local manufacture, all contained sparse to moderate shell of probable local origin together with other inclusions such as quartz and

iron-rich grains. None of these local vessels has the dense shell-temper associated with Maxey-type ware. Vessel forms are mainly medium-sized, necked jars (FIG. 12.28, no. 261) or small bowls. Similar vessels have been found on other Middle Saxon sites in Lincolnshire: Quarrington (Walker and Lane 1996) and Cherry Willingham (Young forthcoming), and were found residually at Flaxengate, Lincoln (Adams Gilmour 1988). The earliest vessel to occur on the Flixborough site is represented by a small, abraded sherd which occurs in a Period 2 soakaway fill. It is possible that this sherd is, in fact, of Early Saxon date, as similar fabrics are occasionally used for Early Saxon vessels. The remaining local vessels occur in deposits spread between Periods 3 and 6.

Non Local fabrics (MSAXX)

Four vessels are in fabrics containing shell inclusions that are not considered to be of local origin. One small jar (represented by three sherds) resembles brickearth found in the Thames valley. A small quantity of Early to Middle Anglo-Saxon pottery in the London area was tempered with similar material. No analysis has been undertaken to test this similarity, which might be fortuitous, or might indicate the use of a vessel made in the London area. A small decorated bowl with a highly burnished exterior surface (FIG. 12.28, no. 264), contains some obvious brachiopod shell inclusions. Such fossil shell is rare in shell-tempered pottery from central and northern Lincolnshire, but common in the south of the county and further south in England. The remaining two vessels are similar in both fabric and form (FIG. 12.28, nos 262–3). The dense shell-filled fabric of these vessels also contains occasional calcite grains. The vessels are both represented by sherds from more than one context; the earliest sherds of one vessel occur in a Phase 4ii deposit, and the other vessel is first found in a Phase 5a to 5b pit fill.

Little can be concluded about the significance of these vessels, other than that they represent contact outside of the usual supply network, and may represent material brought on to the site by individual owners.

Early Lincolnshire Fine-shelled ware (ELFS)

Fine-shelled pottery has been identified on sites in Lincolnshire for nearly 30 years. Analysis of the Flaxengate site, Lincoln (Adams Gilmour 1988), indicated that the pottery mainly occurred in deposits dating to between the late 10th and late 12th centuries. A small number of vessels occurring in earlier deposits were assumed to be intrusive. During the East Midlands Anglo-Saxon Pottery Project, however, it was possible to show that these 'intrusive' vessels were in fact an early fine-shelled ware, dating to between the early and late 9th century AD. The fine-shelled ware occurring in Lincoln in Late Saxon to early medieval deposits had developed out of an earlier Middle Saxon tradition. The fabric and manufacture of both ware types are similar; it is the form, firing and rim typology that differ. The break between the wares is evident in urban assemblages where

the wheel-thrown Late Saxon wares dominate 10th-century groups, whereas on rural sites, the Middle Saxon type appears to slowly evolve into the later ware. A total of 144 sherds of this defined 'Early Lincolnshire Fine-shelled ware', weighing 1668 grams, were identified amongst the ceramic assemblage from the Flixborough site.

Fabric

The ware is characterised by the presence of abundant, fine, fossil shell fragments up to 1.0mm in size, together with sparse subround to sub-angular quartz up to 0.03mm. The colour range of the vessels present at Flixborough is mainly limited to sherds with grey to dark grey cores, with light to dark red-brown surfaces. Only a few vessels have the lighter orange-brown surfaces more commonly found on vessels in Lincoln and at Goltho (Coppack 1987).

Manufacture

Vessels are coil-built with average wall thickness at 10mm. Bases are flat and often smoothed on the underside. The most characteristic manufacturing technique is the use of grass or straw to wipe the surfaces of the vessel. This leaves horizontal parallel striations on the vessel walls. Only one vessel from Flixborough has any form of decoration, this is part of an incised line. Other decorative techniques that are found elsewhere on this ware include finger-tipped pressings on the rim edge and simple circular stamps. The low firing temperature of many vessels means that the fabric does not hold together well, sherds often crumble easily and this may effect the representation of this ware type.

Forms

Most vessels are medium-sized jars with slightly everted or rolled over rims (FIG. 12.28, nos 250–6). These jars have no definite shoulder point, but have gently curved sides and a base diameter roughly equal to that of the rim. A small number of vessels are large jars (FIG. 12.28, nos 247–9), and two of these vessels are lugged. Not enough of the lugs are present to be certain of their shape, but a similar lug found at Goltho (Coppack 1987 illus. 507) is rounded. Only four bowls were found at Flixborough, one of which (FIG. 12.28, no. 257) is a large, wide bowl type that continues to be used throughout the currency of later Lincolnshire Fine-shelled ware until the late 12th century (Adams Gilmour 1988, fig. 34).

Evidence of use and condition

Less than 50% of the sherds showed evidence of soot or carbonised deposits. The larger vessels more commonly have exterior soot, whilst interior carbonised deposits were mainly found on the medium-sized jars or bowls. Smaller vessels tend to be extremely fragmentary, as in many cases the firing temperature seems to have been insufficient for the thickness of the bases. The upper parts of vessels are in a better state of preservation, probably because they are thinner walled. The fragmentary state of many of the smaller vessels makes it difficult to believe that they could

have been used over a long period of time, and they were possibly discarded not long after initial use.

Distribution by period

The earliest stratified vessel to occur on the site comes from a Phase 3a deposit; however, this vessel and two further vessels from Phase 3b deposits may be transitional Maxey-type Fabric U.4 types. Twenty-four vessels occur in Phase 4ii and it is probable that Period 4 is the main period of use of this ware type at Flixborough. The majority of sherds, however, come from Period 5 dumps or Period 6 dark soils and had probably been re-deposited.

Discussion

This type of pottery (ELFS) was originally defined during early work of the East Midlands Anglo-Saxon Pottery Project (EMASSP). It was recognised during this project as a Middle Saxon product at Goltho, and sherds were identified during initial work on the Flixborough site. Subsequently, vessels were identified amongst late 9th- to early 10th-century material from the Flaxengate site, Lincoln (Adams Gilmour 1988, fig. 45, 25–26). It was hypothesised that the fabric was a 9th-century development that replaced Maxey-type ware sometime in the early to mid 9th century. The two ware types differed in several ways, with ELFS producers using grass wiping instead of smoothing, lower firing temperatures and the use of everted or rolled rims instead of flat-topped varieties. Work on the Flixborough and comparative assemblages has shown that this was a simplistic view. The Early Lincolnshire Fine-shelled ware and, subsequently, later Fine-shelled traditions probably grew out of a Maxey-type ware production (Fabric U.4) that was more prominent in the north of Lincolnshire, the fine shell filler and everted rims preceding the wiping technique. The transition between a fine shell-tempered Maxey-type ware and Early Lincolnshire Fine-shelled ware probably took place between the end of Period 3 and the beginning of Period 4, in the context of the Flixborough occupation sequence, possibly sometime towards the end of the 8th or beginning of the 9th century. The earliest vessels identified on the Flixborough site, found in phases 3a and 3b, may therefore represent an overlap between the two traditions.

12.3.3 Ipswich ware

by Paul Blinkhorn

Introduction

Middle Saxon Ipswich ware is unique amongst native English pottery traditions of the time in that it was the only pottery type to have been fired in kilns and produced on an industrial scale. In addition, the range of vessel forms is different from that of other English pottery types of the period, as one, the spouted pitcher, appears to be unique to the industry. The geographical distribution of the ware is also far greater than that of other contemporary English pottery types. It is found throughout eastern England from York to Kent, and penetrated inland as far west as

Oxfordshire and Gloucestershire. Recent chemical analysis of the fabric (Walsh in press) has indicated that all the material was manufactured in the eponymous Suffolk town, meaning that it is a reliable indicator of contact, direct or otherwise, with the *wic* at Ipswich.

The assemblage from Flixborough is one of the largest known outside the kingdom of East Anglia, with only the Middle Saxon *wic* of London having produced more material, and this fact alone marks the site out as being highly important. It is also on the northernmost edge of the distribution area, with only York, Beverley and Wharram Percy being further to the north.

In the past, the presence of Ipswich ware has been taken to be an indicator of high status, and while this is no longer absolutely true, at the limits of its distribution it tends to occur mainly on sites which have royal, ecclesiastical and/or market-related connections, as these appear to have been the points of entry for what were, in these areas, exotica.

It should be stressed, however, that the majority of Ipswich ware, pitchers aside, was probably not traded as pottery in its own right. Most is likely to have travelled as containers for traded goods, and so the amount of Ipswich ware at a site can perhaps be taken as a crude measure of the volume of trade which passed through a site.

The ware was recently the subject of a major English Heritage-funded research project (Blinkhorn in press), and Flixborough was one of the key sites examined. Fifteen sherds of Ipswich ware from the site were tested for organic residues (Evershed *et al.* in press), and the fabric characterized (Walsh in press; Williams in press). The results are summarized here but the detailed data, analysis and conclusions will be published in the final report on the Ipswich Ware Project.

Quantification

The Flixborough Ipswich ware assemblage comprised 282 sherds with a total weight of 8,112g, with the minimum number of vessels (MNV) by summation of rim-sherd circumference = 2.28. A total of 49 sherds (1,252 g, MNV = 0.34) were unstratified, and a further 181 sherds (5098g, MNV = 1.95) re-deposited in Late Saxon or later contexts.

Fabric

The fabric types are those classified as a result of analysis carried out by David Williams during the Ipswich Ware Project. There are two major fabric groups, although around 10% of sherds nationally show significant petrological differences. These were classified as 'Floaters', and are probably the result of variations in the clays around Ipswich, as they showed no significant chemical differences to the main petrological groups. The two main fabric types were as follows:

GROUP 1

The sherds which make up this group tend to be darkish grey in colour (although oxidised orange-red examples

are known), hard and slightly sandy to the touch, with visible small quartz grains and some shreds of mica. When viewed under the petrological microscope, frequent fairly well-sorted angular to sub-angular grains of quartz can be seen, generally measuring below 0.30mm in size but with some larger grains as well, including a number which are polycrystalline in appearance. Also present are flecks of mica, some small pieces of chert in the same size-range as the smaller quartz grains, a little quartzite, a few small discrete grains of feldspar, iron oxides and occasional fragments of ironstone and fine-grained sandstone. In thin-section, a few samples contain a few well-rounded light brownish pellets of glauconite, scattered throughout a clay matrix which tends to be a lighter colour than that of the other sherds in this group. It is possible that glauconite may also be present in some of the other sherds listed here, but the very dark, reduced clay matrix which most of the samples possess makes the substance difficult to identify.

GROUP 2

Like the sherds in Group 1, they are hard, sandy and mostly dark grey in colour. Their most prominent feature is a scatter of large quartz grains which either bulge or protrude through the surfaces of the vessel, giving rise to the term 'pimply' Ipswich ware (Hurst 1959, 14). This characteristic makes them quite rough to the touch. However, some sherds have the same groundmass but lack the larger quartz grains which are characteristic of this group, and the chemical analysis suggests that they are made from the same clay.

Group 2 is not just a fabric version of Group 1 with added larger quartz grains. The clay matrices and associated non-plastic inclusions are quite different, an observation which is supported by the chemical analysis (below). Macroscopically, the majority of the Group 2 sherds can be identified by the presence of large, rounded quartz grits. However, the small proportion of the group which do not have these can be often recognised by texture. Group 1 sherds have a slightly rough sandy feel, whereas those in group 2 are extremely smooth to the touch. The classification can be confirmed by examination of the groundmass with a binocular microscope.

The fabric has a groundmass of moderate to frequent small angular to sub-angular quartz grains, the majority below 0.10mm in size. A proportion of sherds have a sparse to dense scatter of fairly well-rounded larger grains of various sizes up to around 2.50mm across, some of them cracked and polycrystalline in appearance. Others do not have these larger inclusions, which were almost certainly added by the potter on an instinctive basis. Also present are moderately frequent flecks of mica, small pieces of chert, some quartzite, a little ironstone, iron oxide and occasional small discrete grains of feldspar.

A total of seven sherds from Flixborough were thin-sectioned during the Ipswich Ware Project. Two sherds were in fabric Group 1, the rest in fabric Group 2.

Chronology

The evidence collected during the Ipswich Ware Project has meant that it has been possible to refine the chronology of the ware, particularly the start date. In the past, the material was given a date-range of AD 650–850 (e.g. Hurst 1976), but the huge increase in recent years of excavated assemblages found in conjunction with coins and scientifically-derived chronology has meant that it is now possible to say with some certainty that the ware did not come into production until around AD 720. The end-date is still given as AD 850, but this is by no means certain due to a lack of well-dated finds from that time, and it is open to further refinement as future discoveries dictate. However, the evidence from Ipswich indicates that the ware had gone out of use well before AD 900, and there is only a single find of the ware in association with mid-9th-century coinage in the town, from a pit at the Tower Ramparts site which produced twelve sherds of the ware and a coin of Coenwulf, which had a circulation of up to the middle of the 9th century (J. Newman pers. comm). However, Flixborough has also produced evidence which suggests that the material was still in use at that time, i.e. site Phase 5a. Ditch fill 3107 produced four sherds of Ipswich ware, and also a silver penny of Æthelberht of Wessex, with a mint-date of AD 858–865. A single sherd of ELFS pottery, dateable to broadly the same period, also occurred. Ditch fill 10772 produced two sherds of Ipswich ware along with two strap-ends which appear to be of mid 9th century date, and ditch fill 51 yielded a sherd of Ipswich ware and another penny of Æthelberht of the same date as the one noted above. Re-deposition is, however, something of a problem, but despite this, these finds are a substantial increase in the corpus of known associations of Ipswich ware with mid 9th-century material culture.

The presence of Ipswich ware in Phase 5a and 5b features is difficult to interpret. The chronology of the material from Ipswich suggests that it had gone out of use by the late 9th–early 10th century, but it is possible that some vessels may still have been in use, particularly as large storage vessels, which make up the bulk of the Flixborough assemblage, can be very long-lived.

Vessel forms

Evidence from the Middle Saxon *wic* and production sites in Ipswich (West 1964; Blinkhorn 1989) has shown that the majority of the Ipswich ware in the town (c.95%) comprised jar forms, with the rest of the assemblage comprising mainly spouted pitchers, bowls, lamps, ‘ginger jars’ and bottles. All but the pitchers are extremely rare.

Rim diameter and capacitance analysis has shown that the jar forms can be divided into two main types, large and small, with the rim and base diameters of the vessels being an accurate reflection of their size when complete. It has also been shown that a far greater proportion of large jars and pitchers occur in assemblages from sites outside East Anglia. In the case of the pitchers, it is suggested that these were desirable as pottery in their own right, but the

large jars were probably moving as containers for other goods. Certainly, the local potters at sites where such large jars occur, such as *Lundenwic*, were capable of producing vessels of a similar capacity to the largest Ipswich ware vessels, so it cannot be argued that they were filling a lacuna in the local pottery assemblages.

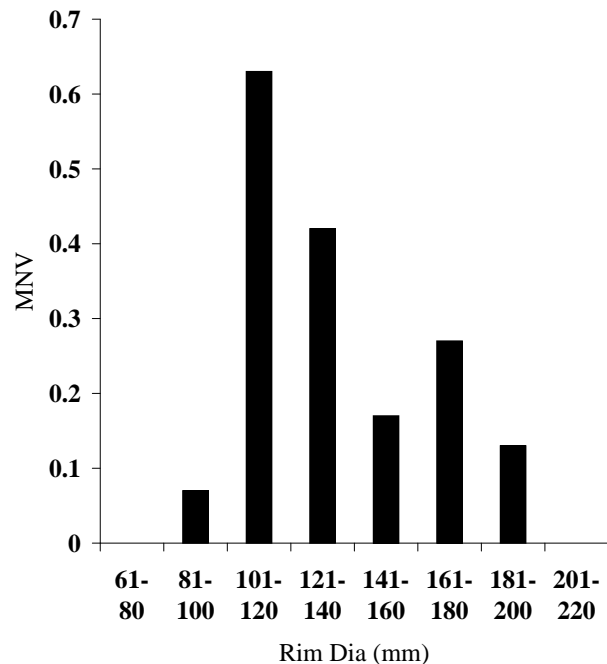


Fig. 12.7. Flixborough Ipswich ware jar occurrence by MNV per rim diameter category (20mm intervals).

FIG. 12.7 shows that this was also the case at Flixborough. Jars with a rim diameter of 161–180mm are more common than those with a diameter of 141–160mm, and vessels with a rim diameter of 161mm or more form 23.7% of the jar rim assemblage, a much greater proportion than in Ipswich.

There is similar evidence for a preponderance of pitchers. The rim sherds (all vessels) have a MNV of 2.25, of which 0.75 are pitchers, the rest jars, meaning that pitchers comprise 33.3% of the assemblage. In Ipswich, pitchers only comprise 1.6% of the assemblage (by MNI). Generally, pitchers comprise less than 5% of vessels from East Anglian sites, but make up over 15% of the vessels from analysed assemblages found outside the kingdom, which in the case of the Ipswich Ware Project, were Canterbury, Barking Abbey and North Raunds, Northamptonshire.

Residue analysis

A total of 15 sherds of Ipswich ware from Flixborough were analysed for organic residues during the course

of the Ipswich Ware Project. Residue occurred in seven vessels, although in all cases at low levels, with only one sample yielding more than 100 $\mu\text{g g}^{-1}$ of lipid. The seven vessels comprised four medium to large jars, two small jars and a pitcher, with the small jars producing the greatest concentration of lipids. The majority of the positive samples produced small quantities of degraded animal fats, although free fatty acids and mid-chain ketones were also noted (Evershed *et al.* in press). The pitcher produced an extremely complex mixture of substances which could not be resolved.

Fifteen samples of Maxey-type ware, all from unstratified contexts, were also examined. Eleven of these produced lipids, showing a similar range of substances, but generally in much higher concentrations than the Ipswich ware.

It would appear therefore, that from the organic residues, there was little difference in function between the Ipswich and Maxey small jars from the site, although the higher concentrations of lipids in the latter suggests that the larger Ipswich ware vessels may have primarily functioned as storage rather than cooking pottery, although differential porosity may have been a factor. The presence of the lipids in the pitcher sherd was somewhat unexpected, but the low concentration and the complexity of the mixture mean that it is not possible to say that the vessel was used for food preparation.

Decoration

STAMPED VESSELS

One of the more remarkable features of Ipswich ware is that it was the only Middle Saxon pottery type to have stamped decoration to any significant degree. Most of the known stamp sherds were examined during the course of the Ipswich Ware Project, and a corpus compiled, with each individual stamped vessel given a corpus number based on the motif type and the number of vessel with the marks of each die. Stamp links, vessels with the marks of the same dies, were noted between sites on the limit of the distribution, such as York and Canterbury, and Ipswich itself, offering further evidence that the pottery had originated in the Suffolk *wic*. Analysis of such vessels during the Ipswich Ware Project also showed that the technique was limited to large jars and pitchers, and that c.10% of such vessels were so treated.

Two vessels with stamped decoration were noted from Flixborough. The first (FIG. 12.29, no. 265) was from a large jar. The motif was classified in the corpus (Blinkhorn in press) as RG67.4, and six other vessels have been found in Ipswich with stamps made with the same die. The other sherd had plain annular ring-stamps. These were not classified in the corpus, as such marks could have been made with objects other than dies, such as reeds ('opportunistic stamps'; Riddler 1986), and thus comparison between vessels would be extremely difficult. The sherd was abraded and re-deposited.

INCISED VESSELS

Other than stamping, the rest of the range of decorative techniques employed by Ipswich ware potters was very limited, with burnishing being the most common, although the technique also had functional considerations in that it makes pottery less porous (Rice 1987, 231). In the case of the Flixborough assemblage, 73 sherds (2,798g, MNV = 0.59) were burnished, a far higher proportion than in Ipswich. Another seven sherds had a criss-crossed burnished lattice, although five were from the same vessel (unillustrated). Of the burnished sherds, 11 (370g) were from pitchers, whilst 35 (1847g) were probably from large jars.

The high proportion of burnished sherds could be taken as an indicator that only the best pottery (in purely modern aesthetic terms) was travelling, but the reasons for their presence in such numbers could be functional. Ethnographic work has shown that some earthenwares, when used for liquid storage, can lose 10% of their contents overnight (*ibid.*, 231). In the case of the Flixborough Ipswich ware assemblage, all the rim-sherds which showed evidence of burnishing were from 4 spouted pitchers. Again, it could be argued that this was aesthetics rather than function; pitchers, with their role as serving vessels, would have been the most visible vessels in the household, but the functional aspect of burnishing cannot be ignored. A case can be made, therefore, that the high proportion of burnished sherds in the assemblage was due to the fact that a considerable number of vessels were used for the transportation, and later, the storage, of liquids. Certainly, many of the burnished sherds came from very large vessels, whereas Ipswich ware pitchers were by and large the same size as small to medium-sized jars.

The most obvious interpretation of this is that the large jars were used for the transportation of wine. The consumption of wine had considerable status in Middle Saxon England, and was referred to as the drink of the 'old and wise' (Hodges 1982, 53). Excavations in Ipswich have produced several Rhenish wine-barrels which were re-used as well-linings (Wade 1988), and the presence of Relief-Band Amphorae and imported pitchers in the town show that wine was being imported and consumed at the site. It seems probable that it was also being consumed in the monasteries, perhaps the only non-royal sites which had the financial acumen to acquire it. For example, only 44 sherds of imported continental pottery ware have been found in Norfolk, and 26 of them occurred at the episcopal complex at North Elmham (Wade-Martins 1980). Over 6,000 sherds of Ipswich ware are known from the county, but North Elmham produced only 161 sherds of the material. In other words, 59% of the imported pottery known from Norfolk occurred at a site which yielded only 2.7% of the Ipswich ware from the county (Blinkhorn in print b). It is possible, therefore, that the physical nature of the Ipswich ware from Flixborough, with its high proportion of pitchers and burnished vessels, means that the settlement was acquiring significant quantities of wine which had been originally imported into the emporium at Ipswich.

Cross-fits

A number of cross-fits were made between sherds from different contexts, as below.

These perhaps demonstrate the scattered and re-deposited nature of much of the Ipswich ware assemblage. The vast majority of cross-fits were made between sherds from contexts which post-date the Middle Saxon period, and usually all from different phases.

Taphonomics and vessel fragmentation

The occurrence per phase by number and weight of sherds, MNV and mean sherd weight is shown in FIG. 12.8.

Perhaps the most striking feature of this assemblage, in a purely taphonomic sense, is the high degree of re-deposition. Not all sherds can be placed in specific phases due to the nature of the stratigraphy at the site, but the majority of the assemblage (181 sherds, 5098g, MNV =

Vessel 6: 2181 (×2), 2183, 3216.	Phases 6iii (×2), 5b–6
Vessel 18: 669, 2488, 2562, 2610.	Phases 5a–5b, 5b–6ii, 5b, 5a.
Vessel 22: 3758, 3870, 5139, 5871, 12076, 12248.	Phases 4ii, -, 5a, 6i, 5b, 3bi–4i.
Vessel 24: 6300 (×2) 6499.	Phases 6iii–7, 6ii–6iii.
Vessel 34: 6472, 6803.	Phases 5b–6i (×2).
Vessel 36: 6483, 7280.	Phases 6ii–6iii, 6ii.
Vessel 37: 11, 70.	Phases 5a–5b, 5a.
Vessel 39: 6300, 7817.	Phases 6iii–7, 6iii.
Vessel 47: 1832, 1889, 5988.	Phases 6ii–6iii, 6, 6i.
Vessel 49: 3275, 6499.	Phases 5a–6i, 6ii–6iii.
Vessel 51 2023, 3216, 6499, 5988.	Phases 6iii, 5b–6, 6ii–6iii, 6i.
Vessel 52: 3891 (×2), 6489, 7817, 12076.	Phases 6ii, 6ii–6iii, 6iii, 5b.
Vessel 54: 2518, 3417.	Phases 5b, 5b–6.

Cross-joins of Ipswich ware vessels found in multiple contexts.

Phase	No.	Wt	MNV	Mean Sherd Wt
1b	1	9	0	9.0 g
2–3a	1	12	0	12.0 g
2i–4ii	3	50	0	16.7g
3a–b	1	28	0	28.0 g
3biii	1	8	0	8.0g
3biv–3bv	1	27	0	27.0g
3bi–4i	4	478	0	119.5g
3bi–5b	1	29	0	29.0g
4i–4ii	3	69	0	23.0g
4ii	7	143	0	20.4g
4ii–5a	3	49	0	16.3g
5a	14	259	0.10	18.5g
5a–6i	4	135	0	33.7g
5a–5b	9	254	0.09	28.2g
5b	12	202	0.15	16.8g
5b–6i	15	301	0.19	20.0g
5b–6ii	4	20	0.13	5.0g
6i	6	264	0.26	44.0g
6i–6ii	4	168	0	42.0g
6ii	19	674	0.24	35.5g
6ii–6iii	29	932	0.48	32.1g
6iii	45	1043	0.12	23.2g
6iii–7	20	846	0.19	42.3g
7	1	20	0	20.0g
7+	1	16	0	16.0g

FIG. 12.8. Ipswich ware occurrence by number and weight of sherds, MNV and mean sherd weight per site phase.

1.95) was stratified in deposits dateable to Periods 5 or 6, i.e. the late 9th–10th century or later. This is obviously a severe handicap to any meaningful analysis, but is in itself perhaps of some interest.

Broadly, the amount of Ipswich ware per period can be summarized as in FIG. 12.9, although it should be noted that pottery from any context which cannot be allocated with certainty to either a Middle or a Late Saxon phase has been omitted.

Taken at face value, the data in FIG. 12.9 appear a little curious, with the re-deposited pottery from Period 6 contexts having a much greater mean sherds weight than the material from the Period 5–6 group. While this may simply be a result of the relatively small assemblage sizes, it is a trait which has been noted with Ipswich ware assemblages from the Suffolk *wic*.

When the Flixborough data are compared to the combined data from three of the largest sites in the heart of Ipswich (Foundation St, School St and the Buttermarket), the same general pattern can be observed. In Ipswich, the pottery showed little change in mean sherds weight through time. For example, the mean sherds weight of the material in Middle Saxon features in the town is only 19.4g, whereas the same material has a mean weight of 19.2g in late medieval features, with the lowest mean sherds weight being 17.9g from early Late Saxon (mid–late 9th century) features (data for excavations up to 1989: Middle Saxon 7035 sherds, 136,495g; early Late Saxon 12,250 sherds, 219,695g; late medieval 2401 sherds, 46115g).

Thus, the evidence from Ipswich suggests that even in an urban context, the thickness and hardness of Ipswich ware make it extremely resilient to breakage during post-depositional disturbance, and so the fragmentation data for the Flixborough assemblage are quite acceptable within the known physical properties of the pottery. The explanation for the greater mean sherds size of the Flixborough assemblage would appear to be related to vessel size rather than a lesser level of post-depositional disturbance. As noted, Flixborough, like many other sites with Ipswich ware outside East Anglia, has a much greater proportion of large vessels than the Suffolk *wic*. Thus, if one assumes that larger vessels break into larger pieces (in terms of weight), and this certainly seems to be the case when comparing, for example, Ipswich-Thetford ware storage jars to smaller vessels of the same ware, then the larger mean sherds weight of the Flixborough Ipswich ware assemblage can be ascribed to this factor.

Very little of the assemblage was stratified within structures. FIG. 12.10 shows those sherds which were. The sherds from building 19, dateable to Phase 1b, is intrusive.

The assemblage in its national context

The Flixborough Ipswich ware assemblage, as previously noted, is by far the largest from the north of England, and, with the exception of those from *Lundenwic* (Blackmore 1988; Blackmore 1989a) and Barking Abbey, Essex (Redknap 1991), the largest yet excavated outside the

Period	No.	Wt	MNV	Mean Wt
3–4 (8th–M9thC)	18	782	0	43.4g
5–6 (M9th–10thC)	58	1171	0.66	20.2g
6 (10thC+)	123	3927	1.29	31.9g

FIG. 12.9. Ipswich ware occurrence by number and weight of sherds per phase group.

Building	Phase	No. Sherds	Wt Sherds (g.)	MNV	Contexts
3	4i–4ii	1	1	0	3531
7	6i	5	231	0	5871, 5988
10	4i–4ii	2	68	0	2470,
12	6i–6ii	3	133	0	7212, 10296, 10961
14	5b	1	10	0	13848
19	1b	1	9	0	1134
27	5a–5b	2	15	0.09	2668
36/37	5a–5b	3	65	0	11,195
38	5a–5b	1	72	0	293, 295

FIG. 12.10. Ipswich ware occurrence within structures.

kingdom of East Anglia. However, it is only one of a growing number of groups from the region, the majority of which are from high-status sites. One of the cornerstones of the Ipswich Ware Project was to gather a national corpus of the material, and most of what follows is taken from that, as many of the sites discussed are, as yet, unpublished, or the material noted amongst field-walking assemblages.

The next largest group in the north after Flixborough is from York (Mainman 1993b). Ten different sites within the city have produced around 100 sherds of the ware (*ibid.* fig. 1), and they are likely to indicate the extent of the Middle Saxon settlement. Like the Flixborough assemblage, they appear to comprise a large proportion of large vessels, including some with stamped decoration (*ibid.* fig. 2), one of which bears the mark of the same die as a vessel from Ipswich.

A decorated pitcher occurred during excavations adjacent to the later minster church at Lurk Lane, Beverley, sealed by a horizon associated with a coin hoard dated to AD 851 (Armstrong *et al.*, 1991). The pitcher is again stamped, although with an 'opportunistic' annular die, and is decorated with an incised diamond lattice. In purely subjective terms, it is a vessel of the highest quality of manufacture. A few sherds of the material also occurred at Wharram Percy (Roffe 2000, 10; Blinkhorn 2000, 69–70).

There are a growing number of find-spots of the ware around the Humber Estuary, mostly made as stray finds, or discovered during field-walking or small-scale excavation. Few are published. At least 4 sherds have been found at Barton-on-Humber (TA 020 220), the probable site of a Middle Saxon church, and other finds have been made in the vicinity of the estuary at Barrow, St. Chad's (TA 073 217; 3 sherds), Elsham (TA 045 115; 1 sherd), Holton-le-Clay (TA 280 020; 8 sherds), Humberstone Abbey (TA 311 052; 1 sherd), and Riby Crossroads (TA 180 070; 9 sherds) and at least one imported continental sherd noted during excavations of the same pipeline trench (Steedman 1994).

Lincolnshire has produced a relatively large number of finds in recent years, particularly from field-walking, mostly notably perhaps that carried out during the Fenland Survey project (Hall and Coles 1994). A few finds of a handful of sherds of the ware have been made in the Trent Valley in Derbyshire and Nottinghamshire. One is a high-status site, Repton Minster, while the other two are from Newark Castle, and, most recently, in a Victorian graveyard in the city of Nottingham. Ipswich ware was also noted at Blyborough in Lincolnshire (SK 933 951), some 15km to the east of the River Trent. This implies that the Trent Valley was not a major trade-route during the Middle Saxon period, but it is possible that it merely reflects the amount of archaeological work carried out in the area, and that further finds will be made in the future.

This short overview of the known find-spots of Ipswich ware in the region perhaps puts into perspective the importance of Flixborough. None of the other sites in the region has produced anywhere near as large an assemblage,

suggesting that the site was an important market place during the Middle Saxon period. This is not at odds with the site having functioned as a monastery, but at the same time, it cannot be taken as proof that the site had ecclesiastical connections, despite the fact that the ware tends to occur at higher-status sites at the edges of its distribution. Ipswich ware appears to have been used at all levels of society during the Middle Saxon period, but only at sites which took an active part in trade (Blinkhorn *in press b*). Very few rural farmsteads which have produced the ware have been excavated, but those that have, such as Riby Crossroads and Pennyland, Bucks. (Williams 1993) appear to have undergone a radical reorganization during the Middle Saxon period, suggesting that they changed from a broad subsistence-based agriculture to the production of a narrow range of produce intended to produce a surplus for trade.

Monastic sites have also yielded some evidence of a similar nature, but the 'marker' in this case appears to be the presence of pottery imported from the continent. Again, this is not an absolute rule. Riby Crossroads, despite apparently being an agricultural site, produced a sherd of imported blackware, as did Terrington St. Clement in Norfolk, which was probably a specialist meat-production centre. It may be that the presence of imported pottery is simply a reflection of the proximity of a market centre. Certainly, there is little evidence that imported pottery had a greater status or value than local wares or regional imports, and a strong case has been made that such vessels were regarded by consumers as just another pot (Brown 1997). This is perhaps demonstrated by an assemblage of Ipswich ware and imported pottery from a Middle Saxon site at Lake End Road, Berks. (Blinkhorn 2002). Sherds from around eight imported and three Ipswich examples were noted, along with large quantities of handmade pottery and some high-status metal and glass. However, the site is relatively close to the emporium at London, and statistical analysis has indicated that the Lake End Road assemblage does not contain a significantly high proportion of imports, as a random sample of the *Lundenwic* assemblage could produce a similar composition.

There is certainly evidence from the south of England that monasteries were involved in trade. It is known that the nuns of Minster-in-Thanet in Kent were trading with London, as toll remission charters still exist, and tolls were only charged on trading ships (Kelly 1992). Monasteries also may have functioned as toll-stations, with Flixborough's location making it ideally suited to the task. Whilst there is no unequivocal evidence that English ecclesiastical houses were involved in toll-collection, certain Carolingian monasteries, such as Stavelot-Malmedy and Saint-Denis, were given the rights to the proceeds of toll-stations (Kelly 1992, 22–3), some of which were located at various strategic points *en route* to market (*ibid.*, 17–18). Again, this may account for the presence of large quantities of Ipswich ware; tolls need not have been paid in cash. Goods, and their containers, may have sufficed.

12.3.4 Imported pottery from Continental Europe

by Alan Vince†

Introduction

Imported pottery is rare on the Flixborough site. Only 51 sherds were recognised as being either certain or possible imports, and these represent substantially fewer vessels, certainly no more than 15, and perhaps as few as 12 in number. Given the large size of the contemporary pottery assemblage, in excess of 5,000 sherds, imported pottery was clearly rare and numerically unimportant on the settlement. Four distinct wares have been identified, all of types known from other English sites of Middle Saxon date, together with a small number of unidentified, possible imports. Two of these wares, Walberberg and Badorf wares, are distinct products of the Vorgebirge pottery industry, situated on the west side of the Rhine, south of Cologne. The other two are unsourced but by general agreement appear to come from the area of modern southern Belgium or northern France. If the remaining sherds are indeed imports, they too are likely to come from the latter general area, rather than the Rhineland.

Walberberg ware

Walberberg ware is a light-bodied ware with a coarse sand temper (grains *c.* 1–2mm across). It is one of a range of wares produced in the Vorgebirge region of the middle Rhineland and exported to the Low Countries, England and elsewhere, via the Rhine. The ware dates to the 7th century and, consequently, is not found at Fishergate, York, where occupation dates predominantly from the 8th century and later (Mainman 1993a). There are no other recorded finds of this ware from Lincolnshire or Yorkshire. Nevertheless,

the ware is one of the more common Middle Saxon-period imports on east coast sites; for example at Ipswich (Coutts 1992), Barking and London (*Lundenwic*: Blackmore 2003). Twelve sherds of Walberberg ware were recovered from the Flixborough excavation, all from the same vessel (Vessel 13). Some examples of this ware from English sites have been published previously as coming from a source in the Seine valley (Blackmore and Redknapp 1988).

The identity of these sherds as Walberberg ware is supported by their chemical composition, which is similar to that of wares of known middle Rhenish origin. Chemical analyses of two Badorf ware sherds and two Walberberg ware sherds from Flixborough were compared with data from Badorf and Walberberg wares from *Lundenwic* (Vince 2006, 46773); and with early German stonewares (EGSW) and Langerwehe stonewares (LANG), from Boston (Vince 2005 for thin-section details; see also Hurst *et al.* 1986 for a general discussion of this type of stoneware). Factor analysis of this dataset indicates that the Walberberg sherds have a similar composition to the Badorf ware sherds, and that both of these wares can be distinguished from the Langerwehe and early stoneware vessels (Fig. 12.11). Langerwehe is located between Aachen and Cologne, 57 km west of Cologne and to the north of the Vorgebirge region, and the source of the early stoneware vessels is not known in detail, although they might be early products of the Siegburg industry, on the east bank of the Rhine, 32km southeast of Cologne.

Fabric

The ware contains a well-sorted coarse sand, with grains up to 2mm across, in a fine-textured clay matrix containing lenses of lighter-coloured clay. The inclusions stand proud

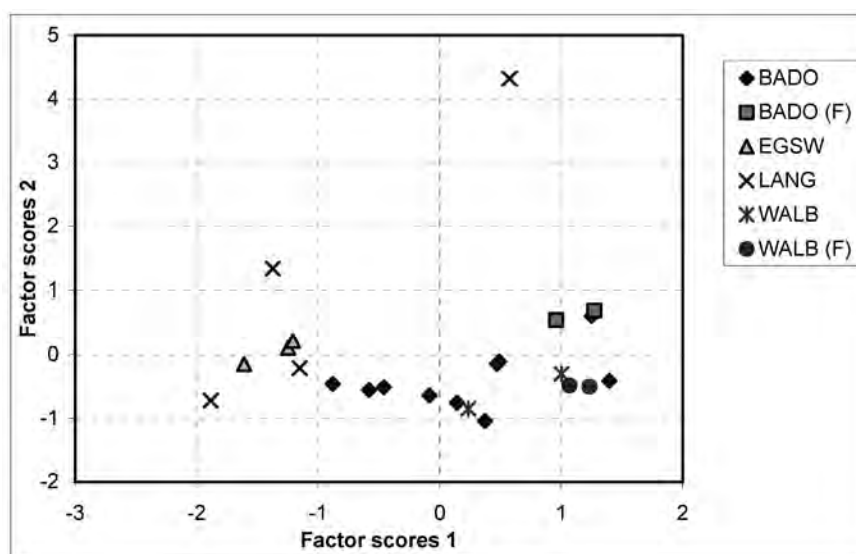


FIG. 12.11. Chemical analyses of various Rhenish sherds – Badorf, Early German Stonewares, Langerwehe, and Walberberg.

of the inner and outer surfaces, as a result of pre-firing shrinkage of the clay. The Flixborough sherds have a reddish core with light grey margins and a reddish tinge to the interior and exterior surfaces. The sand is mostly composed of clear quartz grains, with minor quantities of milky quartz, iron-coated quartz and flint/chert. Most of the quartz grains have a polished surface.

Two thin sections were produced (AG199 and AG200; see ADS archive). They show differences in firing temperature, in that one sample has a groundmass of birefringent clay minerals whereas the other consists of isotopic clay. In addition to the quartz and flint/chert seen by eye, the thin-section revealed moderate quantities of spherical opaque grains up to 2mm across and rare fragments of coarse-grained sandstone. The petrological characteristics of the ware support a Walberberg source, although there is nothing in the fabric which is particularly distinctive. The lack of quartz silt in the groundmass distinguishes this ware from Seine valley whitewares, as does the colour (Seine valley wares tend to have much less iron). Finally, Seine valley wares tend to contain some inclusions characteristic of cretaceous deposits (such as well-rounded, polished quartz grains – ‘greensand quartz’, flint – containing spherical microfossils or altered glauconite).

Manufacture

There is some indication that the Flixborough vessel was wheel-thrown. However, both interior and exterior surfaces are wiped, leaving scratch marks running in several directions. Three of the sherds were decorated with a comb in wavy lines.

Forms

The Flixborough sherds come from a large shouldered jar or similar closed vessel. No indication of the neck, rim or base was found. The vessel may have been 300–400mm in diameter at its girth.

Evidence of use and condition

There was no evidence of wear or sooting on any of the sherds.

Distribution by period

Seven of the sherds were recovered from closely phased contexts. The earliest of these was associated with building 21 (context 10835, Phase 3a). Other sherds were recovered from dumps from Phase 3b, and also in deposits dating from Periods 4, 5 and 6.

Discussion

It is likely that the Flixborough vessel arrived on the site in the 7th century, contemporary with the finds from Ipswich and London. Walberberg ware seems, in the main, to have been used for jars which possibly served as containers for storage. This raises the question of whether the vessel was

imported as a container for some other product, or as a vessel in its own right. By the late 8th century, there was a trade in various goods between the middle Rhine and England, of which wine and quern stones are best known through an exchange between Charlemagne and Offa of Mercia. The vessel is unlikely to have been associated directly with the consumption or preparation of wine, but might have ‘piggy-backed’ upon ships used in the wine trade.

Unsourced whiteware

From at least the middle of the 8th century, the coarse-textured Walberberg wares were replaced by finer products, some of which contained a sand temper while others appear to have no deliberate temper. Both of these wares can be termed Badorf ware, although it is usual to use the term Badorf ware for the finer, untempered ware, and a term such as *coarse Badorf ware* or *sandy Badorf ware* for the sand-tempered ware. The most distinctive Badorf ware vessel form is the relief-band amphora, a form found in the later 8th and 9th centuries. Similar wares, produced from light-coloured clays, are found on sites in northern France and as imports on south- and east-coast sites in England. Three sherds of unsourced whiteware were found at Flixborough, two from the same vessel (Vessel 55), and a third, a base sherd, probably burnt after breakage.

Fabric

One of the sherds of vessel 55 was thin-sectioned. In thin-section, it has many of the characteristics of a cretaceous origin: a well-sorted, iron-coated quartz sand, c.0.3mm across, sparse angular flint and abundant, rounded, altered glauconite grains up to 0.2mm across. The clay has a low iron content. There are two possible sources for this sample: either it is a residual Roman whiteware vessel, or an import of the Middle Saxon period. If the latter (which seems most likely, as the decoration is not familiar to local specialists on Roman pottery), then a source in northern France is likely. The fabric is not identical to that produced at La Londe, to the west of Rouen (Roy 1993), nor to that produced further inland in the Beauvais area. Both of the latter products contain polished quartz grains (‘greensand quartz’), and neither contain as high a quantity of altered glauconite. An ICPS analysis of Vessel 55 cannot be interpreted at present without access to suitable comparanda.

Manufacture

Both vessels from Flixborough were thrown on a wheel, with walls approximately 5mm thick. The sherds from Vessel 55 come from the shoulder of a vessel with a diameter close to the neck of c.150mm, with a globular profile. A single band of *zigzag* decoration may have been applied with a roller or as a series of stamp impressions (there is a break in the *zigzag* pattern). The second vessel is also globular and wheel-thrown, with extensive knife-trimming of the base.

Forms

Both vessels were globular jars, one with a sagging base and the other with a roller-stamped band on the shoulder.

Evidence of use and condition

There is no evidence of use on the sherds of Vessel 55. The second vessel appears to have been burnt after breakage but the outer surface shows no sign of sooting.

Distribution by period

Two of the sherds, one from each vessel, were stratified. That from Vessel 55 came from a post-hole from building 36/37, dated to Period 5, whereas the second vessel sherd came from a Period 6 dump.

Discussion

The Flixborough sherds cannot be sourced at present, although the thin-section evidence points to a northern French source for Vessel 55.

Grey and black burnished ware

The most common import type in the late 7th and 8th centuries was a fine grey or black-surfaced ware with burnished external surfaces. Such vessels are common at Fishergate, York, on sites in *Lundenwic* and in Ipswich. By eye, the fabrics of these vessels are almost completely devoid of inclusions, but the nature of the broken edges indicates a silty or fine sand temper. Studies of this group of wares were carried out as part of the study of the Fishergate, York, finds and included samples from other sites in England (Ipswich) and France (*Quentovic*). This study was carried out using thin-section analysis (by Cathy Coutts) and Neutron Activation Analysis-NAA (by Joanne Williams). The results from these two studies showed that four petrological fabric groups were identified. Group 1 was only noted at Ipswich. Another (group 3) contained samples from all three sites; and the remaining two (groups 2 and 4) contained samples from Ipswich and York. The NAA analysis produced three clusters. Two of these, clusters A and C, contained only *Quentovic* samples, and the third, cluster B, contained samples from all three sites. The cluster B samples, however, fell into three separate petrological fabric groups (groups 2, 3 and 4). Petrological analysis of samples from Flixborough showed that two fabric groups were present, and a comparison of these with the York material shows that these two groups were also present at York. The two groups have been coded at Flixborough GRBURN and GRBURNW. The most common group (GRBURN) is described here, and the second ware, which has a white-firing core, is described in the following section.

Twelve sherds of grey burnished ware were found at Flixborough, representing at most five vessels.

Fabric

The standard grey burnished ware fabric (GRBURN) contains sparse sub-angular quartz sand up to 0.3mm across

and moderate rounded, red or brown clay pellets up to 1mm across. The groundmass contains sparse to moderate flakes of muscovite. One thin-section was made (AG195; see ADS web-pages). This revealed that the quartz inclusions had a bimodal size distribution, with the majority being silt-sized, well-sorted and angular, whilst a smaller number were sub-angular and between 0.2 and 0.3mm across. This sand included fragments of chert or flint and a possible lath of biotite. The groundmass was composed of the quartz silt noted above, together with sparse altered glauconite and muscovite in a matrix of anisotropic clay minerals. The petrological characteristics are consistent with a source in an area of cretaceous or later rocks. The fabric has a tendency to spall, and this has affected Vessels 44 and 58. ICPS analyses of two samples were obtained (AG192 and AG195; see ADS archive).

Manufacture

The vessels are wheel-thrown, and fired in an oxidising atmosphere. Then at some stage before the end of the firing a reducing atmosphere was created in the kiln, producing dark grey margins and a dark grey or black outer surface. Burnishing is found in extensive areas on the exterior of the vessels.

Forms

The Flixborough sherds are mostly featureless body sherds, apart from burnishing. There are, however, two rim sherds from vessels with wide flanged rims (nos DR347 and DR348). The first of these also has the scar from a handle which probably joined the vessel flush with the top of the rim. A single sagging base sherd was also found. All the sherds are likely to come from spouted pitchers with sagging bases.

Evidence of use and condition

There is no evidence for use nor, apart from the spalling noted above, is there any evidence for post-depositional changes. The spalled sherds come from contexts 51, 885, 1831 and 7819.

Distribution by period

Although two of the sherds came from contexts, dated to between Period 2 and Phase 4ii, the earliest securely stratified sherd comes from a Phase 4ii ditch fill (context 51). The majority of the sherds come from dumps and *dark soils* of Period 6.

Discussion

Grey burnished ware vessels identical to those from Flixborough occur in period 3a at Fishergate, York, where they occur in association with early 8th-century coins. They also occur in late 7th- to early 8th-century deposits in *Lundenwic* and at Barking Abbey. Examples have been found on other sites either side of the Humber. In addition to Flixborough and York, sherds have been found at Thwing, West Halton, Normanby le Wold, Holton-le-Clay, Lincoln,

Burgh-le-Marsh, Little Hale, Aunsby, Dembleby and Cherry Willingham. Of particular interest as a relatively local comparison to Flixborough is the site at West Halton. There are five grey burnished ware sherds from this site, all from different vessels. Some were found during field-walking, and others through excavation. The Lincoln finds are very meagre, considering the quantity of later 9th-century and later strata which have been excavated. It seems likely that the ware had ceased to be used before post-Roman activity began in earnest in Lincoln (currently thought to have started in the mid 9th century).

Grey and black burnished ware – white fabric (GRBURNW)

A light-firing variant of grey burnished ware is known from Flixborough and York (Mainman 1993a, no. 2404). How this variant fits into either Coutts's petrological groups or Williams's chemical clusters is not known. The similarity in general appearance and, in particular, the fact that this ware too has a laminated fabric with a tendency to spall, suggest that the two may just be fabric variations within a single production site. There are seven sherds of white fabric, grey black burnished ware from Flixborough, but they come from a single vessel or two at the most.

Fabric

By eye, the only inclusions visible in this ware are sparse, polished sub-angular quartz grains up to 0.3mm across, and sparse voids from roots or other organic inclusions. No mica is visible and the fracture of the sherds suggests a finer-textured matrix than that of the standard ware.

Manufacture

All the sherds come from wheel-thrown vessels. The Flixborough sherds come from a thinner-walled vessel than the standard ware (c.3mm wide). Despite the low iron content of the clay, it is nevertheless clear that a similar firing pattern to that of the standard ware was used; although, in most cases the dark grey surface does not extend far into the sherd margins. Decoration consists of burnishing all over the exterior surface, grooved lines applied whilst the vessel was on a wheel, and diamond roller-stamping. It appears that the burnishing was added after the vessel was leather-hard, so that in places burnishing overlies lines of grooves and roller-stamped impressions, but does not smear them.

Forms

The Flixborough sherds come from a jar with a rolled-out rim and an internal groove (No. DR349).

Evidence for use and condition

There is no evidence for sooting or other use, nor for post-burial alteration.

Distribution by period

A single sherd came from a yard deposit, phased to Periods

2-4, but the remaining sherds came from Period 5 or 6 dumps and *dark soil* deposits.

Unidentified possible imports

Two other vessels, probably imported in the Middle Saxon period, were found at Flixborough. The first is the spout from an oxidised ware pitcher (DR345), and the second is a whiteware jar with possible traces of red-paint decoration (DR351).

Fabrics

DR345 is a very small sherd, so description of the fabric is difficult. However, it appears to contain sparse rounded quartz grains up to 0.3mm across, and a single fragment of red iron ore or iron-cemented sandstone in a groundmass containing abundant quartz and sparse muscovite silt. The sherd is oxidised and a light brown colour. A sample was taken for ICPS analysis (AG191; see ADS archive).

DR351 also contains abundant quartz and sparse muscovite silt, but without any larger inclusions (other than sparse rounded, dark clay pellets). Samples were taken for thin-section and ICPS analysis (AG196; see ADS archive). In thin-section, abundant ill-sorted quartz grains are visible, ranging up to 0.4mm across but mainly much less. The groundmass is isotropic and there is no sign of the muscovite visible by eye. This suggests that the sampled sherd might be higher fired than the remainder.

Manufacture

DR345 is probably the lip of a wheel-thrown applied spout from a pitcher. DR351 is a wheel-thrown vessel, removed from the wheel with a wire and with no subsequent knife-trimming or burnishing. Some of the body sherds show signs of closely-set horizontal lines, which may be deliberate decoration, or simply a by-product of the throwing technique. There are possible traces of red paint on one of the body sherds, but under the binocular microscope these appeared to overlie sooting and discolouration which occurred after breakage.

Forms

DR345 is probably a spouted pitcher and DR351 a medium-sized jar.

Evidence of use and condition

There is no evidence for the use of DR345. DR351 appears to have been burnt after breakage, and some sherds have sooted breaks, as well as sooted external and internal surfaces.

Distribution by period

DR345 comes from the fill of a post-hole in building 18 from Phase 1b. Spouted pitchers occur in late 7th-century and later contexts elsewhere but no precise parallel for the Flixborough sherd is known. DR351 consists of six sherds found in the same Phase 4ii dump (3758). The light colour and silty nature of the clay suggests a possible origin for the

clay within the 'Upper Estuarine' beds, exploited from the late 9th century at Stamford. However, a direct comparison of the Flixborough vessel with samples from the late 9th-century Stamford Castle kiln suggests that this was not the origin of the Flixborough vessel, which was stratified in a deposit much earlier than the period of use of the Stamford kiln. A northern French origin is therefore likely.

Chemical analysis of the selected Continental imports

Ten samples were submitted for chemical analysis using Inductively Coupled Plasma Spectroscopy (ICPS). The samples included the main groups of imports found at Flixborough, together with a sample of the imported, oxidised ware jug from the Castledyke South cemetery, Barton-upon-Humber (Didsbury 1998). See Fig. 12.12 below.

A principal components analysis of these data shows that the two samples of Vessel 13 (WALB) are chemically similar, which is consistent with their interpretation as being sherds from the same vessel. The three grey burnished ware samples also plot in the same area of the graph (Fig. 12.13). Overall, however, the data seem to indicate similar degrees of difference between the chemical analyses of all the samples.

General conclusions on the Continental imports

The number of imported Continental pottery sherds from Flixborough is very small, especially considering the large size of the pottery assemblage. When allowance is made for the fact that several of the vessels are also represented by several sherds, the total number of imports is very low indeed. Given the low number of sherds, and the clear evidence from the stratigraphic sequence for re-deposition, it is not possible to demonstrate any fluctuations in the quantity of imported pottery. Furthermore, in many cases the attribution of sherds to sources is only tentative, although the Walberberg ware was securely provenanced

to the Vorgebirge region, as were the grey burnished wares to southern Belgium/Northern France.

12.4 The Late Saxon pottery

by Jane Young and Alan Vince†

A comparatively small amount of pottery from the site (160 sherds) can confidently be attributed to the Late Saxon or Anglo-Scandinavian period, between the mid 9th century and the mid 11th century. The majority of the pottery is wheel-thrown and is comparable with material from production centres at Lincoln and Torksey. The two main ceramic types, Lincoln Kiln-type Shelly ware and Torksey ware, have been described fully elsewhere (Barley 1964 and 1981; Miles *et al.* 1989) and only new or relevant information is presented here. Few vessels are represented by more than a single sherd, and the average sherd weight is low at 5.5 grams. The Late Saxon fabric types are summarised in Fig. 12.14.

12.4.1 Lincoln Kiln-type Shelly ware (LKT)

Lincoln Kiln-type Shelly ware is the major ceramic type in use from the late 9th to the late 10th century over most of Lincolnshire. It is only in the hinterland of the other two main production centres at Stamford and Torksey that Lincoln Kiln-type ceases to be the main pottery type found. Kilns producing the shell-tempered wares have so far only been found in Lincoln (Miles *et al.* 1989), but a variant fabric found in the Horncastle area indicates that other production centres may exist. A total of 48 sherds of LKT, weighing 206 grams, were recovered from the Flixborough site.

Forms

The pottery form types all fall within the range found at the Silver Street Kiln site (Miles *et al.* 1989), with only one vessel having a diagnostic typology. Sherds are mainly

Sample No.	Attribute	Site	Context	Vess. No.	Code name	Form	Description
AG086	1	Castledyke			IMP		Frankish Jug
AG189	2	Flixborough	207	55	UNSOURCED WHITE	Jar	
AG190	3	Flixborough	1833	42	GRBURNW	Jar	
AG191	2	Flixborough	3915		MISC IMP	Ptch.	
AG192	4	Flixborough	10772		GRBURN	Ptch.	
AG195	4	Flixborough	5553		GRBURN	Ptch.	
AG196	6	Flixborough	3758		MISC IMP	Jar	
AG198	4	Flixborough	u/s	44	GRBURN	Jar	5 from vess. 44
AG199	5	Flixborough	10337	13	WALB	Jar	2 from vess. 13
AG200	5	Flixborough	u/s	13	WALB	Jar	3 from vess. 13

Fig. 12.12. Imports submitted for ICPS analysis.

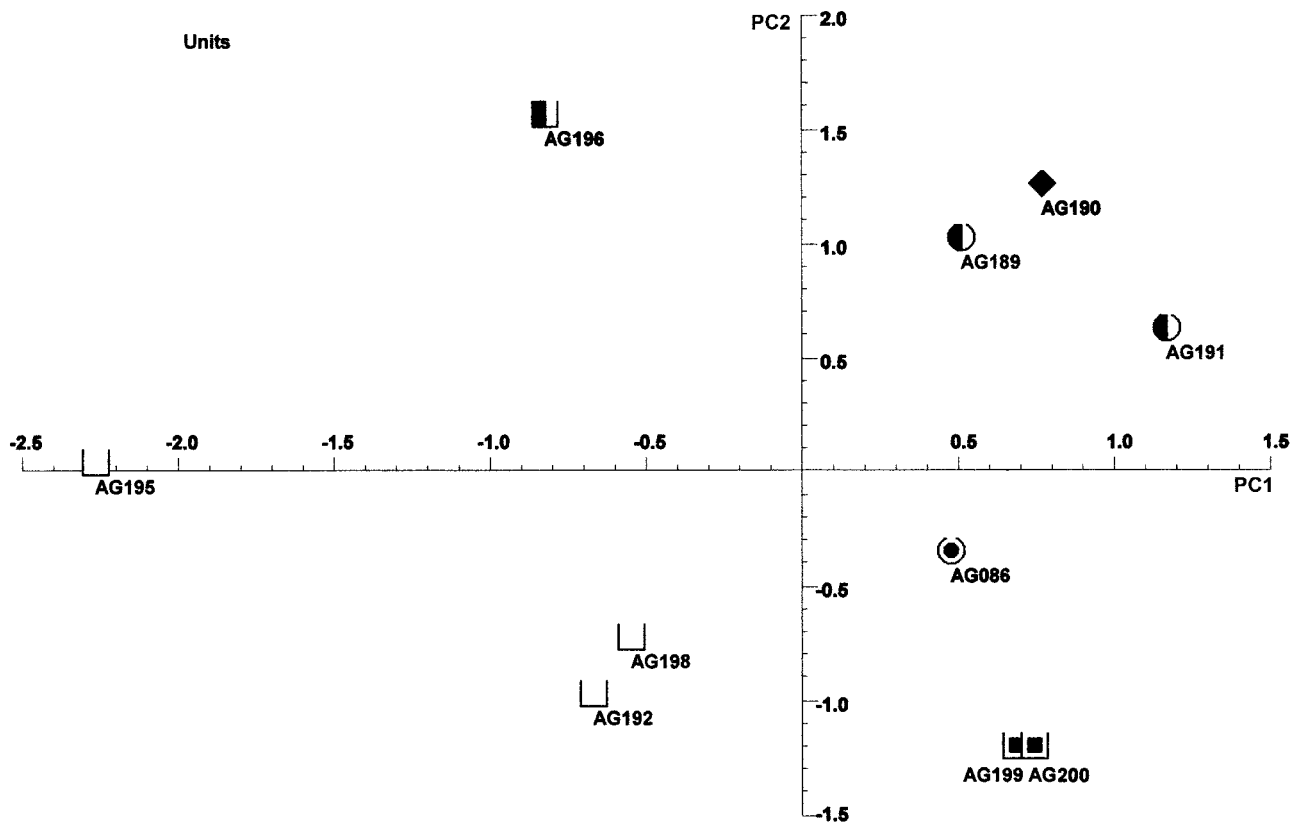


FIG. 12.13. Principal components analysis of selected Continental imports: Graph showing PC1 vs PC2.

Code name	Sherd count	Wt. (g.)
LG	1	3
LKT	48	206
LSAX	6	37
LSH	1	5
LSLOC	13	87
LSLS	4	32
TORK	38	227
TORKT	49	281
Total Late Saxon	160	878

FIG. 12.14. Summary of Late Saxon Fabric groups by sherd count and weight.

from small to medium thin-walled jars (FIG. 12.30, nos 290–1). The illustrated dish (FIG. 12.30, no. 292) is only found in deposits dating to between the late 9th and first quarter of the 10th centuries in Lincoln and elsewhere. None of the vessels has any signs of decoration, but this could be due to the poor condition of most of the sherds.

Evidence of use and condition

Few vessels are in good condition; most are represented by single abraded sherds. Twenty-four of the sherds are completely or partially leached. Eight vessels have soot residues, and one vessel has been burnt to a temperature higher than the initial firing temperature. The material is in too poor condition to conclude much about the function of the vessels; they were probably used for both cooking and storage purposes. There was no evidence for the use of lamps or pitchers in this ware type.

Distribution by period

The earliest two stratified LKT sherds occur in Phase 5a–5b deposits, and it is more likely that they belong to the later of the sub-phases, as a further two sherds are confidently stratified in Phase 5b deposits with other Late Saxon pottery. Two vessels were recovered from occupation deposits in Phase 6ii, and one jar sherd was found in a trench fill of building 14. The remaining pottery was almost entirely recovered from the Phase 6iii dark soils.

12.4.2 Torksey and Torksey-type ware

Several kilns have been found at Torksey (Barley 1964 and 1981; Wilkinson and Young 1995) producing a mainly reduced quartz-tempered fabric from the late 9th to late

11th centuries. Scientific evidence (Brooks and Mainman 1984) suggests that Torksey is not the only centre producing this type of pottery, and more recently a kiln producing Torksey-type pottery was found at Newark (Phillips and Young 1994). A total of 38 sherds in a typical Torksey-type fabric and 49 sherds in variant fabrics were found on the Flixborough site. The colour of most of the sherds found at Flixborough did not fall within the more typical colour range for the ware type. Torksey-type sherds usually have a grey core, black surfaces and red-brown margins; however, the Flixborough sherds are mainly a uniform grey colour similar to sherds recovered from kiln 2 at Torksey (Barley 1964), now thought to belong to the late 9th century. Similar grey-coloured sherds were found at Flaxengate, Lincoln, in early deposits (Adams Gilmour 1988), and at St. Mary's, Stow, associated with late 9th- to early 10th-century pottery.

Forms

The Torksey-type vessels are almost entirely jars, mainly medium-sized (FIG. 12.30, nos 279–282 and 286–289). Three bowls and two pitchers were the only other identifiable forms. A few diagnostic rim types occurred on the jars, including an early overhang rim (FIG. 12.30, no. 288) dating to between the late 9th and early 10th centuries. All three bowls (FIG. 12.30, nos 283–284), one pitcher and one jar had rims with pressed decoration, similar to vessels found in kilns 1 and 5 at Torksey (Barley 1964 and 1981), and typical of late 10th to mid 11th century production. One pitcher had bossed decoration on the body of the vessel, similar decoration was found on a vessel at Flaxengate, Lincoln (Adams Gilmour 1988, fig. 37, 32), in deposits dating to the late 10th to mid 11th centuries.

Evidence of use and condition

Most sherds are small and abraded, and ten vessels have external soot residues. The small number of vessels with soot residues may suggest that Torksey-type vessels were intended mainly for storage.

Distribution by period

The earliest stratified occurrence of Torksey-type pottery is in a Phase 4–5a occupation deposit (10086). Two further vessels occur in possible Phase 5a deposits. None of these vessels is stylistically diagnostic. A small number of vessels, all jars, are stratified in Phase 5b deposits. The remaining material occurs in deposits from Periods 6 and 7, mainly in the Phase 6iii *dark soils*.

12.4.3 Other Late Saxon fabrics

A small number of vessels (25 in total) in various shell- and quartz-sand-tempered fabrics can be dated to between the late 9th and 11th centuries. The types include Lincoln Gritty ware, Lincoln Late Saxon Shelly ware (FIG. 12.30, no. 294), Lincoln Late Saxon Sandy ware (FIG. 12.30, no. 295) and both shell- (FIG. 12.30, nos 296–7) and quartz-tempered local Late Saxon fabrics (FIG. 12.30, no. 298), notably fabrics A and D (Vince and Young

forthcoming). All except three vessels appear to be jars; two of the vessels are bowls and one is a very small jar or cup. Small, abraded sherds represent most vessels, and only two sherds have soot residues. The vessels are stratigraphically spread between phases 5a–5b and 7 with no obvious concentration.

Discussion

A surprisingly small amount of Late Saxon pottery was recovered from the site. Vessels of both 9th and late 10th to 11th century date are present, indicating a continuance of occupation in the area for a least 120 years after the emergence of the Late Saxon potting tradition. The paucity of Late Saxon types at Flixborough makes it difficult to make comparisons with other assemblages, such as those found at Flaxengate, Lincoln (Adams Gilmour 1988) or Coppergate, York (Mainman 1990). All of the sherds from Flixborough can be paralleled with material from either of these two large urban sites. Torksey-type vessels are the most common type found at Flixborough, and both early and late types are present. This ware type is not a common find on rural sites, even those close to the known kiln sites at Torksey. It is the main pottery type found in Lincoln during the mid 11th century, and in York from the mid 10th to mid 11th centuries (Mainman 1993a, 584). Shell-tempered wares from Lincoln are the second most common Late Saxon type found at Flixborough; these types dominate most assemblages of late 9th to late 10th century date throughout Lincolnshire, and form a small but significant part of late 9th to mid 10th century assemblages at York (Mainman 1990). No sherds of York ware or Stamford ware were recovered at Flixborough, although this may be due to the small sample size rather than a lack of availability to the inhabitants of the site.

It is difficult in the light of the stratigraphic evidence (see Volume 1) to explain the scarcity of Late Saxon pottery at Flixborough. A change in rubbish disposal patterns on the site, or the increased use of non-ceramic vessels, are both possible options. The absence of recognised Maxey-type ware amongst the material recovered from the Flaxengate site in Lincoln suggested that the Middle Saxon Maxey-type ware had ceased production by the mid/late 9th century. This must now be called into question by the analysis of the Flixborough Maxey-type pottery. Re-evaluation of the presence of Maxey-type ware at Flaxengate (Vince and Young forthcoming) has shown that a considerable amount of thin-walled later Maxey-type is in fact present. It is, therefore, possible that Maxey-type ware continued in production alongside the Early Lincolnshire Fine-shelled ware into the early Anglo-Scandinavian period.

12.5 The site pottery sequence

A brief summary of the pottery sequence is presented below, whereas more detailed observations are presented in Volume 1 of the Flixborough publications (Loveluck and Atkinson). The complex nature of the site phasing (for

example, with multi-phase options given to some features) made it difficult to analyse many of the ceramic trends. To overcome this, a more simplified phasing system, using the material from tightly dated phases or phase groups was used to form a development sequence for the pottery (Fig. 12.15).

Phase	Sherd count	Wt. (g.)	EVEs
1a	6	57	0
1b	28	232	0.48
2	37	299	1.15
2-3a	96	1012	0.83
2-4ii ditch	181	2105	2.52
3a	20	218	0.31
3b dump	106	1692	1.28
3b occupation	90	1306	0.79
4i	19	160	0.28
4i-4ii	141	2239	1.02
4ii	345	5362	4.15
5a	12	48	0.06
5a dump	280	3718	2.88
5a-5b	128	1078	0.75
5b	67	619	0.40
5b dump	393	2457	3.30
5b-6i	215	2992	3.13
5b-6ii	72	453	0.54
6i	147	2035	1.95
6i-6ii	81	981	0.88
6ii	64	720	0.78
6ii dump	285	3613	4.39
dark soil	1148	11936	12.09
Total	3961	45332	43.96

FIG. 12.15. Phasing for the developmental sequence of the pottery.

Period 1

The first phase of occupation on the site (Phase 1a) produced only five sherds of identifiable pottery. With the exception of a single worn sherd from a handmade Anglo-Saxon vessel, all of the material is of Roman date. Middle Saxon Maxey-type ware is first found in limited quantities in Phase 1b. The condition of some of the sherds from building 18 suggests that they represent primary deposition. The vessels are predominantly medium-sized jars and bowls, with simple flattened rims and external soot residues.

Period 2

Little pottery was recovered from Period 2 deposits, more than 50% of the material is Roman. The Maxey-type

vessels in this phase are represented mainly by small worn sherds. The earliest vessel in Maxey-type Fabric E occurs in this period.

Period 3

Despite the limited amount of material recovered from Phase 3a deposits, several new developments occur. The small group of pottery recovered from building 21 appears to represent primary deposition. This group includes the earliest occurrence of the imported Walberberg vessel (13) that is re-worked through the sequence. The first rolled rim on a Maxey-type vessel comes from this phase. A number of vessels from buildings 6 and 1 have internal carbonised deposits.

A significant increase in the amount of pottery occurring took place in Phase 3b. This phase also suggests a change from the previous pattern of pottery supply. Throughout Phase 3b deposits handmade Anglo-Saxon types are more common. The presence of these types in phase 2 to 3a deposits indicates that these vessels were probably in use during Phase 3a occupation. The first stratified Ipswich ware vessels occur in dump deposit 7220 in Phase 3biii. A sherd from a Maxey-type Fabric E jar with a wheel-thrown rim and the first possible indication of Early Lincolnshire Fine-shelled ware come from Period 3 deposits (although these are likely to be transitional). A number of vessels in Phase 3bv have been subjected to extreme temperatures. The high residual content of this phase is indicated by numerous cross-joins to vessels from earlier deposits.

Period 4

Material recovered from the building deposits in this period appears to be mainly residual. Large groups of pottery were recovered from dump deposits 3758 and 5503; vessels are mainly in Maxey-type ware, a significantly high number in Fabric E (c.18%). The rims of all Maxey-type vessels are now almost all everted or rolled. Early Lincolnshire Fine-shelled ware becomes more common in Phase 4ii. The apparently high number of handmade Anglo-Saxon sherds is caused by 25 sherds from Vessel 21 being re-deposited in Phase 4ii deposits.

The Ditch (Phase 2-4ii)

The pottery suggests that the ditch was filled in with material from several sources (Loveluck and Atkinson, Volume 1, Ch. 5). Sherds were mostly from large and medium-sized Maxey-type vessels, eleven Ipswich ware and four Black Burnished ware vessels also occurred. Little demonstrable early material (Period 1 to 3a) was present in the ditch fills.

Period 5

An increased amount of pottery occurs in the dump deposits of this period. A high proportion of the Maxey-type vessels in Phase 5a are in Fabric E (nearly 40% in dumps 6312, 5139 and 5193). Early Lincolnshire Fine-shelled ware and Ipswich ware sherds are found in

small numbers in Phase 5a groups. The increased number of handmade Anglo-Saxon sherds and the pattern of conjoining vessels indicate that much of the pottery from Period 5, especially Phase 5b, originated from occupation in Period 3, although this conclusion is not borne out when all the material components from Phase 5b deposits are considered (Loveluck and Atkinson, Volume 1, Ch. 6; Loveluck, Volume 4, Ch. 6). The first Late Saxon pottery types occur in Phase 5b deposits, as well as a sherd from a Badorf ware vessel.

Period 6

This period produced the largest groups of pottery from the site. Most of the material comprised residual Maxey-type vessels. The proportion of Late Saxon vessels showed a slight increase, especially in area E, although the sample is still small. The character of the pottery recovered from the *dark soils* in Phase 6iii shows noticeable differences between the composition of material from the dark soils deposited in site areas G and E.

Discussion

The analysis of the Anglo-Saxon pottery from Flixborough appeared to offer the ability to answer numerous questions about the date, source and function of pottery in Lincolnshire between the 7th and 9th centuries AD. In the event, much of the early promise has been unfulfilled. This is primarily because post-excavation analysis has shown that much of the pottery was subjected to complex and repeated post-depositional transformations. Only a tiny fraction of the pottery was found in deposits associated with the

construction, use or disuse of structures, or in primary refuse deposits. The remainder comes from the extensive Phase 3b and later dumps and the Phase 6iii *dark soils*. Internal evidence, such as cross-fitting and the externally-established dating of pottery types, together with the size and appearance of sherds, show that these dumps contain pottery assemblages which span the entire previous site history, even though the characteristics of the animal bone assemblages and other artefact assemblages indicate, conversely, that these are also composed of contemporary refuse (see Loveluck and Atkinson, Volume 1, Chs 2–7).

Chronology

Despite the small quantities of stratified, demonstrably contemporary pottery, it is possible to show that there is a progression of pottery types in Lincolnshire between the 7th and 9th centuries. Six main phases of pottery use can be demonstrated (FIG. 12.16).

The first two pottery horizons are characterised by the same two Northern Maxey ware fabrics, A and B, but differ in the preferred shape of vessels. At present, there is no direct evidence for a starting date for Maxey-type ware, neither is it known whether Northern Maxey-type precedes the Southern-type or *vice-versa*. The earliest known forms in both types are simple almost straight-sided vessels with flat-topped rims. This form is also found in Oolitic-tempered ware in the south of Lincolnshire, and in a Greensand-tempered fabric in the north of Lincolnshire; both these fabrics were in use in the Early Anglo-Saxon period, suggesting a degree of overlap. This is also supported by the use on Maxey-type vessels of incised

Pottery horizon	MAX A	MAX B	MAX E	Handmade	IPS	ELFS	LG, etc	Comments	Flixborough Phase
1	XXX	XXX						Simple forms with flat-topped rims	1b–2
2	XX	XXX						Wider range of rim types and vessel forms including curved profiles	3a
3		XXX	X	X				Resurgence of ?local and non-local handmade wares	3a–3b
4		XXX	XX	X	X	X		Fishergate, York. IPS possibly precedes ELFS at Flixborough	3b
5		XXX	XXX		XX X	XXX		Flat-topped rims absent. Increase in frequency of Fabric E and ELFS	4
6		XX	XX		XX	XXX	XX	Flaxengate and possibly Goltho Manor	5b

FIG. 12.16. Pottery horizons characterised at Flixborough.

decorative patterns also found on Charnwood vessels. No Maxey-type ware was found at the 6th- to very early 7th-century inhumation cemetery at Castledyke, Barton-upon-Humber (Didsbury 1998), or at the 6th- to 7th-century settlement site at Nettleton Top (Leahy 1993), suggesting that production of the type did not start until at least the middle part of the 7th century, and more probably towards the end of that century.

The third pottery horizon includes a third Northern Maxey ware, Fabric E, and this horizon is characterised by a resurgence of handmade Anglo-Saxon types. Small numbers of undecorated Handmade Anglo-Saxon sherds stratified with Maxey-type ware are found on a number of Lincolnshire sites. Previously these have been considered to be residual; further fabric and rim classification is needed to determine to what extent these types were used during the Middle Saxon period.

The earliest examples of Ipswich ware appear on the site in later deposits from Phase 3b, together with transitional ELFS vessels. At Fishergate in York, Maxey-type fabrics, Handmade fabrics and Ipswich ware are all found in the lowest Middle Saxon phase (Phase 3a). This phase has been dated to the late 7th/early 8th to the early 9th century by the excavator (Kemp 1996). Blinkhorn, however, dates the introduction of Ipswich ware to around AD 720 (see above, p.359), suggesting that pottery horizon 4 at Flixborough did not start until sometime after this date. With future work it may be possible to subdivide this horizon into pre- and post-ELFS phases. At present, there is not enough evidence from deposits not subject to post-depositional reworking at either Flixborough or York to support this.

During pottery horizon 5 the frequency of Ipswich ware and ELFS increases, and that of the Northern Maxey wares decreases. Within the Northern Maxey-types the proportion of Fabric E and Fabric U increases. Evidence for the dating of the later part of this horizon comes from the upper fills of the ditch at Flixborough (Loveluck and Atkinson, Volume 1, Ch. 5), where two pennies of Æthelberht of Wessex, struck between AD 858–865, were associated with pottery of this horizon. At Goltho, for example, only 4 or 5 Northern Maxey-type ware vessels were found, alongside 29 ELFS. However, the presence of a high quantity of LG sherds on the site may suggest that the Middle Saxon pottery there actually belongs to the sixth horizon (as always in our experience, the quantities of stratified Middle Saxon pottery are so low, that we have had to try to reconstruct assemblages from sites such as Goltho, by looking at unstratified and residual material too).

The sixth horizon is characterised mainly by ELFS sherds together with the introduction of the earliest Late Saxon/Anglo-Scandinavian Lincoln wares. This phase is represented at the Flaxengate site in Lincoln, where it pre-dates the first occupation along the Flaxengate street frontage, sometime before the late 9th century (Perring 1981). The limited number of Anglo-Scandinavian York ware sherds recovered from Phase 3c deposits at Fishergate, York (dated to the first half of the 9th century) and the

small number of Middle Saxon type found at Coppergate in Period 3 (dated to the mid to late 9th/early 10th century, Mainman 1990) also indicate that there is likely to be some overlap between Middle Saxon and Late Saxon (or Anglo-Scandinavian) pottery types in the mid to late 9th century.

Ceramic use

The evidence for the actual usage of much of the pottery from Flixborough is extremely limited, although sample lipid analysis (see above) suggests that this might be a useful tool in future research. Other more visual deposits found on the pottery include 12 examples of limescale, and a red pigment on the interior of 11 vessels.

Soot residues on the exterior of many vessels suggest that they were used for cooking, or the heating of food or liquids. Few vessels were complete enough to categorise the pattern of this sooting, although it was evident that two main patterns dominate the assemblage. Soot residues on the underneath and lower part of vessels indicate that these had been placed directly onto embers; a few vessels have soot on the lower walls, but not on the underneath, suggesting that they had been placed either on top of another vessel, or that a trivet had been used. Vessels which have soot on one side only, must have been placed beside a fire rather than directly on the embers.

A number of small and medium-sized vessels, mainly open forms, have internal sooting or carbonised residues. These may have been the result of burnt foodstuffs, but could equally be interpreted as the remains of oil or fat burnt in vessels used as lamps.

No definite pitcher forms were found in the shell-tempered fabrics, and it is likely that this form was entirely provided by quartz-tempered Ipswich and imported wares.

The decrease in the number of vessels in the Late Saxon period may reflect the replacement of ceramic forms with those in metal and wood, suggesting a change in cooking practices or the status of the site.

Pottery catalogue

Presented by figure and illustration number, linked to the text

Editorial note:

At a very early stage of the project the authors of this chapter had assumed that all of the pottery from the site would form a single chapter in the volume, and, therefore they allocated vessel illustration numbers to all the pottery, including the prehistoric and Romano-British vessels which are now reported on in Ch. 14. As the system of vessel numbers has also been used in parts of the project archive, this nomenclature has been left unchanged. Accordingly, the following sequence begins at Vessel 14.

Handmade Anglo-Saxon fabrics 2 (Fig. 12.17)

- 14 CHARN and CHAFF, Small bowl. Vessel 10, Context: 2379 (Phase 3bi–3bv), 850 (Phase 5b–6i) and 1450 (Phase 6iii).
- 15 ECHAF, Medium-sized bowl. Fabric includes shell and limestone. External soot and internal carbonized deposit. Vessel 62, Context: 956 (Phase 2–3a) and 1136 (Phase 2–3a).

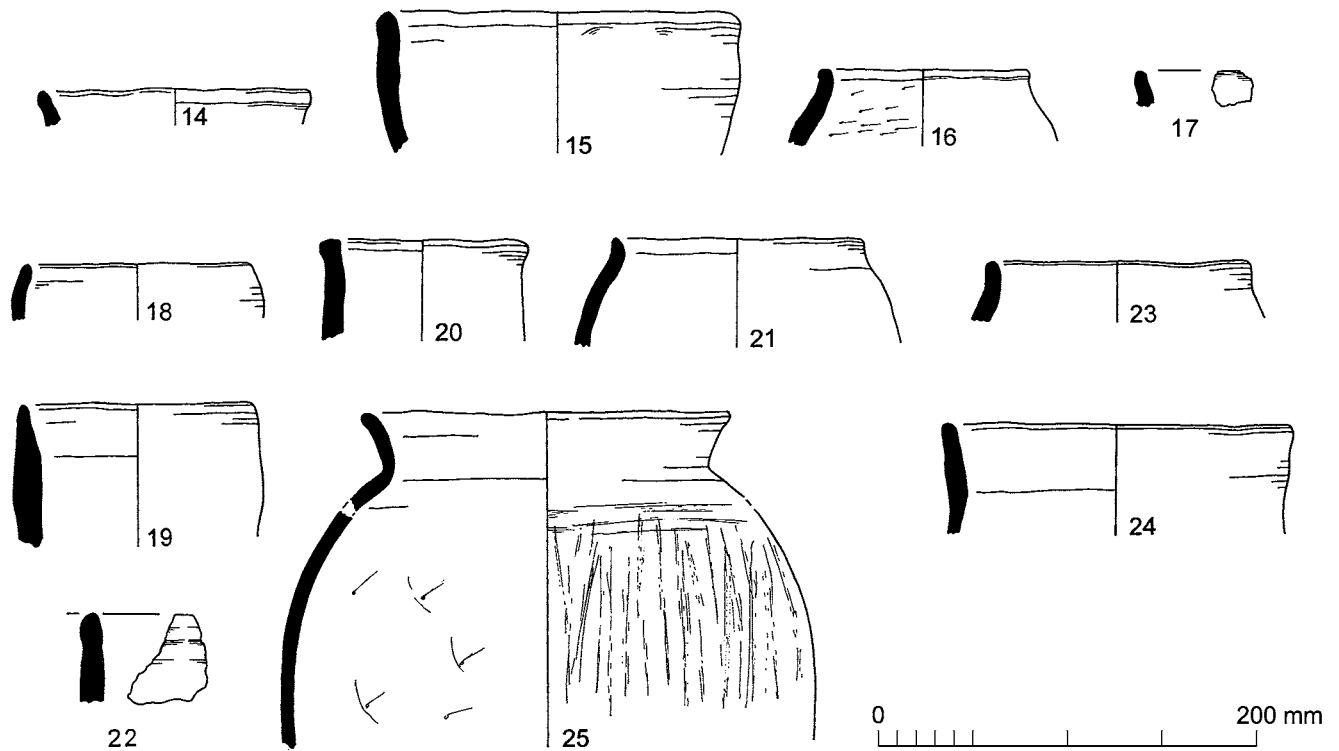


FIG. 12.17. Handmade Anglo-Saxon fabrics 2. Scale 1:4.

- 16 ECHAF, Small jar. Fabric includes shell and muscovite, Unstratified.
- 17 ECHAF, Rim of jar. Fabric includes moderate quartz, Context: 1462 (Phase 6iii).
- 18 ESAXLOC, Small bowl. Vessel 16. Fabric includes fine subround quartz. Internal carbonized deposit, Context: 2718 (Phase 5a–6ii), 636 (Phase 6iii), 2562 (Phase 5b) and 3666 (Phase 1b).
- 19 ESAXLOC, Small bowl. Vessel 33. Heavily carbonized internal, external and some breaks, Context: 11637 (Phase 3bi–4ii), 3891 (Phase 6ii), 11411 (Phase 5a), 11483 (Phase 5b), 10343 (Phase 5a–5b), 8189 (Phase 5b), 5885 (Phase 5a) and 6235 (Phase 3bv).
- 20 ESAXLOC, Small bowl. Heavily carbonized internal and external surfaces, and some breaks. Fine quartz fabric, may be sandstone, Context: 6344 (Phase 5b–6i).
- 21 ESAXLOC, Medium-sized jar. Poorly sorted subround quartz and chaff, Context 4 (surface of natural subsoil).
- 22 ESAXLOC, Small bowl. Fabric includes fine and coarse quartz. Soot residue on internal and external surfaces of vessel, Context: 3185 (Phase 2–4ii).
- 23 SST, Medium-sized jar. Vessel 92. Coarse fabric. Soot residue on external, Context: 5983 (Phase 3bv).
- 24 SST, Medium-sized jar or bowl. Vessel 4. Very coarse fabric. Heavily carbonized internal and external surfaces, and some breaks, Context: 5002 (Phase 2–3a), 1039 (unphased), 5930 (Phase 6i), 4769 (Phase 2–3a), 6235 (Phase 3bv), 5369 (Phase 2–3a) and 5983 (Phase 3bv).
- 25 ESGS, Large jar. Vessel 21. Partially burnt with burnished decoration, Context: 3758 (Phase 4ii), 5871 (Phase 6i), 5856 (Phase 4ii), 10337 (Phase 5a–5b), 5617 (Phase 3bv), 6304 (Phase 3bv), 6235 (Phase 3bv), 6312 (Phase 5a), 5617 (Phase 3bv), 5659 (Phase 5b–6i), 5503 (Phase 4ii) and 5139 (Phase 5a).

Maxey-type Fabric A (Fig. 12.18)

- 26 Maxey-type Fabric A, Medium-sized Type IIa jar. Carbonized deposit on internal surface and edges, Context: 6491 (Phase 5a).
- 27 Maxey-type Fabric A, Small Type IIIb jar. Vessel 60b. Internal soot, Context: 2008 (Phase 6iii) and 6489 (Phase 6ii–6iii).
- 28 Maxey-type Fabric A, Small Type IIIb jar. Vessel 14. External soot and internal carbonized deposit, Context 2027 (unphased), 2184 (Phase 6iii) and 2722 (Phase 3bv).
- 29 Maxey-type Fabric A, Medium-sized type VIa bowl with incuse stamps. Internal soot, Context 6680 (Phase 6i–6ii).
- 30 Maxey-type Fabric A, Medium-sized type VIa bowl with incised cross decoration on the rim top. Vessel 60A. Internal soot deposits. Context: 6472 (Phase 5b–6i).
- 31 Maxey-type Fabric A, Medium-sized type VIa bowl with

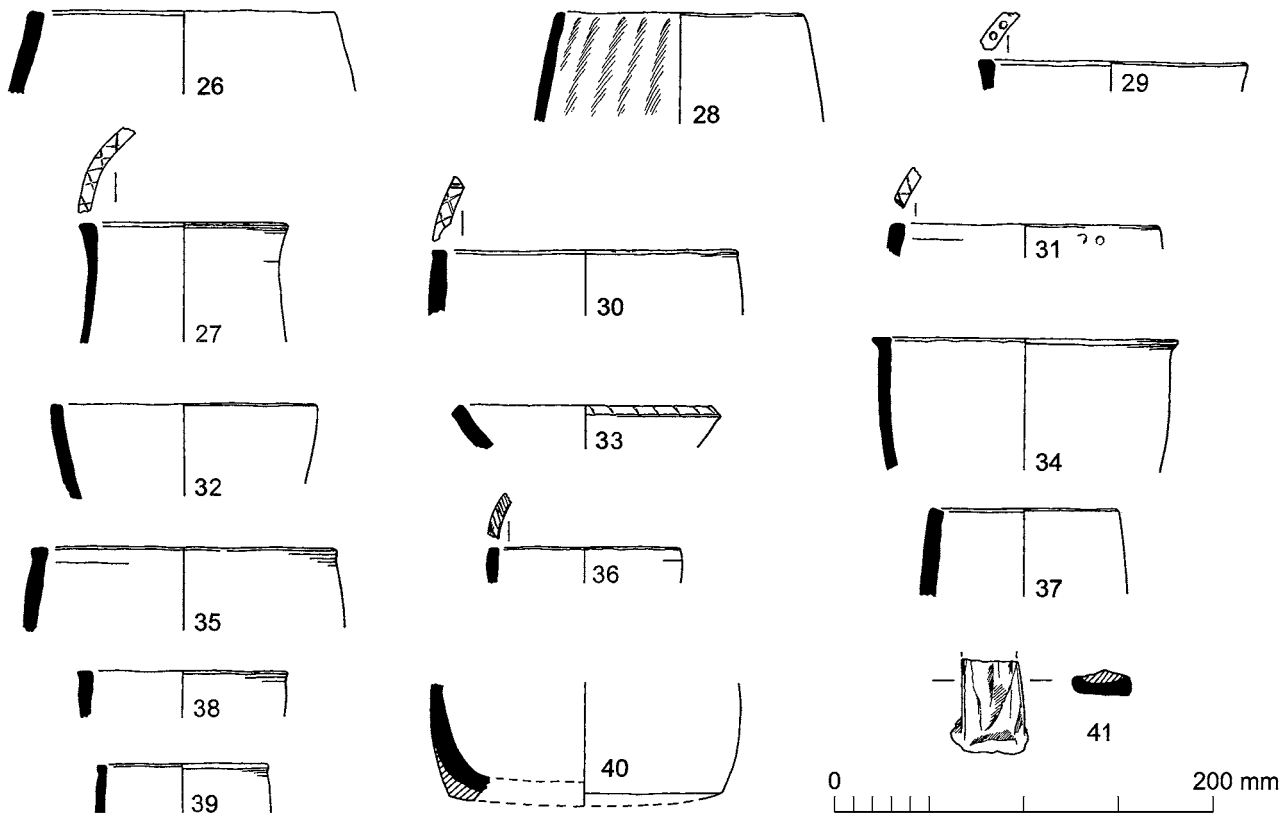


FIG. 12.18. Maxey-type Fabric A. Scale 1:4.

- incised cross decoration on the rim top and incuse stamps below rim. Context: 67 (Phase 5a–5b).
- 32 Maxey-type Fabric A, Medium-sized type VIb bowl with thick internal carbonized deposit. Vessel 66, Context: 8149 (Phase 6ii) and 6483 (Phase 6ii–6iii).
- 33 Maxey-type Fabric A, Medium-sized type VIc bowl with incised decoration on rim edge. Internal soot deposit, Context: 3891, (Phase 6ii).
- 34 Maxey-type Fabric A, Medium-sized type VIh bowl with thick internal and part external soot deposit, Context: 4322 (Phase 3bi–4i).
- 35 Maxey-type Fabric A, Medium-sized type VIi bowl with internal and part external soot deposit, Context: 5503 (Phase 4ii).
- 36 Maxey-type Fabric A, Small type VIIa bowl with incised decoration on rim top, and thick internal and part external soot deposit, Context: 5139 (Phase 5a).
- 37 Maxey-type Fabric A, Small type VIIa bowl with internal carbonized deposit, Context: 7817 (Phase 6iii).
- 38 Maxey-type Fabric A, Small type VIIa bowl with internal carbonized deposit and part external soot deposit. Vessel 85, Context: 2438 (Phase 5b) and 1672 (Phase 5b–6i).
- 39 Maxey-type Fabric A, Small type VIIa bowl with external soot deposit, Context: 3336 (Period 2).
- 40 Maxey-type Fabric A, Medium-sized jar or bowl with internal and part external, soot deposit, Context: 4711 (Periods 1–2).
- 41 Maxey-type Fabric A, Handled vessel with applied strip, Context: 4202 (Phase 3bi–3bv).

Maxey-type Fabric B, large jars (Fig. 12.19)

- 42 Maxey-type Fabric B, Large type Ia jar with external soot, Context: 3300 (Phase 2–3a).
- 43 Maxey-type Fabric B, Large lugged type Ia jar, Context: 1449 (Phase 6iii).
- 44 Maxey-type Fabric B, Large triangular lugged, type Ia jar with external soot. Vessel 65, Context: 10961 (Phase 6i–6ii), 10179 (Phase 3bii–3biii) and 1835 (Phase 6ii–6iii).
- 45 Maxey-type Fabric B, Large type Ib jar with post-firing hole below rim and external soot, Context: 1012 (Phase 2–3a).
- 46 Maxey-type Fabric B, Large triangular lugged type Ib jar with worn internal surface. Vessel 79, Context: 7153 (Phase 3biii) and 6920 (Phase 4i–5a).
- 47 Maxey-type Fabric B, Large lugged type Ib jar, Context: 10775 (Phase 4i–4ii).
- 48 Maxey-type Fabric B, Large lugged type Ie jar. Vessel 68, Context: 5503 (Phase 4ii) and Unstratified.

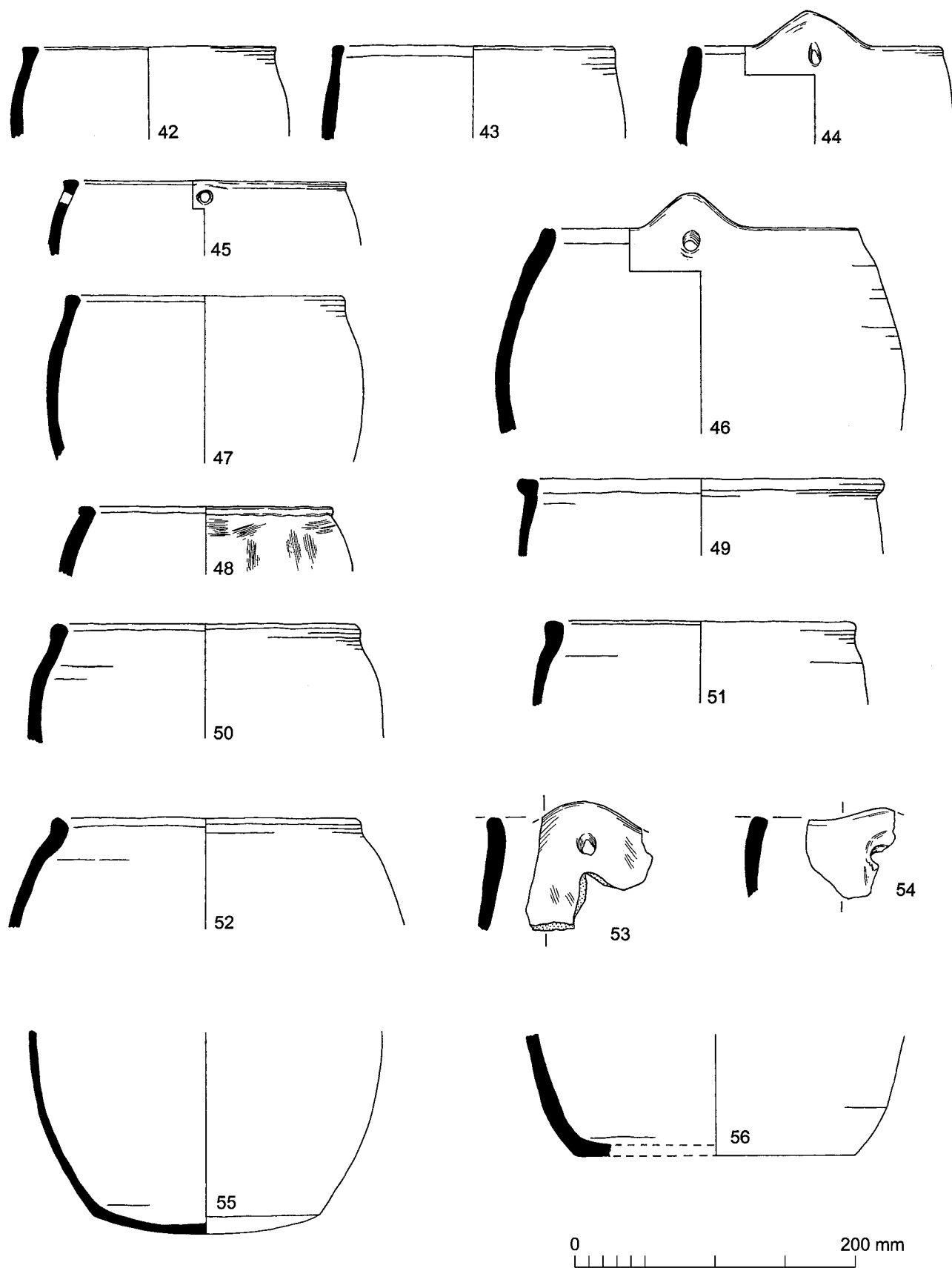


FIG. 12.19. Maxey-type Fabric B, large jars. Scale 1:4.

- 49 Maxey-type Fabric B, Large lugged type Ie jar with external soot, Context: 2610 (Phase 5a).
- 50 Maxey-type Fabric B, Large lugged type If jar with external soot and leached internal surface, Context: Unstratified.
- 51 Maxey-type Fabric B, Large lugged type If jar, Context: 1893 (Phase 6ii–6iii).
- 52 Maxey-type Fabric B, Large lugged type If jar with external soot, Context: 6483 (Phase 6ii–6iii).
- 53 Maxey-type Fabric B, Large round lugged jar with additional post-firing hole. Vessel 76, Context: 2859 (Phase 4ii) and 3421 (Phase 5b–6i).
- 54 Maxey-type Fabric B, Large round lugged jar, Context: 2024 (Phase 6iii).
- 55 Maxey-type Fabric B, Large jar with external soot and partially leached internal surface. Vessel 90, Context: 10772 (Phase 2–4ii) and area B Unstratified.
- 56 Maxey-type Fabric B, Large jar with internal white deposit and external soot. Vessel 8, Context: 534 (Phase 7), 535 (Phase 6iii), 618 (Phase 6iii) and 636 (Phase 6iii).

Maxey-type Fabric B, medium and small-sized jars (FIG. 12.20)

- 57 Maxey-type Fabric B, Medium-sized type IIa jar with internal carbonized deposit and external soot, Context: 3893 (Phase 3a).
- 58 Maxey-type Fabric B, Medium-sized type IIa jar with external soot, Context: 3194 (Phase 1b).
- 59 Maxey-type Fabric B, Medium-sized lugged type IIa jar with external soot, Context: Area B Unstratified.
- 60 Maxey-type Fabric B, Medium-sized type IIb jar with small rounded lug and external soot. Vessel 12, Context: 636 (Phase 6iii) and 535 (Phase 6iii).
- 61 Maxey-type Fabric B, Medium-sized type IIb jar with small rounded lug and external soot, Context: 3541 (Phase 3bv).
- 62 Maxey-type Fabric B, Medium-sized type IIb jar with internal carbonized deposit and external soot, Context: 3734 (Phase 5a–5b).
- 63 Maxey-type Fabric B, Medium-sized type IIc jar, Context: Area A Unstratified.
- 64 Maxey-type Fabric B, Medium-sized type IIc jar with small rounded lug. Vessel 26, Context 7543, (Phase 4i), 5860 (Phase 5a) and 7644 (Phase 4i).
- 65 Maxey-type Fabric B, Medium-sized type IIc jar with external soot, Context: 4914 (Phase 4i–4ii).
- 66 Maxey-type Fabric B, Medium-sized type IIc jar, Context: 8461 (Phase 6ii).
- 67 Maxey-type Fabric B, Medium-sized type IIc jar, Context: 7903 (Phase 6ii).
- 68 Maxey-type Fabric B, Medium-sized type IId jar with finger-tipped decoration to rim edge, Context: 3759 (Period 7).
- 69 Maxey-type Fabric B, Medium-sized type IId jar with internal carbonized deposit and external soot, Context: 2562 (Phase 5b).
- 70 Maxey-type Fabric B, Medium-sized type IIe jar with

external soot. Vessel 84, Context: 72 (Phase 5a) and 2024 (Phase 6iii).

- 71 Maxey-type Fabric B, Medium-sized type IIe jar with internal soot, Context: 6798 (Phase 6i).
- 72 Maxey-type Fabric B, Medium-sized lugged type IIe jar with external soot, Context: 7505 (Phase 6i).
- 73 Maxey-type Fabric B, Medium-sized type IIe jar, Context: 3891 (Phase 6ii).
- 74 Maxey-type Fabric B, Medium-sized type IIg jar with soot on rim edge. Vessel 64, Context: 239 (Phase 5a–5b) and 11 (Phase 5a–5b).
- 75 Maxey-type Fabric B, Medium-sized type IIh jar, Context: 1995 (Phase 6i–6ii).
- 76 Maxey-type Fabric B, Small type IIIe jar, Context: 5871 (Phase 6i).
- 77 Maxey-type Fabric B, Small type IIIc jar external soot, Context: 5503 (Phase 4ii).
- 78 Maxey-type Fabric B, Small type IIIc jar with external soot, Context: 6490 (Phase 5b–6i).
- 79 Maxey-type Fabric B, Small type IIIe jar with internal carbonized and white deposits, and external soot. Vessel 92, Context: 3541 (Phase 3bv) and 1728 (Phase 5b).
- 80 Maxey-type Fabric B, Small type IIIe jar, Context: 10851 (Phase 3bi).
- 81 Maxey-type Fabric B, Small type IIId jar with internal carbonized deposit, external soot, and wear mark on rim internal, Context: 816 (Phase 2–3a).
- 82 Maxey-type Fabric B, Small lugged type III jar with pressed decoration on rim and external soot, Context: 5697 (Phase 5a).

Maxey-type Fabric B, bowls (FIG. 12.21)

- 83 Maxey-type Fabric B, Large lugged type Va bowl, Context: 636 (Phase 6iii).
- 84 Maxey-type Fabric B, Large type Va bowl with post-firing holes and external soot, Context: 618, 6iii.
- 85 Maxey-type Fabric B, Large type Vb bowl with internal soot, Context: 3107 (Phase 4ii).
- 86 Maxey-type Fabric B, Large type Vb bowl with external soot and leached internal surface, Context: 2024 (Phase 6iii).
- 87 Maxey-type Fabric B, Large bowl with internal soot, Context: 3241 (Phase 6ii).
- 88 Maxey-type Fabric B, Large bowl, Context: 4044 (Phase 6ii).
- 89 Maxey-type Fabric B, Medium-sized type VIa bowl with external soot, Context: Area C Unstratified.
- 90 Maxey-type Fabric B, Medium-sized type VIa bowl with thick internal soot deposit, Context: Area B Unstratified.
- 91 Maxey-type Fabric B, Medium-sized type VIa bowl, Context: 323 (Phase 2–4ii).
- 92 Maxey-type Fabric B, Medium-sized type VIa bowl with internal carbonized deposit, Context: 6300 (Phase 6iii).
- 93 Maxey-type Fabric B, Medium-sized type VIb bowl with external soot, Context: 6235 (Phase 3bv).
- 94 Maxey-type Fabric B, Medium-sized type VIc bowl with external soot, Context: 10296 (Phase 6i–6ii).

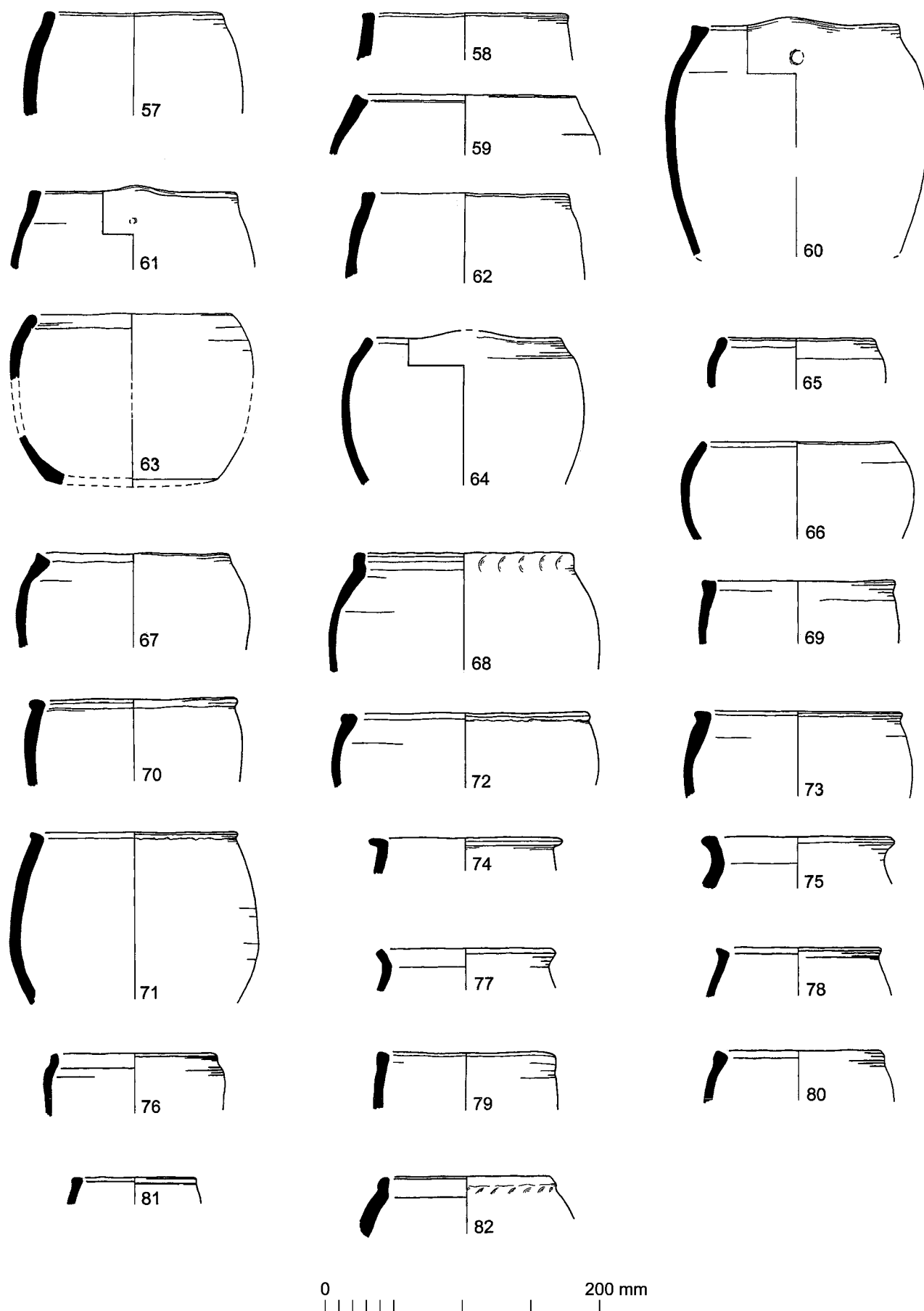


FIG. 12.20. Maxey-type Fabric B, medium and small-sized jars. Scale 1:4.

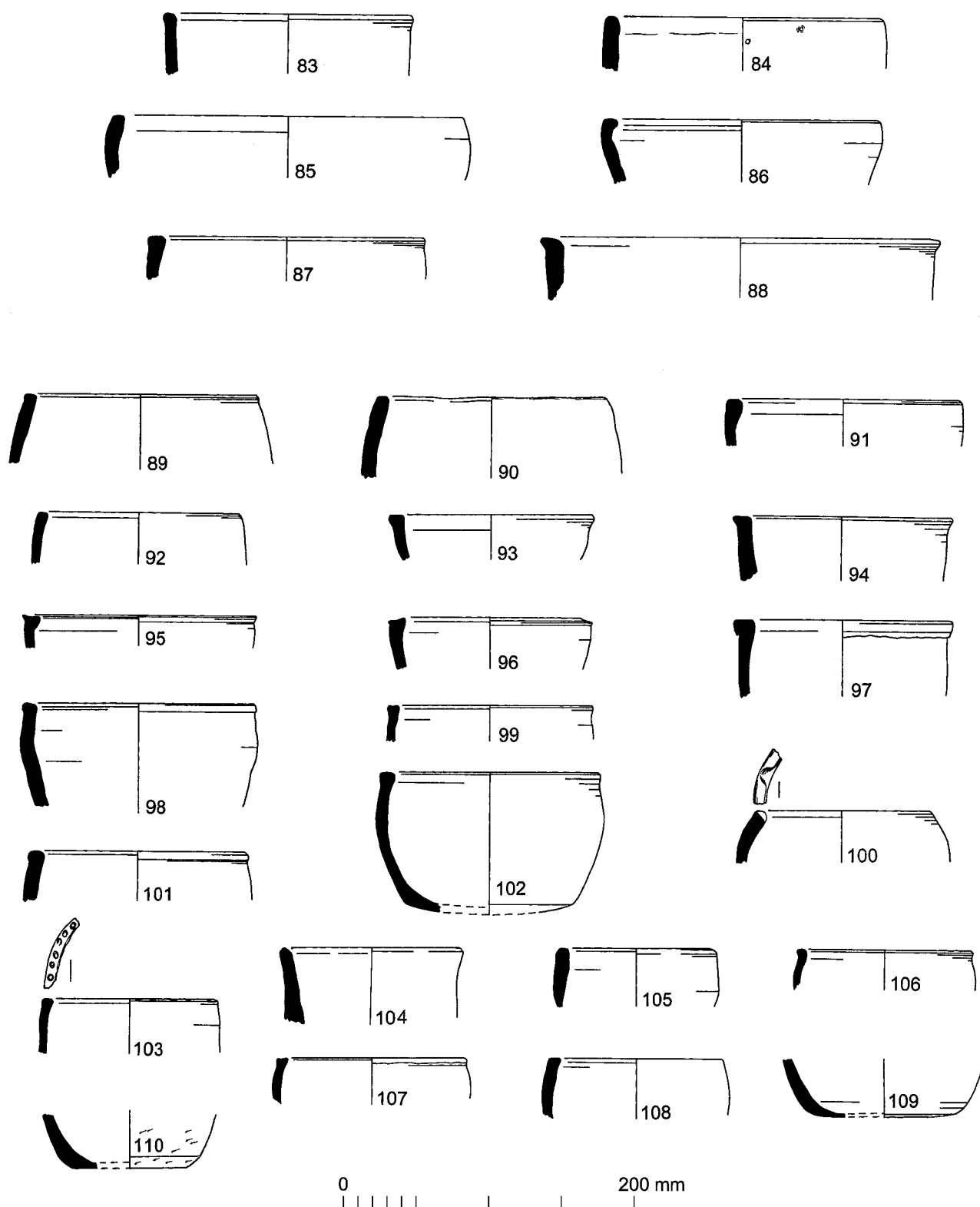


FIG. 12.21. Maxey-type Fabric B, bowls. Scale 1:4.

- 95 Maxey-type Fabric B, Medium-sized type VIe bowl, Context: 6471 (Phase 6ii).
- 96 Maxey-type Fabric B, Medium-sized type VIe bowl with internal and external soot, Context: 6803 (Phase 5b–6i).
- 97 Maxey-type Fabric B, Medium-sized type VI f bowl, Context: 11039 (Phase 5a).
- 98 Maxey-type Fabric B, Medium-sized type VI g bowl with leached interior and internal soot deposit, Context: 5139 (Phase 5a).
- 99 Maxey-type Fabric B, Medium-sized type VI i bowl with internal and external soot, Context: Unstratified.
- 100 Maxey-type Fabric B, Medium-sized type VI j bowl with external soot, and post-firing hole or wear mark on rim edge, Context: 10700 (Phase 2–3a).
- 101 Maxey-type Fabric B, Medium-sized type VI k bowl with external soot, Context: 6491 (Phase 5a).
- 102 Maxey-type Fabric B, Medium-sized type VI k bowl with internal carbonized deposit, Context: 10048 (Phase 3biv–4i).
- 103 Maxey-type Fabric B, Small type VII a bowl with incuse stamps on rim top, and internal and part external soot. The fabric is very fine, and this vessel may in fact be a Fabric A example, Context: 6499 (Phase 6ii–6iii).
- 104 Maxey-type Fabric B, Small type VII a bowl with thick internal soot, Context: 2127 (Phase 6i–6ii).
- 105 Maxey-type Fabric B, Small type VII a bowl, Context: 1728 (Phase 5b).
- 106 Maxey-type Fabric B, Small type VII c bowl with internal carbonized deposit, Context: 3421 (Phase 5b–6).
- 107 Maxey-type Fabric B, Small type VII c bowl with external soot. Vessel 88, Context: 6498 (Phase 6ii–6iii) and 6300 (Phase 6iii).
- 108 Maxey-type Fabric B, Small type VII c bowl with thick internal soot, Context: Unstratified.
- 109 Maxey-type Fabric B, Small type VII d bowl with external soot, Context: 1837 (Phase 6ii–6iii).
- 110 Maxey-type Fabric B, Small type VII d bowl with a wear mark on the basal edge, Context: 5503 (Phase 4ii).
- Maxey-type Fabric B, miscellaneous (Fig. 12.22)*
- 111 Maxey-type Fabric B, side-lugged bowl, Context: 3758 (Phase 4ii).
- 112 Maxey-type Fabric B, Large jar with triangular lug, and a wear or cut mark on the rim. The interior of the vessel has a dark stain, Context: 5139 (Phase 5a).
- 113 Maxey-type Fabric B, Large jar with rounded lug having off-centre hole, Context: 72 (Phase 5a).
- 114 Maxey-type Fabric B, Large vessel with triangular lug, Context: 6491 (Phase 5a).
- 115 Maxey-type Fabric B, Large jar with rounded lug. The hole has been formed within a thumb-pressing, Context: Unstratified.
- 116 Maxey-type Fabric B, Large jar with rounded lug perforated from the interior of the vessel. The lug appears to have been applied after the hole has been formed, Context: 7054 (Phase 6ii–6iii).
- 117 Maxey-type Fabric B, vessel with incuse stamps below incised horizontal line. The sherd is heavily leached and the vessel may be Fabric U, Context: Unstratified.

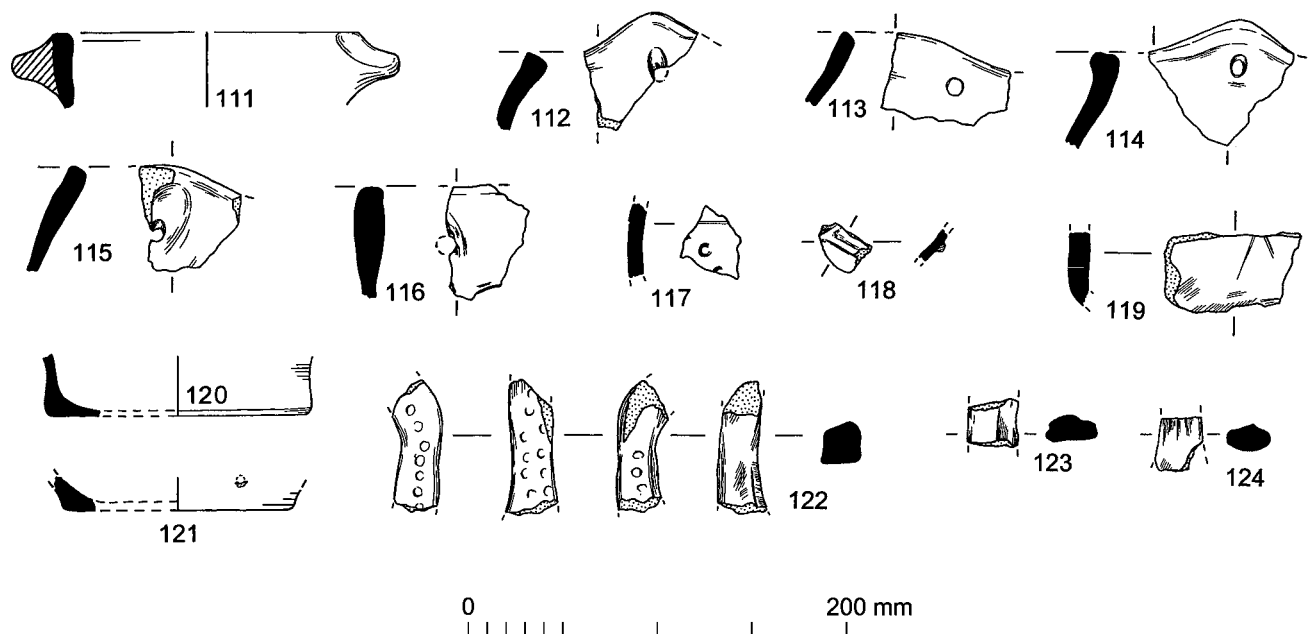


FIG. 12.22. Maxey-type Fabric B, miscellaneous. Scale 1:4.

- 118 Maxey-type Fabric B, Sherd with applied decoration, Context: 6300 (Phase 6iii).
 119 Maxey-type Fabric B, Large vessel with incised decoration, Context: 5871 (Phase 6i).
 120 Maxey-type Fabric B, Unusual vessel, possibly a bowl, Context: 6803 (Phase 5b–6i).
 121 Maxey-type Fabric B, Base with post-fired hole, Context: 1450 (Phase 6iii).
 122 Maxey-type Fabric B, Side handle with incuse stamps. This vessel may be a Fabric U, as it is partially leached, Context: 3081 and 2562 (Phase 5b).
 123 Maxey-type Fabric B, Small strap handle or applied strip, Context: 3711 (Phase 5a).
 124 Maxey-type Fabric B, Small strap handle, Context: 7321 (Phase 6ii).

Maxey-type Fabric E, large jars (Fig. 12.23)

- 125 Maxey-type Fabric E, Large lugged type Ia jar with internal and part external soot, Context: Unstratified.
 126 Maxey-type Fabric E, Large round lugged type Ib jar with external soot. Vessel 77, Context: 2612 (Phase 3bv–4i), 669 (Phase 5a–5b), 4675 (Phase 4i–4ii) and 674 (3a–3bi).
 127 Maxey-type Fabric E, Large lugged type Ic jar with internal soot. There is finger-pressing on the internal side of the base. Vessel 32, Context: 10176 (Phase 5b–6i), 11404 (Phase 3bii–3biii) and area A Unstratified.
 128 Maxey-type Fabric E, Large lugged type Id jar, Context: Unstratified.
 129 Maxey-type Fabric E, Large lugged type Ie jar, Context: 3610 (Phase 6ii).
 130 Maxey-type Fabric E, Large type If jar, Context: 4737 (Phase 4i–4ii).
 131 Maxey-type Fabric E, Large type If jar with wear mark to rim edge, possibly caused by a lid, Context: 5503 (Phase 4ii).
 132 Maxey-type Fabric E, Large type Ig jar with external soot, Context: 5968 (Phase 5b).
 133 Maxey-type Fabric E, Large triangular lugged jar with internal and external soot, Context: 3891 (Phase 6ii).
 134 Maxey-type Fabric E, Large jar with internal and external soot. Vessel 89, Context: 6491 (Phase 5a) and 10177 (Phase 4ii–5a).
 135 Maxey-type Fabric E, Large jar with external soot, Context: 3758 (Phase 4ii).
 136 Maxey-type Fabric E, Large jar, Context: 3758 (Phase 4ii).

Maxey-type Fabric E, medium and small-sized jars (Fig. 12.24)

- 137 Maxey-type Fabric E, Medium-sized type IIb jar, Context: Unstratified.
 138 Maxey-type Fabric E, Medium-sized type IIc jar, Context: Unstratified.
 139 Maxey-type Fabric E, Medium-sized type IId jar with traces of internal soot. Vessel 27, Context: 3758 (Phase 4ii) and 5139 (Phase 5a).

- 140 Maxey-type Fabric E, Medium-sized type IId jar, Context: 6920 (Phase 4i–5a).
 141 Maxey-type Fabric E, Medium-sized type IId jar, Context: 3610 (Phase 6ii).
 142 Maxey-type Fabric E, Medium-sized type IId jar with external soot, Context: 2861 (Phase 2i–4ii).
 143 Maxey-type Fabric E, Medium-sized type IId jar, possibly lugged, with external soot, Context: 3758 (Phase 4ii).
 144 Maxey-type Fabric E, Medium-sized type IId jar with external soot, Context: Unstratified.
 145 Maxey-type Fabric E, Medium-sized type IId jar with internal soot and a cut-mark on the rim, Context: 3758 (Phase 4ii).
 146 Maxey-type Fabric E, Medium-sized type IId jar with soot on the lower internal body and upper external surface, Context: 11411 (Phase 5a).
 147 Maxey-type Fabric E, Medium-sized type IId jar with partial internal and external soot, Context: 7701 (Phase 5b).
 148 Maxey-type Fabric E, Medium-sized type IIh jar with internal and external soot, and well-burnished external surface, Context: 6463 (unphased).
 149 Maxey-type Fabric E, Medium-sized jar with internal carbonized deposit with a demarcation line c.10mm below the rim, Context: 8237 (Phase 5b).
 150 Maxey-type Fabric E, Small type IIIa jar, Context: 8090 (Phase 5a–5b).
 151 Maxey-type Fabric E, Small type IIIb jar with part internal and external soot, Context: 6797 (Phase 6ii).
 152 Maxey-type Fabric E, Small type IIIc jar with external soot, Context: 10296 (Phase 6i–6ii).
 153 Maxey-type Fabric E, Small type IIIc jar with internal and external soot, Context: 1833 (Phase 6ii–6iii).
 154 Maxey-type Fabric E, Small type IIIc jar with external soot extending over the rim top, Context: 5617 (Phase 3bv).
 155 Maxey-type Fabric E, Small type IIIe jar with external soot. Vessel 87, Context: 6961 (Phase 6i–6ii) and 11404 (Phase 3bii–3biii).
 156 Maxey-type Fabric E, Small type IIIe jar with internal soot, Context: 11038 (Phase 2–3a).
 157 Maxey-type Fabric E, Small type IIIe jar with partial internal and external soot, Context: 6797 (Phase 6ii).
 158 Maxey-type Fabric E, Small type IIIe jar with internal soot and leached lower internal body, Context: 10772 (Phase 2–4ii).
 159 Maxey-type Fabric E, Small type IIIe jar with internal carbonized deposit and external soot. Vessel 93, Context: 3610 (Phase 6ii) and 3219 (Phase 5b).
 160 Maxey-type Fabric E, Small jar, Context: 8675 (Phase 6i).

Maxey-type Fabric E, Type IV vessels and bowls (Fig. 12.25)

- 161 Maxey-type Fabric E, Type IV jar with thick external soot extending over inner rim. Vessel 31, Context: 6491 (Phase 5a) and 11039 (Phase 5a).
 162 Maxey-type Fabric E, Type IV jar with partial internal and

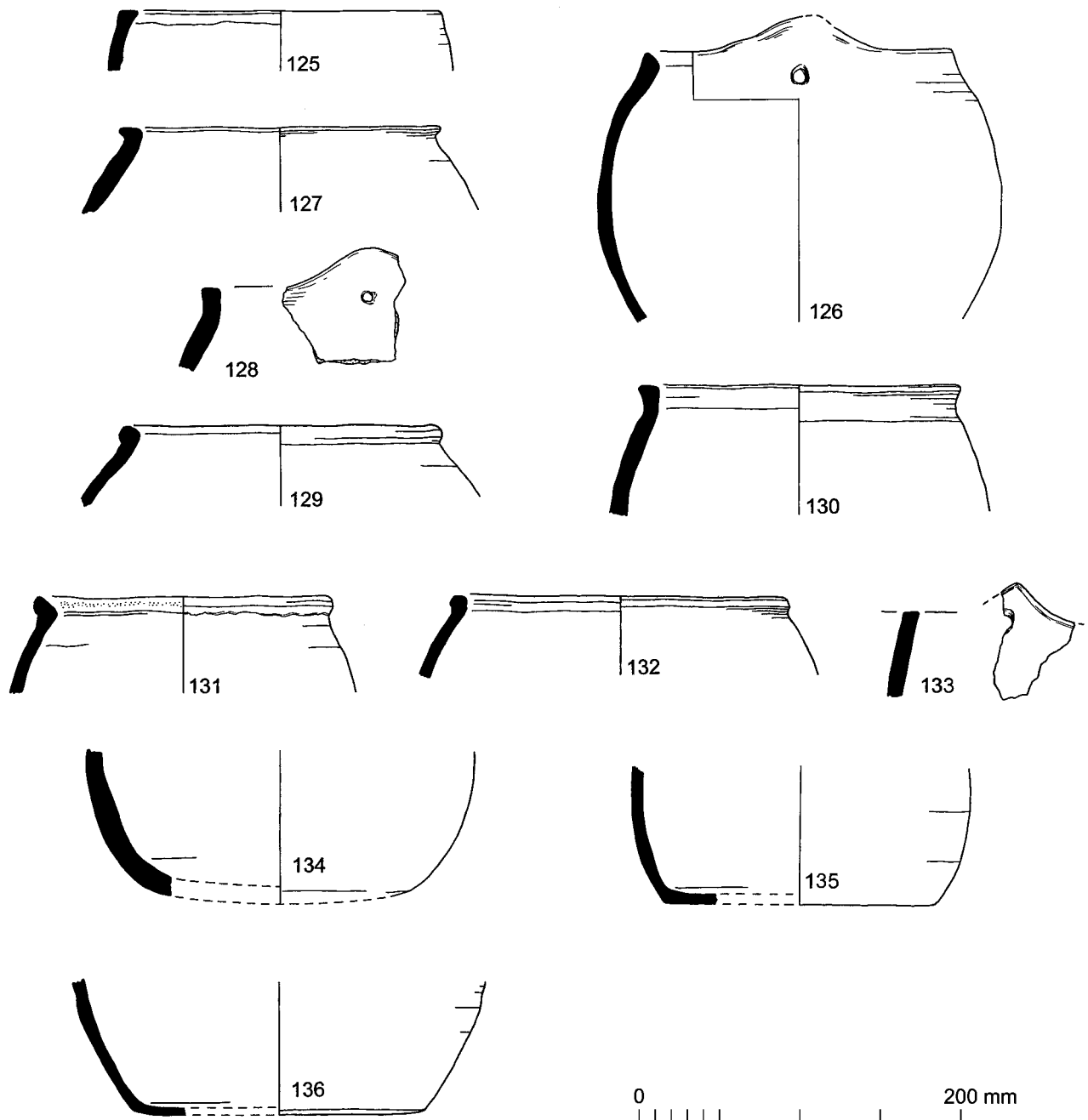


FIG. 12.23. Maxey-type Fabric E, large jars. Scale 1:4.

- external soot. Vessel 43, Context: 7151 (Phase 5a–5b), 3241 (Phase 6ii) and Unstratified.
- 163 Maxey-type Fabric E, Type IV jar with internal and external soot. Vessel 29, Context: 5503 (Phase 4ii), 3758 (Phase 4ii) and 1672 (Phase 5b–6i).
- 164 Maxey-type Fabric E, Type IV bowl, Context: 6039 (Phase 3biv).
- 165 Maxey-type Fabric E, Type IV jar, Context: 400 (Phase 2i–4ii).
- 166 Maxey-type Fabric E, Type IV jar with internal and external soot. Vessel 69, Context: 5871 (Phase 6i), 3610 (Phase 6ii), 7150 (Phase 5a–5b) and 6046 (Phase 6ii).
- 167 Maxey-type Fabric E, Type IV jar, Context: 6039 (Phase 3biv).
- 168 Maxey-type Fabric E, Type IV triangular lugged jar with external soot. Vessel 46, Context: 10772 (Phase 2–4ii) and 4322 (Phase 3bi–4i).
- 169 Maxey-type Fabric E, Type IV vessel with internal and

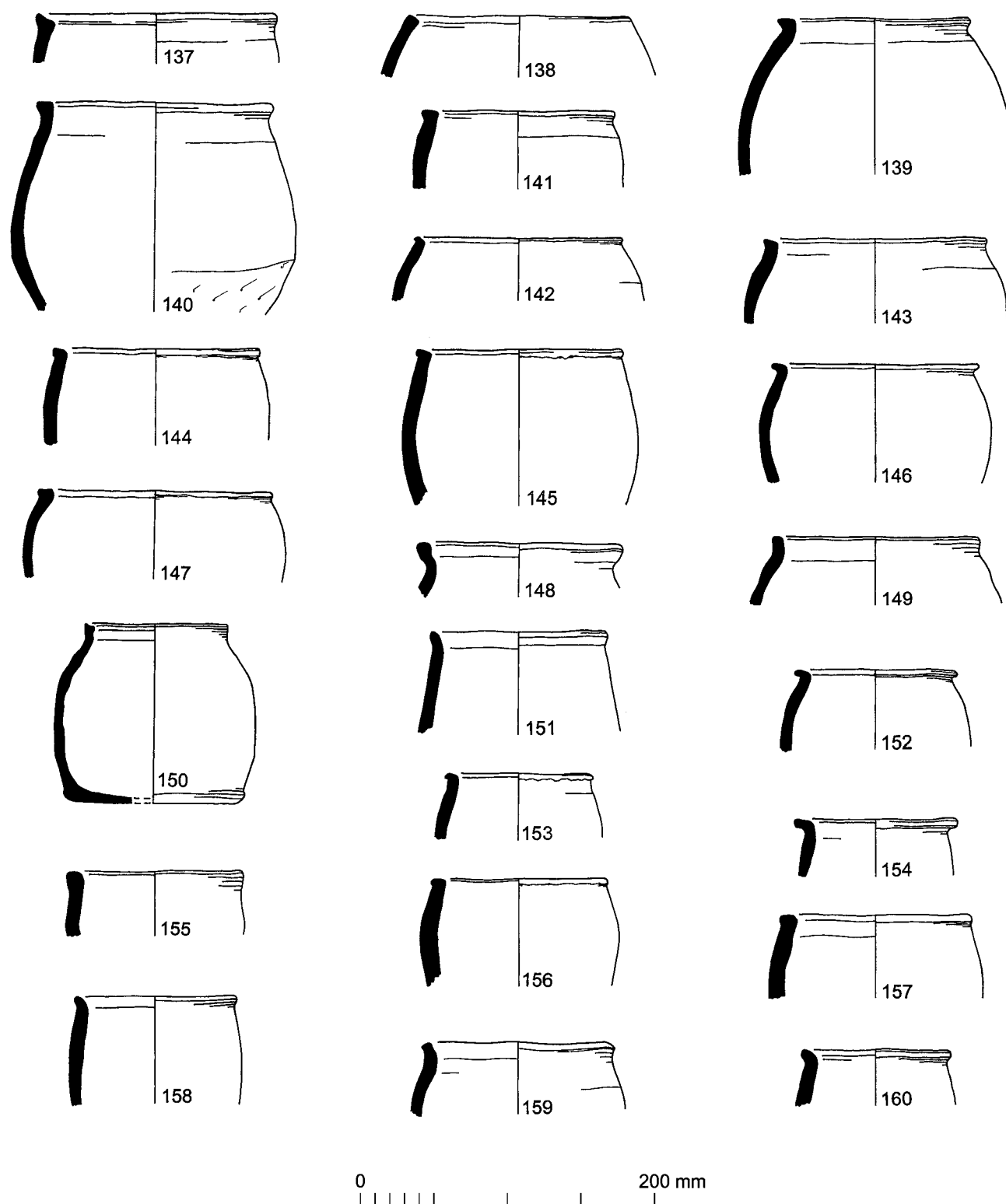


FIG. 12.24. Maxey-type Fabric E, medium and small-sized jars. Scale 1:4.

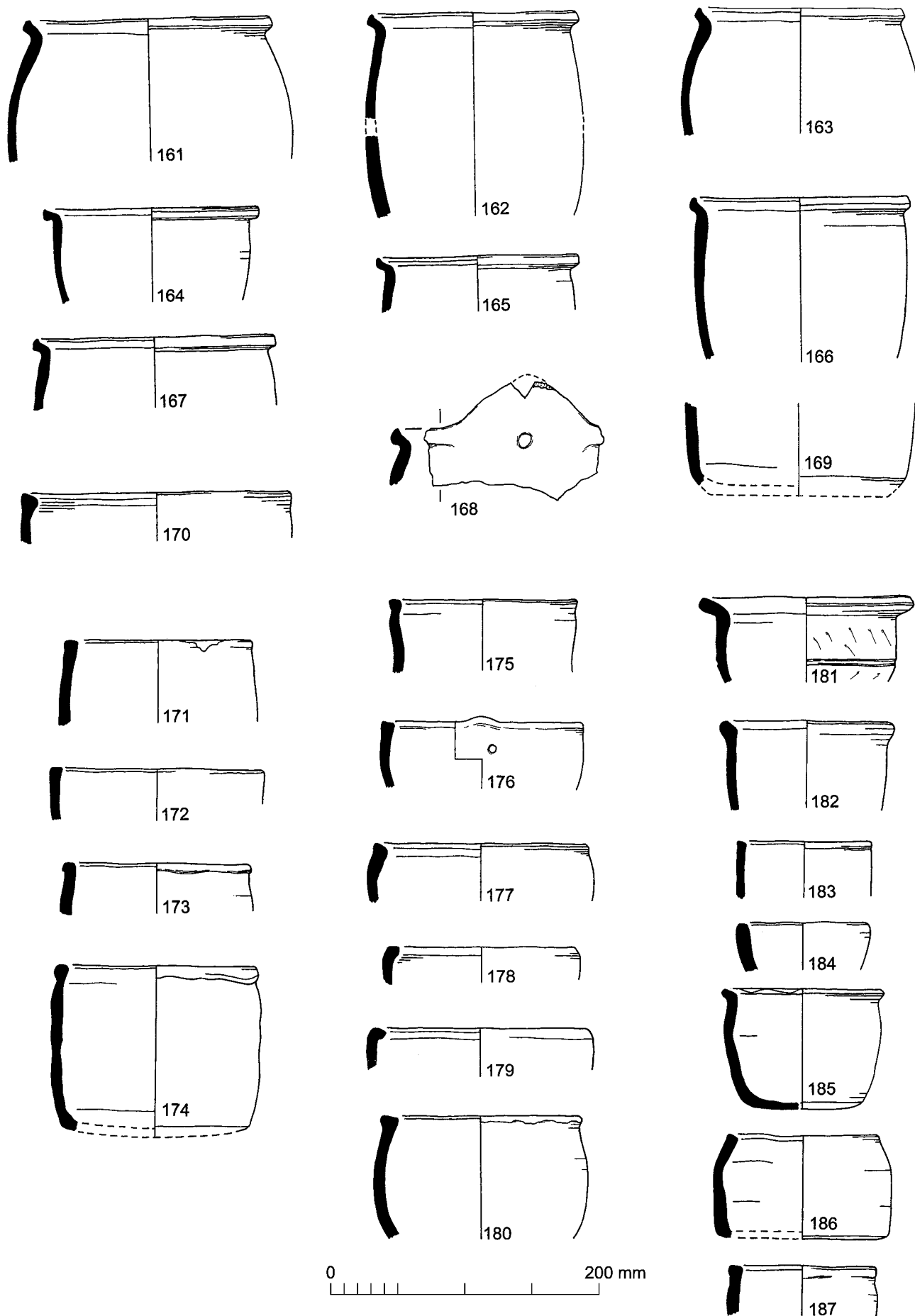


FIG. 12.25. Maxey-type Fabric E, type IV vessels and bowls. Scale 1:4.

- external soot. Vessel 77, Context: 3610 (Phase 6ii) and 5193 (Phase 4ii–5a).
- 170 Maxey-type Fabric E, Large bowl with wear marks on the interior and rim top, Context: 10176 (Phase 5b–6i).
- 171 Maxey-type Fabric E, Medium-sized type VIa bowl with internal carbonized deposit and external soot, Context: 5988 (Phase 6i).
- 172 Maxey-type Fabric E, Medium-sized type VIa bowl with thick internal soot, Context: Unstratified.
- 173 Maxey-type Fabric E, Medium-sized type VIb bowl with internal soot, Context: 5930 (Phase 6i).
- 174 Maxey-type Fabric E, Medium-sized type VIb bowl with worn and pitted interior, and external soot. Vessel 67, Context: 6492 (Period 2) and 6484 (Phase 6ii–6iii).
- 175 Maxey-type Fabric E, Medium-sized type VIg bowl with internal and external soot, Context: 6490 (Phase 5b–6i).
- 176 Maxey-type Fabric E, Medium-sized type VIi bowl with small triangular lug. Internal carbonized deposit and external soot. Vessel 86, Context: 2024 (Phase 6iii) and 6463 (unphased).
- 177 Maxey-type Fabric E, Medium-sized type VIj bowl, Context: 6300 (Phase 6iii).
- 178 Maxey-type Fabric E, Medium-sized type VIj bowl, Context: 3730 (Phase 6ii).
- 179 Maxey-type Fabric E, Medium-sized type VIj bowl, Context: 6489 (Phase 6ii–6iii).
- 180 Maxey-type Fabric E, Medium-sized type VIk bowl with internal carbonized and white deposits, and external soot, Context: 3219 (Phase 5b).
- 181 Maxey-type Fabric E, Medium-sized type VIi bowl with incised horizontal grooves. External soot extending over rim top. Vessel 25, Context: 3891 (Phase 6ii), 3891 (Phase 6ii), 6040 (Phase 3bv), 6235 (Phase 3bv), 8854 (Phase 5b–6i) and area C Unstratified.
- 182 Maxey-type Fabric E, Medium-sized type VIn bowl with internal and external soot. Vessel 72, Context: 5193 (Phase 4ii–5a) and 5139 (Phase 5a).
- 183 Maxey-type Fabric E, Small type VIIa bowl with internal and external soot, Context: 6498 (Phase 6ii–6iii).
- 184 Maxey-type Fabric E, Small type VIIb bowl with internal and external soot, Context: 5885 (Phase 5a).
- 185 Maxey-type Fabric E, Small type VIId bowl with incised zigzag decoration on rim. Partial internal and external soot. Vessel 30, Context: 5503 (Phase 4ii), 669 (Phase 5a–5b) and 10772 (Phase 2–4ii).
- 186 Maxey-type Fabric E, Small type VIIi bowl with possible lug. Slight soot marks on the base, Context: 5871 (Phase 6i).
- 187 Maxey-type Fabric E, Small type VIIc bowl with thick internal soot and slight external soot, Context: 6490 (Phase 5b–6i).
- Maxey-type Fabric E and Fabric U, jars and large bowls (Fig. 12.26)*
- 188 Maxey-type Fabric E, Medium-sized vessel with leached internal surface, Context: 8089 (Phase 5b–6i).
- 189 Maxey-type Fabric E, Small vessel, Context: 6499 (Phase 6ii–6iii).
- 190 Maxey-type Fabric E, Medium-sized vessel with soot pattern on internal surface, Context: 9 (Phase 5a–5b).
- 191 Maxey-type Fabric E, Applied decoration or foot-ring base, Context: 5690 (Phase 5b).
- 192 Maxey-type Fabric U, Large type Ib jar, Context: 1462 (Phase 6iii).
- 193 Maxey-type Fabric U.2, Large type Ic jar with lower internal wall leached and bleached white. Vessel 28, Context: 3891 (Phase 6ii), 5139 (Phase 5a), 5617 (Phase 3bv), 5503 (Phase 4ii), 3758 (Phase 4ii), 783 (Phase 5b–6i), 850 (Phase 5b–6i) and 5252 (Phase 4ii–5a).
- 194 Maxey-type Fabric U, Large type Ie jar with internal and external soot, Context: 10296 (Phase 6i–6ii).
- 195 Maxey-type Fabric U with coarse shell, Large round lugged type Ie jar with external soot, Context: 2024 (Phase 6iii).
- 196 Maxey-type Fabric U.1, Large triangular lugged jar, Context: 10772 (Phase 2–4ii).
- 197 Maxey-type Fabric U with coarse shell, Medium-sized type IIa jar, Context: 72 (Phase 5a).
- 198 Maxey-type Fabric U, Medium-sized type IIb jar, Context: Unstratified.
- 199 Maxey-type Fabric U.3, Medium-sized type IIc jar with external soot, Context: 968 (Phase 3bi–3bv).
- 200 Maxey-type Fabric U, Medium-sized type IId jar with internal soot, Context: 5988 (Phase 6i).
- 201 Maxey-type Fabric U with coarse shell, Medium-sized type IIe jar with thick external soot, Context: 11411 (Phase 5a).
- 202 Maxey-type Fabric U, Medium-sized type IIe jar with external soot. Context 2473 (Phase 3bv).
- 203 Maxey-type Fabric U with coarse shell, Medium-sized type IIb jar with external soot, Context: 968 (Phase 3bi–3bv).
- 204 Maxey-type Fabric U with coarse shell, Medium-sized type IIa jar, Context: 6888 (Phase 5b–6i).
- 205 Maxey-type Fabric U.1, Medium-sized type IIb jar with external soot, Context: Unstratified.
- 206 Maxey-type Fabric U.1, Medium-sized jar with external soot, Context: 3666 (Phase 1b).
- 207 Maxey-type Fabric U.1, Medium-sized jar base with heavily polished underneath and worn internal surfaces, Context: 11588 (Phase 4i–4ii).
- 208 Maxey-type Fabric U, Small type IIIa jar, Context 10772 (Phase 2–4ii).
- 209 Maxey-type Fabric U, Small type IIb jar with internal and external soot, Context: 1 (topsoil).
- 210 Maxey-type Fabric U, Small type IIc jar, Context: Unstratified.
- 211 Maxey-type Fabric U.1, Small type IIc jar, Context: Unstratified.
- 212 Maxey-type Fabric U, Small type IIId jar, Context: Unstratified.
- 213 Maxey-type Fabric U, Small type IIe jar with external soot, Context: 1588 (Phase 6iii).
- 214 Maxey-type Fabric U.3, Small type IIe jar with internal soot, Context: 1838 (Phase 6ii–6iii).

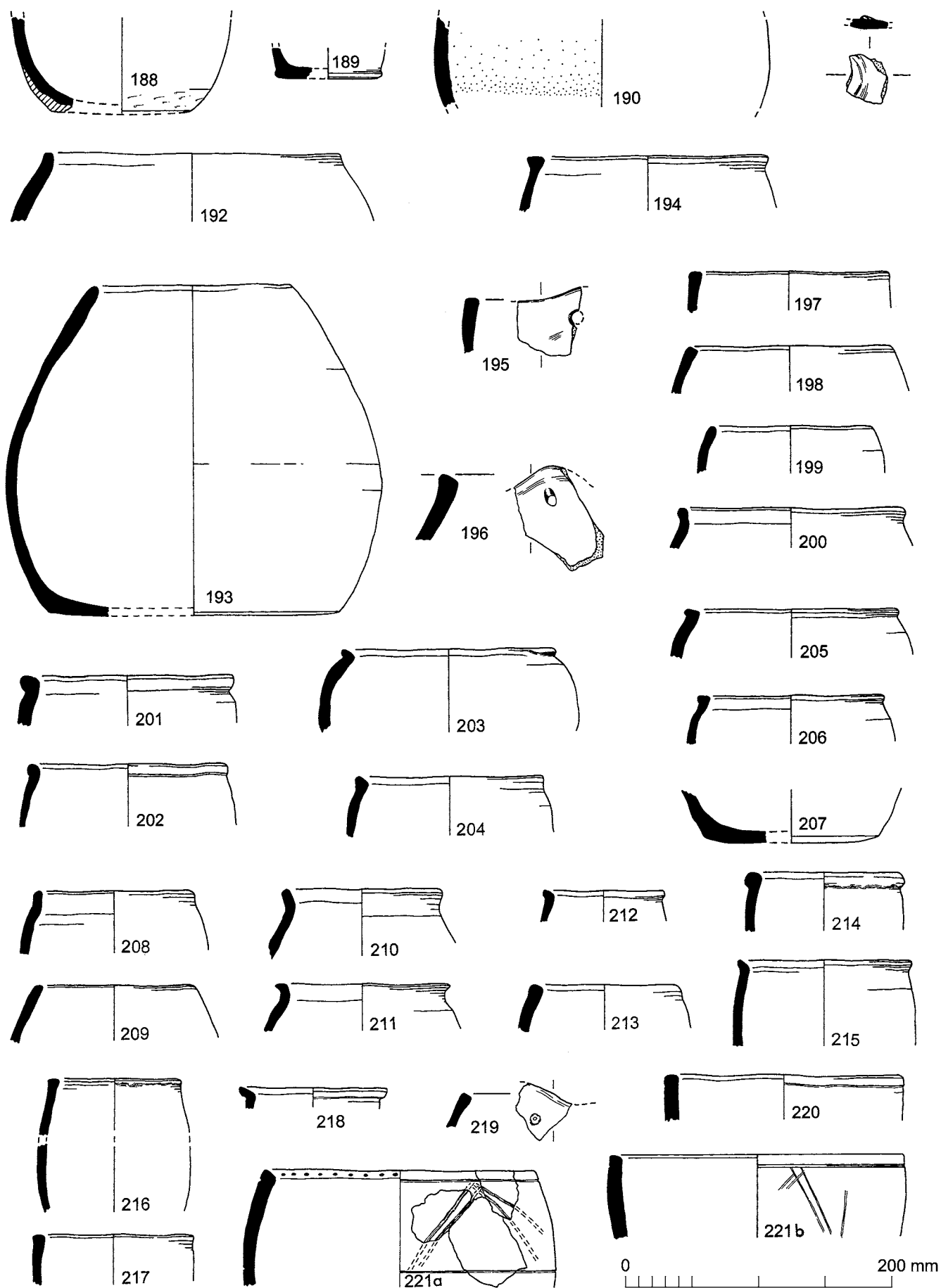


FIG. 12.26. Maxey-type Fabric E and Fabric U, jars and large bowls. Scale 1:4.

- 215 Maxey-type Fabric U, Small type IIIe jar with internal carbonized deposit. Vessel 78, Context: 8541 (Phase 5b) and 8192 (Phase 5a–5b).
- 216 Maxey-type Fabric U with coarse shell, Small type IIIf jar, Context: 7817 (Phase 6iii).
- 217 Maxey-type Fabric U, with coarse shell Small type IIIf jar with internal and external soot, Context: 2488 (Phase 5b–6ii).
- 218 Maxey-type Fabric U.4, Small jar, Context: 5860 (Phase 5a).
- 219 Maxey-type Fabric U with coarse shell, Small lugged jar with internal carbonized deposit, Context: 7152, 6i–6ii.
- 220 Maxey-type Fabric U.3, Large type Va bowl, possibly lugged, with external soot, Context: 636 (Phase 6iii).
- 221a Maxey-type Fabric U possibly U.1, Large type Vc bowl with incised and stabbed decoration. Vessel 40, Context: 2127 (Phase 6i–6ii), 1464 (Phase 6iii), 1659 (Phase 5b–6i), 6490 (Phase 5b–6i), 1662 (Phase 5b) and Unstratified.
- 221b Maxey-type Fabric U possibly U.1, Large type Vc bowl with incised decoration. Vessel 74, Context: 12076 (Phase 5b), 7123 (Phase 6iii) and area C Unstratified.

Maxey-type Fabric U bowls and Fabric C jars
(Fig. 12.27)

- 222 Maxey-type Fabric U with coarse shell, Medium-sized type VIa bowl with external soot. Vessel 83, Context: 8461 (Phase 6ii) and 8653 (Phase 4i–4ii).
- 223 Maxey-type Fabric U, Medium-sized type VIa bowl with incised cross decoration on rim top. External soot, Context: Unstratified.
- 224 Maxey-type Fabric U with coarse shell, Medium-sized type VIa bowl with incised decoration. Internal carbonized deposit. Vessel 38, Context: 6798 (Phase 6i), 6490 (Phase 5b–6i) and Unstratified.
- 225 Maxey-type Fabric U, Medium-sized type VIa bowl with incised cross decoration on rim top. Internal soot. Vessel 48, Context: 1832 (Phase 6ii–6iii) and 1276 (Phase 6iii).
- 226 Maxey-type Fabric U.3, Medium-sized type VIb bowl, Context: 6680 (Phase 6i–6ii).
- 227 Maxey-type Fabric U.3, Medium-sized type VIb bowl with internal soot, Context: 687 (Period 2).
- 228 Maxey-type Fabric U.1, Medium-sized type VIc bowl, Context: 10179 (Phase 3bii–3biii).
- 229 Maxey-type Fabric U with coarse shell, Medium-sized type VIc bowl with internal and external soot, Context: 6490 (Phase 5b–6i).
- 230 Maxey-type Fabric U with coarse shell, Medium-sized type VIg bowl with external soot, Context: 6492 (Period 2).
- 231 Maxey-type Fabric U, Medium-sized type VIg bowl with external soot, Context: 6490 (Phase 5b–6i).
- 232 Maxey-type Fabric U with coarse shell, Medium-sized type VIg bowl with leached internal surface, Context: 7417 (Phase 3bi–3bv).
- 233 Maxey-type Fabric U.1, Medium-sized type VIIi bowl with internal soot. Vessel 3A, Context: 3320 (Phase 4i–4ii), 4493 (Phase 1b) and 3668 (Phase 1b).
- 234 Maxey-type Fabric U.1, Medium-sized type VIIi bowl with pre-fired hole below rim. External soot. Vessel 3B, Context: 2562 (Phase 5b), 2488 (Phase 5b–6ii) and 3085 (Phase 4i–4ii).
- 235 Maxey-type Fabric U with coarse shell, Medium-sized type VII bowl with internal carbonized deposit. Vessel 7, Context: 2518 (Phase 5b), 2184 (Phase 6iii), 4025 (Phase 3a), 2784 (Phase 3a), 2776 (Phase 5b) and 3451 (Phase 6iii).
- 236 Maxey-type Fabric U with coarse shell, Medium-sized type VII bowl with external soot and a thick carbonized deposit under the rim edge, Context: 2611 (Phase 5a).
- 237 Maxey-type Fabric U, Small type VIIa bowl, with incised decoration on rim and body. Internal soot deposit, Context: 10772 (Phase 2–4ii).
- 238 Maxey-type Fabric U, Small bowl with partial internal soot, Context: 6499 (Phase 6ii–6iii).
- 239 Maxey-type Fabric U, Vessel with stabbed decoration, Context: 3341 (Phase 3a).
- 240 Maxey-type Fabric U, Handled vessel, Context: Unstratified.
- 241 Maxey-type Fabric C, Large type II jar, Context: 3689 (Phase 2–3a?).
- 242 Maxey-type Fabric C, Large type II jar, Context: 3107 (Phase 4ii).
- 243 Maxey-type Fabric G, Medium-sized type IId jar, Context: 6463 (unphased).
- 244 Maxey-type heavily leached, possibly transitional U.4, Medium-sized type IIg jar, Context: 70 (Phase 5a).
- 245 Maxey-type, heavily leached, possibly transitional U.4, Medium-sized type VIg bowl with external soot and internal red pigment, Context: 221 (Phase 2i–4ii).
- 246 Maxey-type, heavily leached, possibly transitional U.4, Medium-sized type VIk bowl with partially leached internal surface, Context: Unstratified.

Early Lincolnshire Fine-shelled ware and other shell-tempered fabrics (Fig. 12.28)

- 247 Early Lincolnshire Fine-shelled ware, Large round lugged type Id jar. Could be Fabric U.4, Context: 5555 (Phase 5b–6i), 1836 (Phase 6ii–6iii) and 6344 (Phase 5b–6i).
- 248 Early Lincolnshire Fine-shelled ware, Large type Ig jar with internal soot. Vessel 71, Context: 6490 (Phase 5b–6i) and 5139 (Phase 5a).
- 249 Early Lincolnshire Fine-shelled ware, Large lugged type Ih jar, Context: 5503 (Phase 4ii).
- 250 Early Lincolnshire Fine-shelled ware, Medium-sized type Iie jar, Context: Area C Unstratified.
- 251 Early Lincolnshire Fine-shelled ware, Medium-sized type Iie jar, Context: 5503 (Phase 4ii).
- 252 Early Lincolnshire Fine-shelled ware, Medium-sized type IIf jar, Context: 3758 (Phase 4ii).
- 253 Early Lincolnshire Fine-shelled ware, Medium-sized type IIf jar with external soot, Context: 5503 (Phase 4ii).
- 254 Early Lincolnshire Fine-shelled ware, Medium-sized type IIf jar with external soot, Context: 3758 (Phase 4ii).
- 255 Early Lincolnshire Fine-shelled ware, Medium-sized type IIf jar, Context: 195 (Phase 5a–5b).

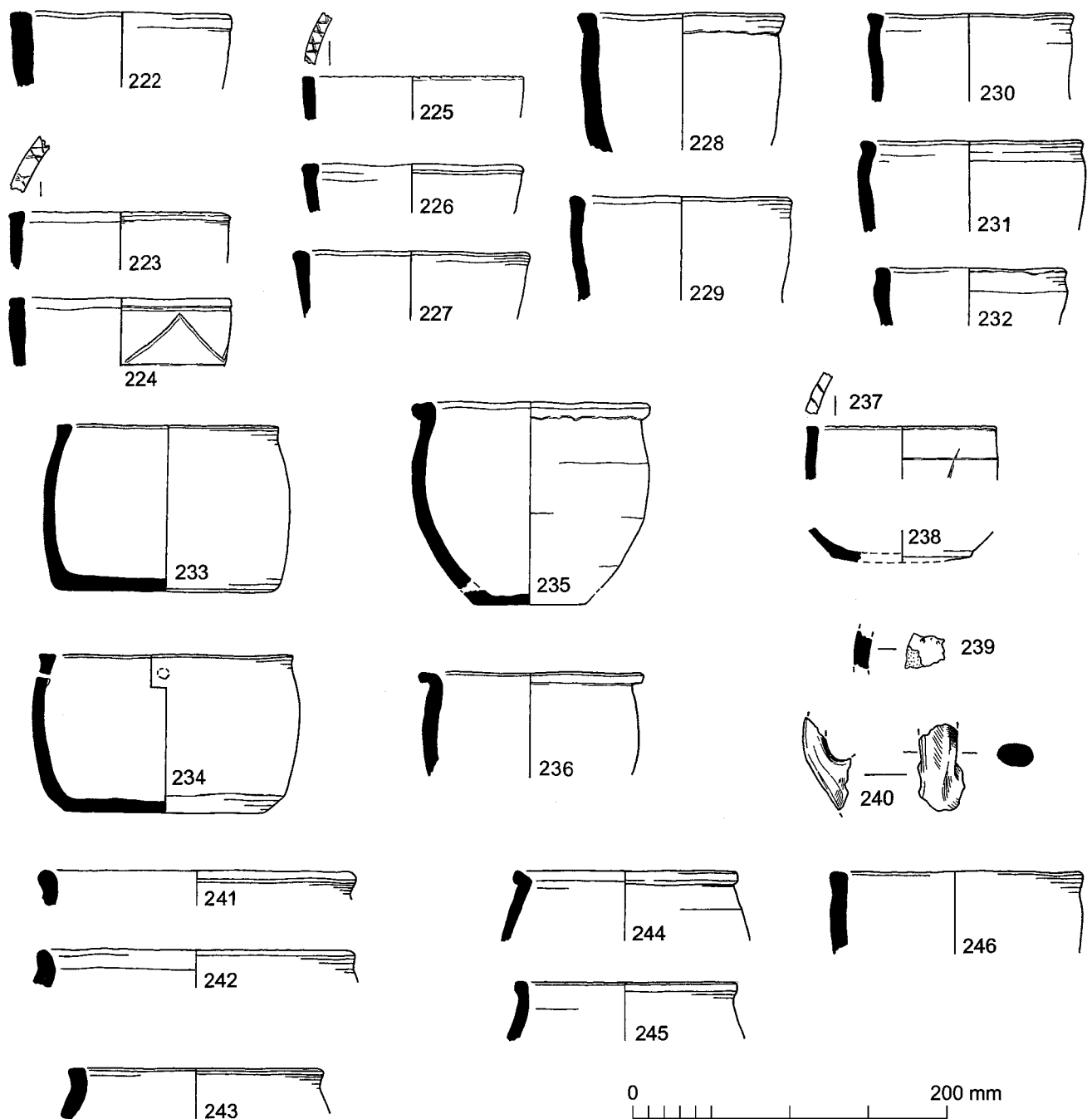


FIG. 12.27. Maxey-type Fabric U bowls and Fabric C jars. Scale 1:4.

- | | | | |
|-----|---|-----|---|
| 256 | Early Lincolnshire Fine-shelled ware, Medium-sized type IIg jar, Context: Area C Unstratified. | 259 | Early Lincolnshire Fine-shelled ware, Medium-sized type VIin bowl, Context: Area B Unstratified. |
| 257 | Early Lincolnshire Fine-shelled ware, Large bowl, Context: 6300 (Phase 6iii). | 260 | Early Lincolnshire Fine-shelled ware, Small type VIIa jar, Context: Unstratified. |
| 258 | Early Lincolnshire Fine-shelled ware, Medium-sized type VIIm bowl, with external soot, Context: 2860 (Phase 2-4ii). | 261 | Local Middle Saxon Fabric, Medium-sized jar, Context: 3331 (Phase 3bi-3bv). |
| | | 262 | Non-Local Middle Saxon Fabric, Medium-sized type IIId jar with carbonized internal deposit and external soot. |

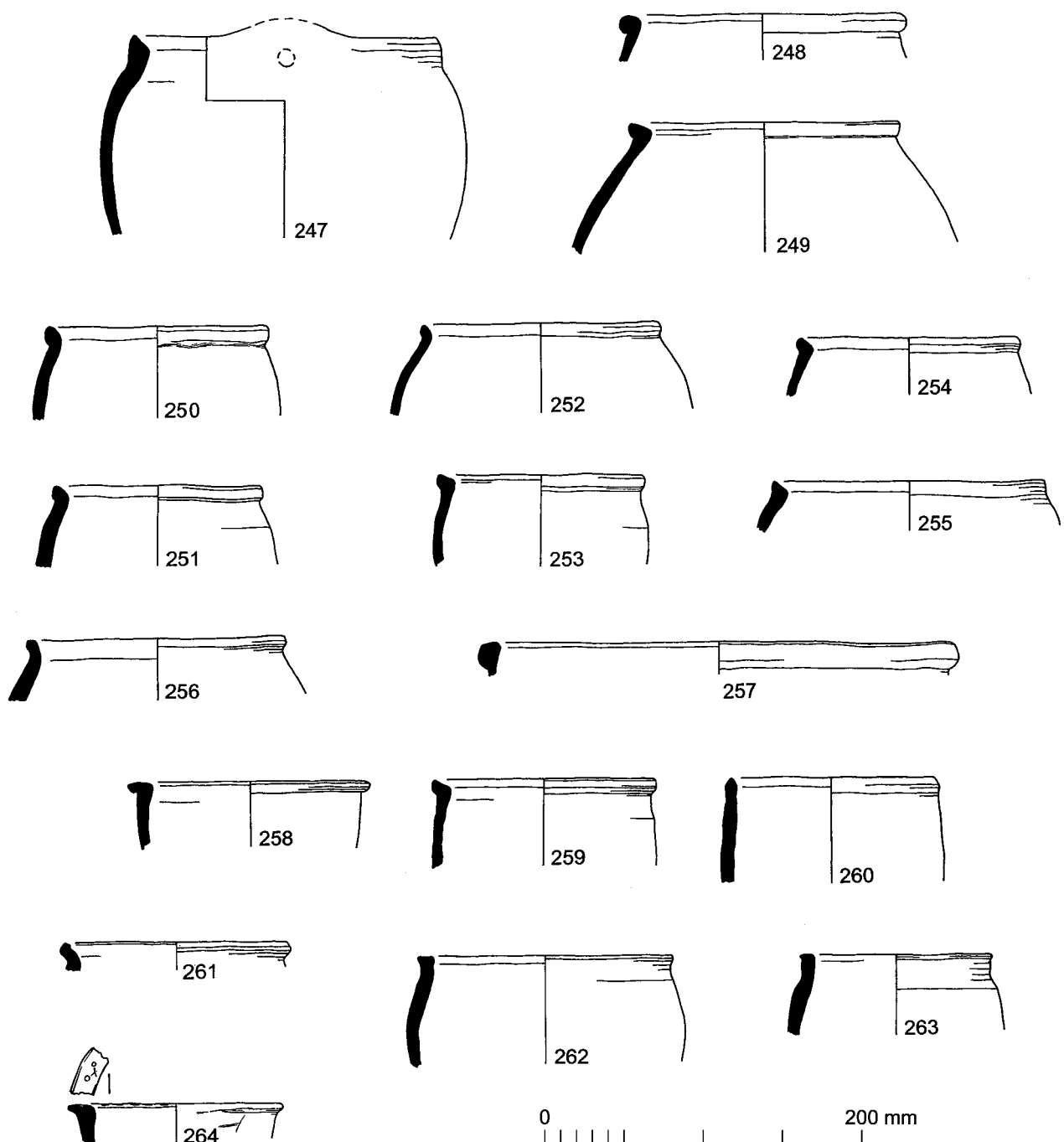


FIG. 12.28. Early Lincolnshire Fine-shelled ware and other shell-tempered fabrics. Scale 1:4.

Vessel 81, Context: 6363 (Period 7), 7688 (Phase 5a–5b) and Unstratified.

263 Non-Local Middle Saxon Fabric, Small type IIIa jar with external soot. Vessel 82, Context: 3412 (Phase 6ii–6iii) and 3107 (Phase 4ii).

264 Non-Local Middle Saxon Fabric, Small type VIIIf bowl with incuse stamps on rim and incised decoration on both rim and body. Highly burnished external surface and

leached internal surface. External soot, Context: 6680 (Phase 6i–6ii).

Ipswich ware and Continental imports (FIG. 12.29)

265 Ipswich ware, group 1 fabric. Stamped sherds from the shoulder of a large jar. Uniform orange sandy fabric with few visible inclusions except for fine silver mica, Context 4322 (Phase 3bi–4i).

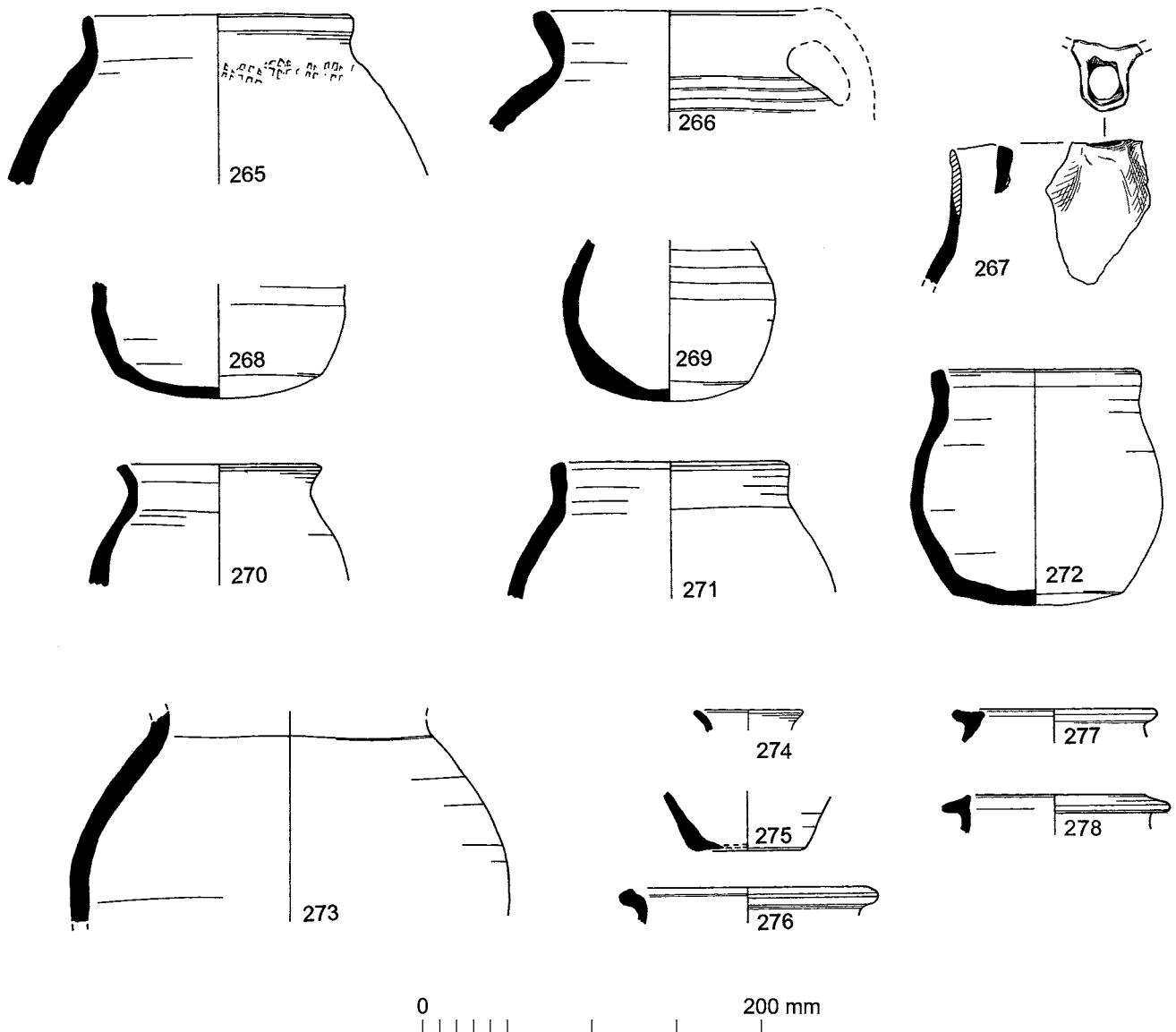


FIG. 12.29. Ipswich ware and Continental imports. Scale 1:4.

- 266 Ipswich ware, group 2 fabric. Pitcher rim. Very hard grey fabric with darker surfaces. Sparse quartz up to 2mm. Outer surface is burnished except for the area which would have been underneath the handle, Context: 6498 (Phase 6ii–6iii).
- 267 Ipswich ware, group 1 fabric. Pitcher spout. Uniform, slightly sandy orange fabric turning grey below the spout on the inner surface, Context: 3891 (Phase 6ii).
- 268 Ipswich ware, group 2 fabric. Small jar. Very hard brick-red fabric with grey core and surfaces. Vessel 22, Contexts 3758 (Phase 4ii), 5139 (Phase 5a), 5871 (Phase 6i), 12076 (Phase 5b), 12248 (Phase 3bi–4i).
- 269 Ipswich ware, group 2 fabric. Small jar. Very hard grey fabric with slightly darker surfaces. Moderate sub-rounded quartz up to 2mm. Vessel 35, Contexts 7212 (Phase 6i–6ii), 7903 (Phase 6ii).
- 270 Ipswich ware, group 2 fabric. Small jar. Very hard grey fabric, few visible inclusions. Vessel 51, Contexts 5988 (Phase 6i) and 6499 (Phase 6ii–6iii).
- 271 Ipswich ware, group 1 fabric. Small jar. Soft, slightly sandy, brick-red fabric with grey surfaces. Few visible inclusions, Context 2773 (Phase 5a).
- 272 Ipswich ware, group 2 fabric. Small jar. Hard, blue-grey fabric with browner margins and dark grey surfaces. Few visible inclusions. Vessel 24, Contexts 6300 (Phase 6iii) and 6499 (Phase 6ii–6iii).
- 273 Ipswich ware, group 1 fabric. Shoulder from large jar. Slightly soft, grey fabric with darker surfaces. Smoothed

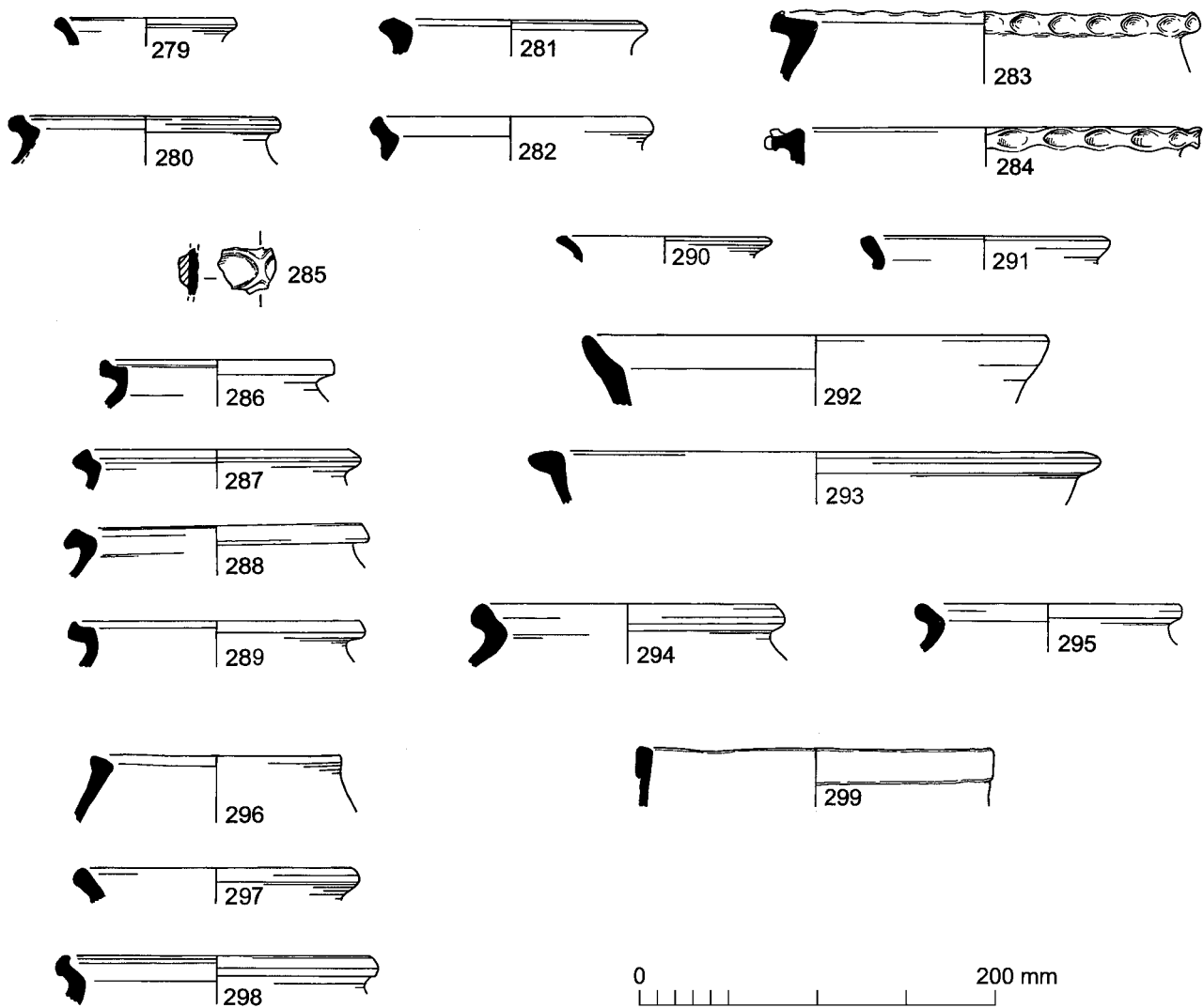


Fig. 12.30. Late Saxon wares. Scale 1:4.

and partially burnished outer surface. Some limescale on inner surface. Vessel 47, Contexts 1832 (Phase 6ii–6iii), 1889 (Phase 6ii–6iii), 5988 (Phase 6i).

- 274 Unidentified possible import, perhaps the rim of a wheel-thrown, applied spout from a jug (sample AG191), Context: 3915 (Phase 1b).
- 275 Unidentified possible import, medium-sized jar with putative traces of red paint (sample AG196), Context: 3758 (Phase 4ii).
- 276 Grey burnished ware with white fabric, jar with rolled-out rim (sample AG190). Vessel 42, Context: 1672 (Phase 5b–6i) and 1833 (Phase 6ii–6iii).
- 277 Grey burnished ware, spouted pitcher (sample AG195), Context: 5553 (Phase 5b).
- 278 Grey burnished ware, spouted pitcher. Traces of applied handle or spout. Sherds decorated with a band of dimples just below the shoulder may be from the same vessel.

Vessel 56, Context: 10772 (Phase 2–4ii), 10394 (Phase 6ii–6iii), 65 (Phase 5a–5b), 3610 (Phase 6ii), 7701 (Phase 5b) and Unstratified.

Late Saxon wares (Fig. 12.30)

- 279 Torksey-type ware, Small jar, Context: 1285 (Phase 6iii).
- 280 Torksey ware, Medium-sized jar (sample AG184), Context: 1276 (Phase 6iii).
- 281 Torksey-type ware, Medium-sized jar, Context: 8854 (Phase 5b–6i).
- 282 Torksey-type ware, Medium-sized jar, Context: 6471 (Phase 6ii).
- 283 Torksey ware, Large bowl with thumbled rim (sample AG186), Context: 1155 (Phase 6iii).
- 284 Torksey ware, Large bowl with thumbled rim (sample AG187), Context: 535 (Phase 6iii).

- 285 Torksey ware, Applied strip from jar or pitcher, Context: 1680 (Phase 5b–6ii).
- 286 Torksey-type ware, Medium-sized jar (sample AG185), Context: 1285 (Phase 6iii).
- 287 Torksey-type ware, Medium-sized jar, Context: 1450 (Phase 6iii).
- 288 Torksey-type ware, Medium-sized jar with early rim type (sample AG183), Context: 6300 (Phase 6iii).
- 289 Torksey-type ware, Medium-sized jar, Context: 1704 (Period 7).
- 290 Lincoln Kiln-type Shelly ware, Small jar, Context: 1280 (Phase 6iii).
- 291 Lincoln Kiln-type Shelly ware, Small jar, Context: 1280 (Phase 6iii).
- 292 Lincoln Kiln-type Shelly ware, Dish or shallow bowl, Context: 3610 (Phase 6ii).
- 293 Lincoln Kiln-type Shelly ware, Large bowl, Context: 1145 (Phase 6iii).
- 294 Lincoln Shelly ware Fabric E, Medium-sized jar with external soot, Context: Unstratified.
- 295 Lincoln Late Saxon Sandy ware, Medium-sized jar (sample AG181), Context: 1276 (Phase 6iii).
- 296 Local Late Saxon Fabric D, Medium-sized jar, Context: 6300 (Phase 6iii).
- 297 Local Late Saxon Shell-tempered fabric, Medium-sized jar, Context: 8461 (Phase 6ii).
- 298 Local Late or Middle Saxon Shell-tempered fabric, Medium-sized jar, Context: 5503 (Phase 4ii).
- 299 Lincoln Fine-shelled or Early Lincolnshire Fine-shelled, medium-sized bowl, Context: 1449 (Phase 6iii).

12.6. The Anglo-Saxon pottery from Flixborough within the context of the East Midlands of England, AD 650–1000¹

by Alan Vince† and Jane Young

12.6.1 Late 7th and early 8th century

Six distinctive fabrics used in the late 7th and early 8th centuries (though unfortunately also used earlier in the Anglo-Saxon period) can be identified in Lincolnshire and surrounding areas. Of these, only three contain inclusions which, as far as the county is concerned, might come from a discrete source. These are acid igneous rock (CHARN, FIG. 12.31), Ooliths (LIM, FIG. 12.35) and polished quartz from the Cretaceous greensand (ESGS, FIG. 12.33). Even in these instances, however, there are some doubts over the number of sources of supply. The remaining three wares are known to include vessels from different sources, since they are either technological classifications (as with ECHAF, FIG. 12.32, tempered with abundant organic material) or based on the presence of inclusion types with several outcrops (as with the sandstone-tempered ware, SST, FIG. 12.36, and the iron-rich pellet tempered ware, FE, FIG. 12.34).

The iron-rich pellet tempered ware has three discrete distributions (FIG. 12.34). The first, following the outcrop of the Northampton Sands and Middle to Upper Lias clays, from Cherry Willingham to West Halton. The second has a widespread, if numerically limited, distribution in Kesteven extending from sites on the River Trent to those on the Fen silt. Finally, the third has a coastal distribution from Barton-upon-Humber around to the Grimsby area.

In the first of these three, it is possible, indeed likely, that the raw materials for potting were obtained locally. In the second, there is probably a single source area, perhaps in the Ancaster area since it is certain that the Trent and Fen silt settlements could not have obtained these materials locally. In the third case, coastal distribution from a site or sites along the Jurassic ridge is likely. Petrological investigation of this ware has not progressed far, but should enable a possible Jurassic origin to be confirmed or refuted.

The distribution of oolith-tempered ware (LIM) also has two distinct elements to it (FIG. 12.35). The first is limited to the Kesteven fen edge and the Fen silt settlements. Given the probable identification of the ooliths as disaggregated Ketton Oolite (which again could and should be tested through thin-section analysis) this distribution provides evidence for the use of King Street or similar routes northwards from the Stamford area, together with contact from that area to the silt fen, either by boat or overland. The second element consists of five find-spots from sites on major river and coastal lines of communication. These seem good evidence for the distribution of this ware by boat, either down the Trent or around the coast, or both.

The distribution of wares containing sand grains of Cretaceous origin (ESGS) also has two elements to it (FIG. 12.33). Most of the finds are from the Lincolnshire Wolds or the surrounding clay-lands and marshes. There is no evidence as to whether there is a single source or several, although it is clear from the distribution of other wares that ESGS is most common on sites around the central and southern Wolds. The second element consists of finds made at some distance from the Wolds, which must have been acquired by exchange with people in the Wolds. Those at West Halton and Flixborough, and perhaps also Newark and Repton, might have been carried by boat around the coast, but those from Blyborough and Kirton-in-Lindsey were almost certainly carried overland. A group of finds in and around Lincoln (from the city itself, Cherry Willingham and Bracebridge Heath) might have been transported by boat or overland. Two finds from the south of the county, Tallington and Maxey might have been transported by boat through the fens, or maybe from a source further to the south, since similar wares were in use in Bedfordshire and parts of Cambridgeshire. The apparent absence of this ware from sites on the fen silt-lands perhaps favours a southern origin for these sherds.

The final distribution which can profitably be analysed is that of the acid igneous rock tempered ware (FIG. 12.31). Petrological work on the 5th- to 7th-century pottery from

Castledyke South, Barton-upon-Humber, showed that there were examples at that site tempered with erratic rocks and Mountsorrel granodiorite, but that the erratic rocks were more varied, and sometimes showed signs of mechanical weathering, absent from the putative Leicestershire finds. Given the small size of most collections, it is difficult to talk about the relative frequency of this ware to others. Nevertheless, to the north of the River Witham, the incidence in the central clay vale (3 out of 39 Early-to-Middle Anglo-Saxon sherds) and the Wolds (17 out of 221 sherds) is about three times less than in the Lindsey Marshes and coastal clay-lands (117 out of 667 sherds) and the Trent Valley north of the Foss Dyke. The incidence of CHARN sherds in Kesteven and the upper Trent Valley is higher than further north, whilst on the fen silts it is again quite low. These data indicate that CHARN was distributed via the Trent Valley, almost certainly by boat rather than along route ways following the river, and from there around the north Lincolnshire coast, with lesser quantities reaching sites not accessible by river.

Taken together, these distributions suggest that in the Early to Middle Anglo-Saxon period, *c.* AD 650 to 750, there was considerable contact between the different parts of the East Midlands, and few signs of barriers to contact. The major distribution zones identified in this study are separated by the central clay valley and by the freshwater fens, separating the silt-lands from the Wolds and the Kesteven heights. Even so, there is evidence for all these natural barriers being crossed during this period. It is not possible, on present evidence, to say whether these inter-area contacts were regular, nor to comment on the exact nature of the contact.

Perhaps the most surprising result of this survey is the evidence it provides for the use of river transport over considerable distances. These include southern Lincolnshire down the River Trent and around the coast to the Grimsby area (seen with reference to LIM, FIG. 12.35); from the scarp of the Lincolnshire limestone to the Grimsby area (with reference to FE, FIG. 12.34), and more limited evidence for contact across the mouth of the Ancholme to the Flixborough area (seen in the distribution ESGS, FIG. 12.33). All these distributions provide good confirmation that the acid igneous rock tempered pottery found throughout the region does indeed originate, at least in part, in the Charnwood Forest in Leicestershire. The detailed distribution of this ware suggests that here too the River Trent and coastal transport were involved in the process. However, it is not possible on this evidence to show that boats were regularly sailing from the Upper Trent down river and around the coast to the Grimsby area, since one would get the same distribution patterns from a number of smaller journeys if pottery was being exchanged at different points along the route.

12.6.2 The 8th century

During the late 7th to 8th century, shelly wares first came into use in the Lincolnshire area. By the middle of the

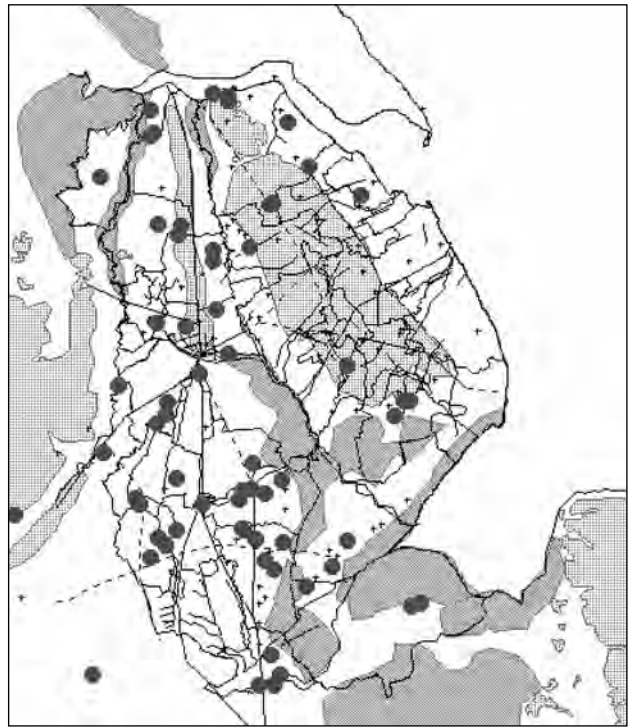


FIG. 12.31. Distribution of CHARN pottery, with acid igneous rock inclusions, in the East Midlands.

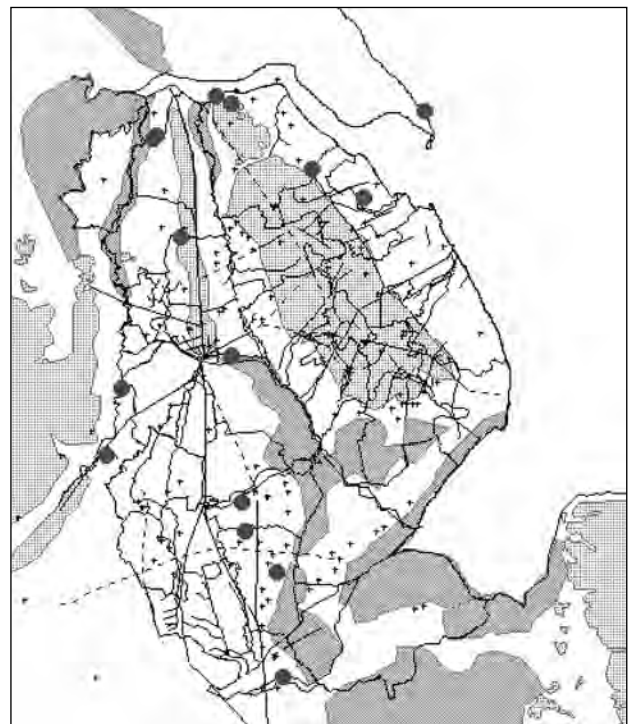


FIG. 12.32. Distribution of ECHAF pottery, tempered with abundant organic material, in the East Midlands.



FIG. 12.33. Distribution of ESGS pottery, with polished quartz inclusions from Cretaceous greensand, in the East Midlands.



FIG. 12.34. Distribution of FE pottery, tempered with iron-rich pellets, in the East Midlands.



FIG. 12.35. Distribution of LIM pottery, with Oolite inclusions, in the East Midlands.



FIG. 12.36. Distribution of SST pottery, tempered with sandstone, in the East Midlands.

century they seem to have replaced most other locally-produced wares. The speed of this change is still unclear, although the evidence from Flixborough suggests that both CHARN and ESGS continued in use alongside the shelly wares. There is a hint that these late CHARN vessels contain a wider range of inclusions than earlier examples. At Flixborough, for example, the CHARN vessel contains abundant chaff/dung temper together with the acid igneous rock inclusions. The consistent association of LIM with shelly wares on sites in the Fens suggests that this ware too continued in use. Nevertheless, in most cases 8th-century assemblages in Lincolnshire consist solely of a few sherds of shelly pottery. Superficially, at least, these provide a sharp contrast with the earlier black, gritty wares both in texture and colour. There are also differences in vessel shape, with flat bases replacing the rounded or flattened oval profiles of the earlier wares.

No production sites are known for any of the locally produced Middle Saxon wares found in the East Midlands. Nevertheless, the petrology of the shell-tempered Maxey wares indicates that production took place along the Jurassic ridge. In the case of the Northern and Central Maxey wares, this production probably utilised clay developed on weathered shelly limestones outcropping on the dip slope of the limestone ridge, whilst the Southern Maxey ware was made from shelly marls occurring within the Oxford Clay. Thus, where these wares are found on sites located on the dip slope of the Jurassic limestone ridge, they might have been made using local resources, but in all other cases the wares must have been obtained from outside the locality.

Flixborough itself lies on windblown sand overlying Lincolnshire Limestone. None of the shell-tempered pottery found on the site could have been made there, but in theory the wares could have been obtained only a short distance to the east. The distribution of the two variant fabrics, MAXE and MAXU, in fact support the model of a northern Lincolnshire source (FIG. 12.37).

However, only a small proportion of the shell-tempered wares from Flixborough belong to these variant fabrics. The majority are identical, petrologically, chemically and typologically, to Northern Maxey wares found throughout northern and central Lincolnshire (FIG. 12.38). Variations in typology and chemistry within this Northern Maxey group might be indicative of distinct production areas, but there is no evidence to date that these variations are regional, and it is just as likely that they represent production phases of different dates. Whatever the detailed interpretation, it is nonetheless clear that Flixborough was part of a local economic network that encompassed the Lincolnshire Wolds, the central clay vale, the Cliff and the northern Trent Valley. This network stretched southwards to Lincoln and some sites immediately south of the Witham, as far south as Sleaford and Newark. The numbers of sites outside this central core from which Northern Maxey ware and its variants have been recovered is limited to a few in the Isle of Axholme, York and Wharfedale. At the

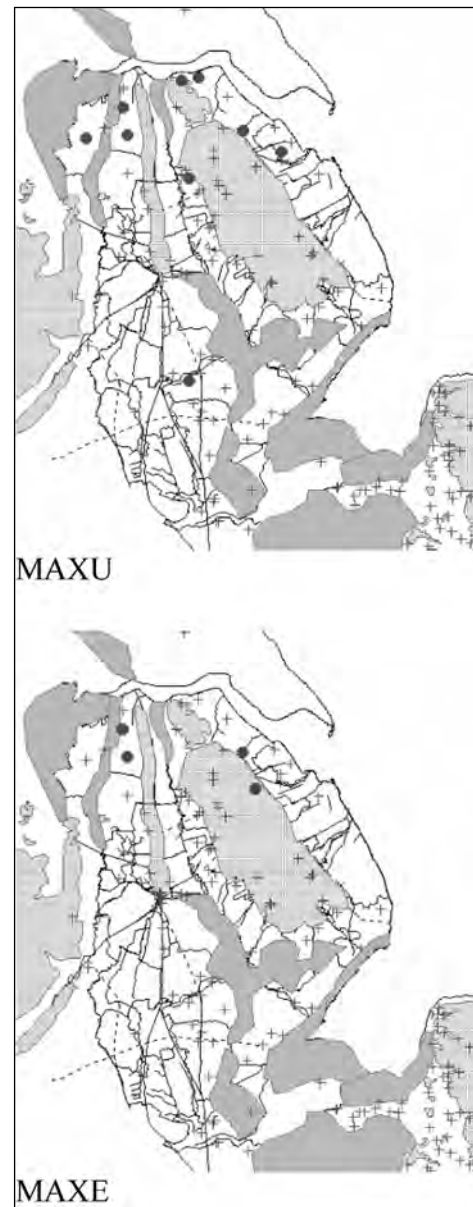


FIG. 12.37. Distribution of Maxey-type wares in fabrics MAXE and MAXU in the East Midlands.

first two of the latter sites, Northern Maxey ware forms a sizeable element in ceramic assemblages, which might indicate regular supply. However, it is dangerous to place too much upon these peripheral finds, as it is highly likely that pottery was not an essential part of the material culture of the regions to the north of the Humber Estuary, nor west of the River Trent.

The distribution of Central Maxey ware is at present limited to two sites: Newark and Quarrington (FIG. 12.39), and petrological evidence makes it clear that the ware was produced closer to Quarrington. The limits to the original distribution area of this ware are given by the Lincoln area

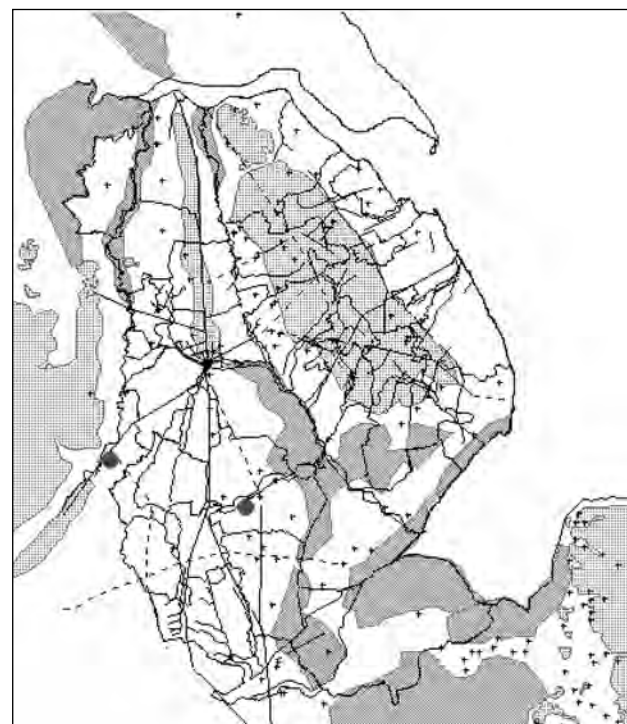
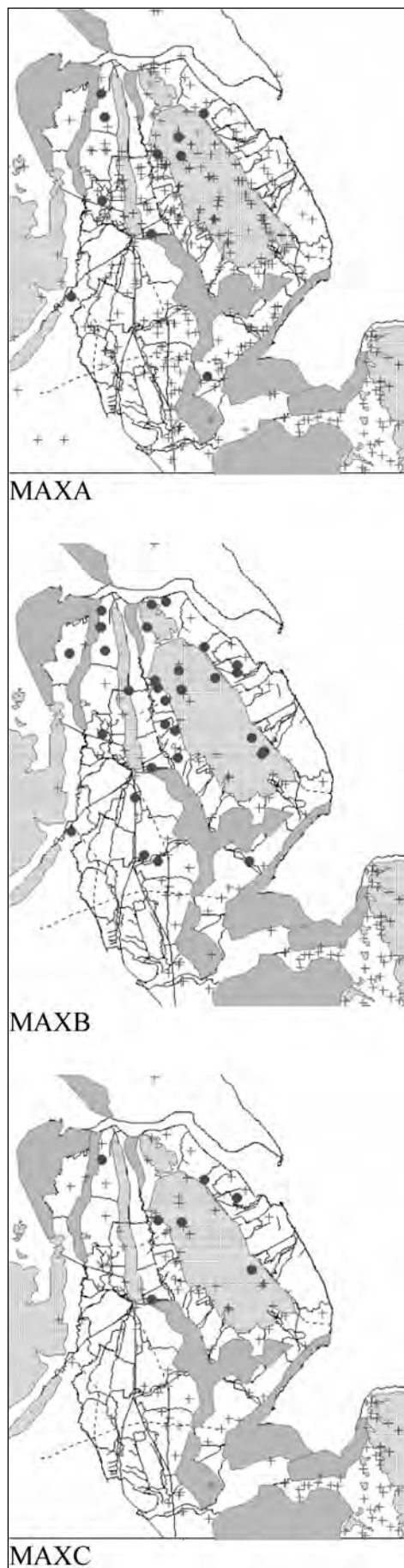


FIG. 12.39. Distribution of Central Maxey-type ware (MAXQ) in the East Midlands.

sites and Cherry Willingham on the north, and the Fenland sites which used Southern Maxey ware to the southeast. This still leaves a considerable measure of uncertainty as to the scale of this industry, but even the present evidence shows that Central Maxey ware was distributed over a much smaller area than other Middle Saxon wares in the East Midlands.

Within Lincolnshire, Southern Maxey ware is found on sites in the Fens and the southern dip slope of the Limestone escarpment, and has not been found in the Trent Valley (FIG. 12.40). Whether this distribution is a true reflection of the original pattern, or whether the absence from sites in the southwest part of the county is merely a reflection of chance survival, is not yet clear. As far as Flixborough is concerned, however, the pattern is clear: the Fens and the fen-edge settlements were part of a different economic network from that including Flixborough.

Because it seems that there were very few centres producing pottery in Lincolnshire in the 8th century, it is not easy to surmise exactly what route was used in the transportation of the pottery. For example, in the Fens most of the sites have produced Southern Maxey and Ipswich wares. Assuming that the source of the former

FIG. 12.38. Distribution of Northern Maxey-type wares (MAXA, MAXB and MAXC) in the East Midlands.

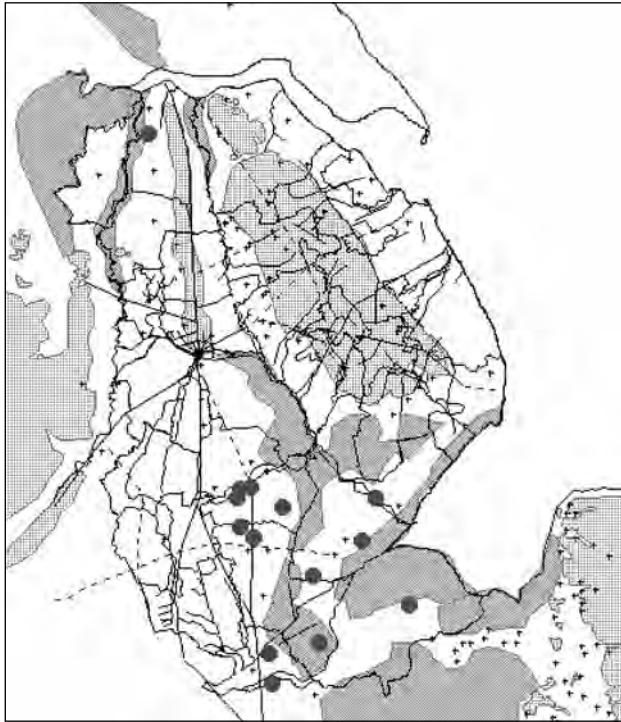


FIG. 12.40. *Distribution of Southern Maxey-type ware (RMAX) in the East Midlands.*

ware lay to the south of the county on the Oxford Clay, this distribution might indicate the use of King Street (the Roman road) to supply the settlements along the Fen edge, whilst the tributaries of the River Welland were used to supply the settlements on the silt Fen. In northern Lincolnshire, however, all sites used the same pottery types. Clearly there were sites where access must have been completely by overland routes, but for many it would have been possible to transport goods by a combination of coastal, river and overland routes. However, in the medieval period it is certainly the case that such combined transport mechanisms were not the norm, since at each stage the extra cost of loading and unloading had to be taken into account. In the Middle Saxon period, however, such considerations may not have been relevant.

The distribution of shelly wares provides some evidence for the preferential use of river valleys for the transportation of pottery. In just one case, York, is it clear that the river itself was used, rather than route ways following the valley. To the south of Flixborough, for example, Maxey-type wares are found almost exclusively on the east side of the Trent which, therefore, seems to have acted as a barrier to contact in this case. Only in the case of finds in the Isle of Axholme is there any evidence for goods crossing the river. The Axholme find-spots may be evidence for direct crossing of the river, but are as likely to have been obtained via a ferry crossing, perhaps at Littleborough.

Further south in the Fens, by contrast, there is possible evidence from the distribution of shell-tempered wares and Ipswich ware along the Welland tributaries, and it may well be that the particular circumstances of the Fens influenced the preferred method of transport. Nevertheless, even here it seems that the major rivers were as likely to act as barriers to contact as route ways. The River Witham, for example, seems to have acted as a barrier at Boston, where both Northern and Southern Maxey wares were found in similar quantities. To the south of the Witham, however, sites produced almost exclusively the southern ware, whereas on Fen-edge sites north of the Witham Northern Maxey ware is found. The River Nene also seems to have formed a barrier to the distribution of Southern Maxey ware, and sites on the Fen silt to its south contain much higher proportions of Ipswich ware than those to the north of the river.

There is little evidence in the 8th century for the coastal distribution of locally-produced pottery, unless the finds of LIM on the south bank of the Humber date from this period. This is in contrast to the situation in the preceding period, and may be partly due to the fact that pottery was actually being distributed more widely overland. For example, settlements on the Lincolnshire Wolds were receiving Northern Maxey wares directly overland, rather than just obtaining a few vessels via the Humber Estuary. It is, of course, quite possible that ships continued to travel down the Trent and along the Humber Estuary, but even if they contained pottery it would have been indistinguishable from the wares already found in the Wolds. However, there are no sherds of Southern Maxey or LIM types from sites along the Lindsey Marshes and, therefore, there is no evidence for coastal traffic along this stretch of the coast.

12.6.3 The 9th to 11th centuries

At some point in the 9th century a new shell-tempered ware came into use in Lincolnshire. This ware shares the same fabric as Lincoln Fine Shelly ware (LFS) which forms the bulk of the coarseware used in Lincoln from the end of the 10th to the 13th centuries (Adams Gilmour 1988, 113–14), and is termed Early Lincoln/Lincolnshire Fine Shelly ware (ELFS) in recognition of this similarity. Although a handmade shell-tempered ware, there are differences in typology and manufacture which distinguish ELFS from Maxey wares: the rims are rolled out and rounded in profile rather than flat-topped, and the vessels are not smoothed externally, but wiped horizontally with grass.

Later in the 9th century a much more radical change in ceramics took place, with the introduction of wheel-throwing, kiln firing and glaze. Torksey, Lincoln, York and Stamford all supported major industries, and production also took place at Leicester, Nottingham, and possibly Derby. The stratified sequences at York enable a relative chronology for these Anglo-Scandinavian wares to be constructed.

York appears to have been the earliest. York ware is virtually absent from Fishergate, York, from which mid

9th-century *stycas* have been recovered, but it is present in the earliest Anglo-Scandinavian levels at Coppergate. A starting date in the last third of the 9th century is therefore likely. Torksey ware is present in late 9th-century deposits in Lincoln, although it is uncommon until the end of the 10th century. The early examples tend to be decorated with roller-stamping, whereas later ones are usually undecorated. Lincoln Gritty ware also occurred in these early Lincoln deposits, but is absent from later ones dating to the early to mid 10th century. Finer sandy wares, LSLS, occur in these later deposits, and again appear to have a short lifespan. Lincoln Late Saxon Shelly ware (LSH) is most common in the mid to late 10th century, but does occur earlier. Lincoln's 'Saxo-Norman' Sandy ware (SNLS) appears towards the end of the 10th century, and has a relatively short period of use. Torksey ware also re-appears at this time, but unlike SNLS continues in use throughout the 11th century. In York, Torksey ware seems to replace York ware at this time, along with Stamford coarseware, which is also common in 11th-century deposits in Lincoln. At York, the end of the Anglo-Scandinavian pottery sequence is marked by the replacement of all these wares by white-firing gritty ware (YG), which seems to have completely taken over the York market by the 1080s.

The distribution of ELFS (Fig. 12.41) includes sites in the Trent Valley from the Foss Dyke to Flixborough, sites in the clay vale, and in the northern Lincolnshire Wolds.



FIG. 12.41. Distribution of ELFS (Early Lincoln/Lincolnshire Fine Shelled Ware) pottery in the East Midlands.

Only one find-spot has been recorded south of Lincoln. This distribution is similar to those of Northern Maxey wares, and it is likely that the wares were produced nearby and employed similar distribution networks.

The distribution of Lincoln Gritty ware, however, is much more limited. At present, Flixborough stands out, in that all the other find-spots are in and around Lincoln, or could be reached by short overland trips to the east of the city (Fig. 12.42). Slightly later sandy wares (Fig. 12.43), however, have a wider distribution, although they too concentrate on sites in and around Lincoln and settlements immediately to the east of the city.

Early Lincoln shelly wares (Fig. LKT ROUL) are found on a larger number of sites. At present, their distribution appears to have been carried out overland and down the River Witham. The relative absence of sites south of the Witham is notable.

Definite late 9th-century Torksey ware is likewise restricted to sites in and around the production centre and those in Lincoln (Fig. 12.45). The one exception is from a site in the central Wolds. Surprisingly, therefore, the evidence to date suggests that the earliest market for Torksey ware was not reached via the Trent, but overland eastwards via Lincoln.

Inturned-rim bowls are a form produced in Lincoln mainly in the mid 10th century (Fig. 12.46). These vessels are found on a much larger number of sites than the earlier



FIG. 12.42. Distribution of LG (Lincoln Gritty ware) pottery in the East Midlands.



FIG. 12.43. Distribution of LSLS sandy ware pottery in the East Midlands.



FIG. 12.44. Distribution of LKT ROUL (Early Lincoln Shelly Ware) pottery in the East Midlands.



FIG. 12.45. Distribution of TORK ROUL (Torksey ware) pottery in the East Midlands.

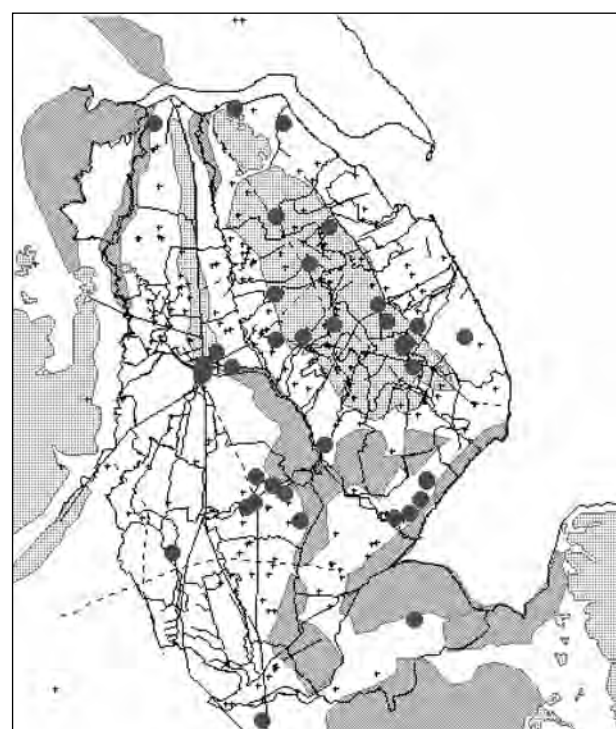


FIG. 12.46. Distribution of LKT INT (Lincoln Kiln Type Inturned Rim) pottery in the East Midlands.



FIG. 12.47. Distribution of LSH (Lincoln shelly ware) pottery in the East Midlands.

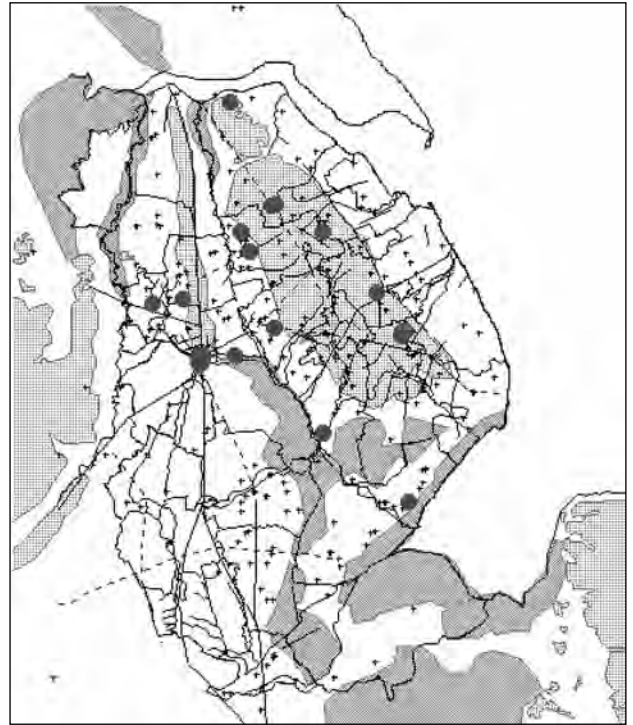


FIG. 12.48. Distribution of SNLS (Lincoln sand-tempered ware) pottery in the East Midlands.

Torksey and Lincoln products, and include sites south of the Witham, plus sites on the Fenland silts whose easiest access to Lincoln would be by water.

Slightly later Lincoln shelly wares (FIG. 12.47) have a similar distribution to the inturned-rim bowls, but are found on sites in the Lindsey Marshes from which the earlier wares are absent.

The late 10th/early 11th-century sand-tempered wares produced at Lincoln have a similar distribution pattern to earlier sandy wares, rather than LSH, since they do not occur to any extent south of the Witham. This suggests that the presence or absence of Lincoln products south of the Witham is not due to any political barrier. It could, instead, be due to the presence of a strong competing production centre at Stamford. Stamford jars, unglazed vessels used mainly for cooking, have a distribution which is complementary to that of these Lincoln-made sandy wares (FIG. 12.49). The distribution of the glazed vessels, by contrast, covers the entire county of Lincolnshire, north and south of the Witham (FIG. 12.50).

Later Torksey wares (FIG. 12.51), probably dating to the 11th century in the main, have a distribution mainly in north Lincolnshire, including Flixborough (see p.369–70 and FIG. 12.30). If the absence of find-spots in the northern Wolds is real, then the ware seems to have been distributed via Till Bridge Lane and Lincoln, with the Trent accounting for far fewer find-spots.

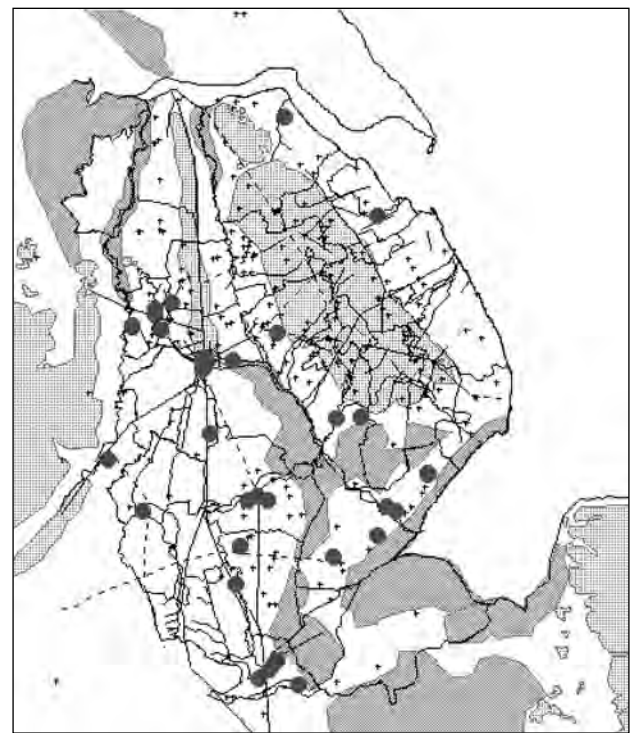


FIG. 12.49. Distribution of ST JAR (Stamford ware jars) pottery in the East Midlands.



FIG. 12.50. Distribution of ST (Glazed Stamford ware) pottery in the East Midlands.



FIG. 12.51. Distribution of TORK (later Torksey ware) pottery in the East Midlands.



FIG. 12.52. Distribution of THET-TORK (Thetford-type ware) pottery in the East Midlands.

Finally, the distribution of 11th-century Thetford-type wares (from several East Anglian and south-east Midlands sources (FIG. 12.52) clearly shows that most of these were carried to Boston and Lincoln, and redistributed from there.

In general, these later pottery distributions indicate the increasing importance of Lincoln from the late 9th century onwards, and the growth of overland trade routes from Lincoln into the Wolds and along the Jurassic ridge. Pottery seems to have been distributed overland to a great extent, even when, as at Torksey, the kilns were ideally situated to exploit the River Trent. We can surmise that pottery was carried by boat from Torksey into Yorkshire, but there was clearly also considerable overland carriage of pottery. By this period we can also be certain that much of this pottery was being distributed through markets, although the limited 'halo' of find-spots around Lincoln suggests that only inhabitants of settlements within 10–15km of Lincoln actually acquired pottery there. In most cases the distribution patterns suggest that it is the potters, or middlemen, who undertook most of the movement of goods.

Note

1. FIGS 12.31 to 12.52 can also be found in full colour in the ADS archive.

13 The Anglo-Saxon Coins, Mensuration Weights and Ingots

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This chapter examines in detail the evidence for the use of coinage, silver ingots and mensuration weights on the site between the end of the 7th and the beginning of the 11th centuries; all other coinage from the site (e.g. the Roman, High Medieval and later coins) is discussed in the relevant sections of Ch. 14, to which the reader is referred.

13.1 The Anglo-Saxon and medieval coins from Flixborough

by Marion M. Archibald

A total of 77 post-Roman coins were recovered from Flixborough, 67 datable to before the year 1000, and 10 between the 13th century and Victoria. At an earlier stage, the coins then to hand were studied by Kevin Leahy and James Booth whose preliminary work was the basis of the 53 coins of the Anglo-Saxon period listed and discussed by Mark Blackburn (Blackburn 1993, 82–83 and 87). Michael Metcalf also drew on the same sources in his text and distribution maps, although the Flixborough finds were not listed, and were identified for security reasons as ‘near Scunthorpe’ (Metcalf 1993–4, *passim*).

This rich series is of primary importance to an understanding of the character of the site, and the archaeological context is essential for a full evaluation of the coin evidence. When broken down into their constituent numismatic groups, the relatively low totals involved mean that there is a risk of fortuitous absences and ‘abnormal’ representations. The archaeological record is particularly valuable in periods of numismatic invisibility, when it provides corroborative or, even more importantly, contrary evidence about the status of the settlement which might

be misunderstood if reliance were placed on a simplistic reading of the coin evidence alone. The representation of coinage from the beginning of post-Roman settlement at Flixborough is influenced by the changing character of the site, and the extent and direction of its trading connections at different times; although the primary influence on the content of all currency is the wider historical context. Unlike most archaeological finds, coins often do have a historical label not just attached, but stamped upon them. The underlying patterns of coin representation in England and, in greater detail, within its regions are basically very similar, and Flixborough conforms to this broad picture (Blackburn 1993). The variations important to understanding the individual development of Flixborough itself must be sought in differences beyond these national and regional norms, with the attendant problems of dealing with still smaller numbers.

Some of the usual benefits to numismatic interpretation of secure stratigraphy are not available here. As described by Loveluck and Atkinson in Volume 1 of the Flixborough publications, the habitation sequence is complicated by successive periods of rebuilding, often on the same plots, interspersed with episodes of levelling and dumping. Material, including coins, originally lost at several different periods on one part of the site, was dug up together and re-deposited on another. Only 21 coins are from stratified contexts, and just three (discussed in their chronological positions below) derive from deposits of the same general period as their issue. Even these were not found in their position of primary loss, but had been dumped with other debris in different contexts on other parts of the site. The rest of the stratified coins were re-deposited in levels of later date also at some unknown distance from their source. While coins found in close proximity may have remained together since they were first deposited, this cannot be

relied upon, as they could have become associated only subsequently, during some later earth-moving operation. The converse is also true, namely that coins found far apart and/or in differently dated levels could originally have been deposited together. The danger in the latter case is that the representation of coins of particular types or regions may thus be exaggerated by the unverifiable presence of such nucleated groups. There is also the converse pitfall of a too ready identification of 'dispersed hoards' and 'purse contents', which might erroneously depress the incidence of finds of the types represented in the supposed groups.

The Flixborough coin series does not start until *c.*700 but the archaeological evidence shows that the Anglo-Saxon settlement was already established on the excavated area during the 7th century, and had probably begun earlier on the unexplored parts of the site, suggested by residual 5th- to 6th-century finds (Hines and Rogers, this volume, Ch. 1). The absence of earlier post-Roman coins from Flixborough may be explained on a number of grounds. The national distribution of finds makes clear that the use of coin was undoubtedly more intense in southern England than in Lindsey at this time (Metcalfe 1993, distribution maps *passim*), but the difference is essentially one of degree. Representatives of Merovingian and early south-eastern Anglo-Saxon gold issues, and English Primary sceatta silver issues, have been found in the midlands and the north, and the gold thrymsas and Primary sceattas struck in York in the 7th century were also available. While, therefore, an absence of coins before *c.*700 is not unexpected on more northerly sites in general, representatives would not be unexpected on settlements of a high status, or those which enjoyed commercial, political or ecclesiastical relations with areas where coin use was more developed.

The archaeological levels from before *c.*700 (i.e. Periods 1 and 2) at Flixborough are characterised by general cleanliness, with few finds in comparison with later phases, and no large contemporary dumps (Loveluck and Atkinson, Volume 1, Ch. 3). The earliest buildings (in the south-east of the site) were probably on the edge of the Early Anglo-Saxon settlement, whose focus may have lain in the unexcavated area to the southeast (Loveluck and Atkinson, Volume 1, Ch. 3). While archaeological evidence for this early phase is slight, 7th-century continental imports, in the form of lava querns and a small number of pottery vessels, and indigenous fine metalwork (Youngs, this volume, Ch. 2) suggest that Flixborough was already a high-status site; it is at least possible that early coins are lacking partly because the most likely area for their use and loss was not excavated.

The earliest of the coins found at Flixborough are Frisian sceattas of Series E of the VICO type, one of the early sub-groups of the 'porcupine' series which began to be struck at the end of the 7th century (nos 3213–15 in catalogue below). Their designs are somewhat devolved, so they are not among the earliest of the VICO series, although all three are of characteristically high weight, and two have high

silver contents (nos 3214–15), while the third (no. 3213) is slightly less fine. Although the substantive type is attributed to Dorestad, derivatives may have been produced at other mints in the area of the Rhine mouths. They were probably struck *c.*700 and could have been brought to Flixborough directly or indirectly from the continental mainland, at that time or a little later. They were included in the Aston Rowant hoard Oxfordshire, buried *c.*705–10 (Kent 1972 and *CH* 1, no. 347), but they are absent from the Woodham Walter hoard, Essex, buried in the 730s (Archibald forthcoming a). The two coins of Series D (nos 3211–12), also from a mint in the Low Countries, possibly Domburg, are probably of a slightly later date of issue than the VICOs, but they were present with them in the Aston Rowant hoard. Ten further Frisian coins of Series E (nos 3216–25), of declining weight and fineness, include varieties of general types current alongside English Secondary sceattas in Woodham Walter. The minting places in Frisia, and possibly also in north-eastern France, and the precise issue dates for many varieties of these later Series E coins both remain elusive. A relative chronology is broadly established by their weight and fineness, but it is not a regular progression, and the continental hoards in which different varieties appear are often geographically biased and difficult to date. One of the later sceattas of Series E (3223), although the earliest stratified coin from the Flixborough occupation sequence, derives from Flixborough Phase 3biii from the mid to late 8th century, and must have been first deposited at the beginning of that bracket, as it is unlikely that it was still current as late as 750. To complete the tally of continental coins, contemporary with some of the later Series E are two coins of Series G (nos 3226–27) attributed to Quentovic, in north-eastern France, a type well-represented in Woodham Walter.

While the better VICO coins could have reached Flixborough before the other Frisian issues, there is no stratigraphical proof of this either way and, in the limited timescale, 'wear' is no help. They could alternatively have arrived with, or in the same general period as, some of the later continental coins found on the site, and could have been deposited originally in levels contemporary with them. Four Series E coins, two VICOs (nos 3213–14) and two others (nos 3216–17) were located close together in the eastern part of the excavated area. Had they been surface finds, it might well have been concluded that they, and maybe even other sceattas found a few metres away, had circulated and been deposited together. The archaeological evidence, however, shows that pairs of one of each were found as residual items in two dumps, one of the mid 9th century, and the other of the mid–late 10th to early 11th centuries. While this does rule out some of the coins having been deposited together, none of the conjunctions can be relied upon as evidence of associated primary deposition or contemporary currency.

Sixteen continental sceattas were found at Flixborough, representing 55.2% of the total number of 29 sceattas recovered. The presence of continental issues is strong

elsewhere in Lindsey, but less so than at Flixborough itself (totals for Lindsey from Blackburn 1993, 81). The high percentage suggests that many of these coins had reached Flixborough directly from the Low Countries, emphasising the strength of the link also evident from the wealth of other material of continental origin from the earlier period of the site. The representation is much greater than it is at places in south and southeast England; but it is necessary to consider other factors which temper the raw statistics. Most of the bullion used at English mints must ultimately have been derived from coins which had come in from the continent, so that a higher proportion of these coins would have remained in circulation in places, where there was no mint nearby. Until recently it was generally accepted that no mint was in operation in Lincolnshire during the sceatta period. Naylor has attributed Series J to Lindsey (Naylor 2006), but problems remain (see discussion below). The lower proportions of continental coins from such sceattarich locations as Southampton and Ipswich are thus not an indication of a lower level of trade with the European mainland, but rather of the re-coining of a significant proportion of them into local issues.

Despite the general high velocity of sceatta circulation, local bias and different levels of output are also factors in their distributions. Places nearer the prolific mints of Kent, for example, would show a higher representation of them at the expense of continental issues. The accident of coin recovery, even in leading centres like Lincoln, London and York, means that the greatly increased data currently available may not yet be truly representative of sceatta circulation. Also, as just discussed, a number of the Series E coins from the site may have been derived from group deposits and, if so, would exaggerate the representation of continental issues. Difficulties still remain in assigning some sceatta issues to England or the Low Countries, and although these cases are relatively few, changing the attribution of just one or two coins can alter the proportions materially in a total of just 29 coins. Continental sceattas were a significant part of the normal circulating medium throughout England, and, therefore, some of those found at Flixborough almost certainly did not arrive as a result of primary contact with Frisia, but indirectly in trade with other places in England, both inland and, particularly, coastal, as demonstrated by the archaeological evidence. English sceattas form a much smaller proportion of Continental currency, but the odd stray may have made the return journey. It is impossible to quantify the influence of these factors, but they show that the coin representations, valuable indicators though they are of trading and other connections, may exaggerate some, and under-represent others, especially if divorced from the rest of the archaeological record, which is itself incomplete both spatially and materially.

It should also be borne in mind that the proportions of coins recovered at all commercial sites, both as regards period and source, indicate not the relative level of trade at a particular time with a particular region, but rather the

proportions of that trade which had (or whose imbalances had) to be settled in cash. High representations, as in the case of continental sceattas at Flixborough, indicate a balance of trade in favour of the find spot. The settlement was then, apparently, an aristocratic estate centre with no conspicuous craft-production (Loveluck, Volume 4, Ch. 6). What then, was being exported from Flixborough in the early 8th century that caused this surplus, even after the import of many continental luxury goods? Was it livestock products, in particular wool? (Loveluck, Volume 4, Ch. 7; Walton Rogers, Volume 4, Ch. 6).

The remaining 13 sceattas belong to the English Secondary series (44.8% of the sceatta total). Series J is best represented with 4 examples, plus one derivative piece with a series G-type obverse whose source in England or the continent is uncertain (no. 3228: the derivative). All the main sub-groups of Series J are represented: BMC types 36 (the derivative no. 3228), 37 (nos 3230–1), 72 (no. 3232) and 85 (no. 3229); the rare type 60 is absent. Metcalf attributed Series J to the kings of Northumbria and its bishops at York (Metcalf 1994, 366–7). He based the attribution mainly on their distribution which is, in relative terms, much stronger north of the Wash (maps pp. 360 and 363) than undoubted southern issues (maps p. 371). Several other students, including the writer, have found it difficult to accept an anonymous issue at York between two series of regally explicit coins, with a similar animal motif on the reverse, and are unconvinced by the explanation of the different distribution pattern from Series Y (undoubtedly of York). On the principal basis of regression analysis Naylor has recently attributed the widely distributed Series J types 36, 37 and 85 to Lindsey; he prefers to exclude the others, placing type 72 in the Low Countries, and leaving type 60 unlocated (Naylor 2006, *passim*, especially 169–70). While not advocating any particular minting place, he included Flixborough among the candidates. The increase in the Flixborough representation, from the single coin he was aware of, to the present four (or five, if the derivative piece is included), which represent 30.8% (or 38.5%) of the Secondary English sceattas from Flixborough, would appear at first sight to support his thesis, but there is no evidence, direct or indirect, for any minting activity on the site. Admittedly, the whole area was not investigated, but excavated dumps included much material from beyond the limits of archaeological activity, so the overall cover was more extensive. The location of the mint or mints (even the character of sites which might qualify them as potential) remains one of the problems with this hypothesis. Earlier, others had suggested a Mercian (Midlands) origin. The question of Series J is too complex to discuss further here, but the case is still open.

Lindsey was at this period politically under the control of Mercia, so this strand of the currency may have a political as well as a commercial dimension. Metcalf has tentatively attributed Series N (no. 3233) to London (Metcalf 1994, 462 and 465), but Kent remains a possibility. The minting place of Series U (no. 3237) also has not been definitively

located, although Kent is again a candidate. The continuing uncertainty surrounding the origins of all these coins makes it unwise to use the tentative attributions to propose trading connections, especially as the coins could have reached Flixborough by some indirect route, such was the mixed content of the currency throughout England.

Of the securely located and relatively common coins of East Anglia, there are three examples, two Series R (nos 3235–6) from Suffolk, and one of Series Q (no. 3234), almost certainly from Norfolk. Only one of the East Anglian coins (Series R, no. 3235) has been analysed, and it has the relatively high figure for the series of 72% silver, so it was produced relatively early during its period of production, in the 720s. The others too are about the same period. The relatively low representation compared to Frisian coins is paralleled elsewhere in Lindsey (Blackburn 1993, 81), and may well point to a lower volume of trade with East Anglia at this period, which is also reflected in the archaeological record. There could again be mitigating factors involved here which cannot be tested or quantified, e.g. it would have been financially advantageous for traders in south-eastern ports to pass on (legally or otherwise) universally-acceptable coins which they had obtained from Frisia, without incurring the expense of converting them into local issues. Continental coins accounted for 37% of the total in the Woodham Walter hoard, found beside a road leading inland from the Essex port of Maldon. As there are no other comparable contemporary hoards, it is difficult to know how typical its contents are.

The Flixborough ‘South Humbrian’ sceatta list closes with coins struck c.735. It does not include any of the very base silver coins from the end of the English series, e.g. the latest coins from East Anglia and London, whose silver content declines to 25% and less towards the mid 8th century, reflecting the decline in bullion supplies in north-west Europe generally at this time. These late sceattas are in aggregate much less plentiful throughout England than those which preceded them. A few did reach Lindsey (Blackburn 1993, 81), but their apparent absence at Flixborough is not necessarily significant. The Frisian coinage had ceased. While its latest stages are difficult to chart, it certainly did not survive Charles Martel’s annexation of Frisia which culminated in 734. Although previously rare, an increasing number of Merovingian regal silver coins are being found in England, including two deniers from Doddington, Lincolnshire (see the “Coin Register” in the *British Numismatic Journal* 2002, no. 60, and 2004, no. 58).

The mid 8th century at Flixborough is represented by two sceattas from early in the revived coinage of York, struck for Eadberht of Northumbria, 737–58, initially to a standard of c.75–80% silver (Pirie, nos 3239–40, below). The following rarer and baser issues from York, issued during the rest of the 8th century and until c.830, are absent. The next coin in terms of issue date from Flixborough is a denier of the Carolingian ruler Pepin the Short, produced at Quentovic between 755 and 768 (no. 3268). Coins

of Pepin are rare finds in England, and the Flixborough example is the first from Lincolnshire. The Pepin issue may not have been brought to England during his lifetime as his coins survive in significant numbers in later continental hoards, as detailed in the catalogue. Although Quentovic had become a major focus of trade at this time, the coin did not necessarily come direct from there, as the prolific issues of that mint travelled widely, including north-east, into conquered Frisia. For the Carolingian series generally, Lincolnshire has yielded later coins, including a cut quarter of a gold solidus of Louis the Pious, 814–40, found near Louth in 1996 (CR *BNJ* 1997, no. 101), and a forgery of a Frisian copy of a similar solidus, found between Gainsborough and Lincoln in 1995 (CR *BNJ* 1995 no. 127). Both these coins appear to be several removes from the Carolingian originals, and probably arrived from the Low Countries.

From the reign of Offa, 757–96, onwards, foreign coins were more successfully excluded from English circulation and had to be re-coined into local issues. The few finds of foreign coins, mostly from coastal sites, thus do not reflect the level of continuing overseas contact also affirmed by the continental products still found at Flixborough at this time (Loveluck, Volume 4, Ch. 7). Offa also successfully suppressed the coinages (where they had existed) of his client kingdoms and, apart from a few strays, only his own issues were current in his dominions. He is represented by one of his earliest broad pennies (no. 3270), produced in the early 760s. These coins are rare today, and the Flixborough coin adds a second moneyer, Odard, suggesting that this issue was probably struck on a somewhat larger scale than has been envisaged hitherto.

The sharp reduction in isolated coin finds after the sceatta period at Flixborough matches the pattern in Lindsey and elsewhere in England, and reflects a reduction in the availability of bullion in western Europe generally (Blackburn 1993, 82). The effects of this are already clear in the later sceatta period, of which there are significantly no coins from Flixborough. The decline in the circulating medium is real, but a comparison of simple head-counts of coins does not accurately represent the situation. Eighth-century broad pennies were made of finer metal and with a higher weight than the later secondary sceattas, even before their final precipitous decline. A denier of Pepin is, in bullion terms, worth more than twice a lighter sceat of 50% silver; a penny of Offa’s early broad penny coinage has about four times the bullion of a sceat of 25% silver, and many times that of the final sceattas, whose metal was hardly better than copper.

At this period, therefore, the ‘South Humbrian’ English coinage consisted of fewer coins of higher individual value. As such coins are always less commonly lost and abandoned than pieces of lower intrinsic worth, fewer site-finds relative to the total number of coins in circulation are likely to be found. No analogy is perfect, but the situation has similarities with that following the end of the western Roman empire, when the coinages of the successor states

were largely of high denominations (in that case mainly gold). While this did reflect a real diminution of urban commercial life, it did not mark a universal decline in prosperity, but rather a shift in its emphasis away from towns and external trading centres to large wealthy landed estates. At Flixborough the mid 8th to early 9th centuries (Phase 3b) were marked by a decline in the number of coins found, but there was no change in the wealth and high status of the site, which was 'characterised by conspicuous consumption' with a concentration of luxury imports which is exceptional (Loveluck, Volume 4, Ch. 7). There was a marked increase in specialist craft production, especially textiles during the first half of the 9th century (Loveluck and Walton Rogers, Volume 4, Ch. 6). Could this suggest that the former trade in raw wool had declined, and the inhabitants were now beginning to weave it before export themselves (shades of Charlemagne's complaint to Offa about short measure)? The importance of the Flixborough coin evidence for this period is that the proposed model of adaption to changed circumstances is supported by the other archaeological remains.

Dating from the mid 9th century, there are pennies of Archbishop Ceolnoth of Canterbury, struck c.833–50 (no. 3269), one of Berhtwulf of Mercia of the later 840s (no. 3271), one of Æthelwulf of Wessex, and two of his son Æthelberht (nos 3272–4), struck in the 850s to early 860s. The West Saxon regal coins are of the 'Open Cross' type, a series so uncommon as casual losses that the possibility of their deposition together should be considered. All three were stratified. The two Æthelberht issues derive from the upper levels of the Middle Saxon ditch (50), in the west of the excavated area, filled in during the contemporary Phase 4ii, dated to mid 9th century. They are, however, from two different contexts of debris dumped there from some other part of the site, possibly from the unexcavated area to the east. The Æthelwulf issue is from the south-east of the site, found in a dump of Phase 6iii, dated to the mid–late 10th to the early 11th centuries, which included material possibly also originating in the unexcavated area to the east. The archaeological evidence neither positively associates the Open Cross coins together, nor precludes their being isolated losses, but it is quite likely that two or even all three had been relocated with debris scooped up at different times from a single primary deposit. If this were so, then the representation of mid 9th-century coins, especially West Saxon ones, will have been exaggerated.

While the two earlier 9th-century pennies, struck before 850, are each more likely to have been deposited fairly shortly after their issue, the lack of stratigraphical associations again leaves open the possibility that they continued to circulate alongside the slightly later West Saxon coins of the Open Cross type, as is shown by the contents of some hoards. Most of these coins struck in the early and mid 9th century were superseded by the Lunettes type, especially during its prolific baser phase, from the later 860s onwards. Even then, however, the occasional earlier coin, including the West Saxon Open Cross type, can survive. For

example, the Beeston Tor hoard, Staffordshire (Thompson 1956, no. 40), buried c.875, included one Open Cross type of Æthelwulf with 48 Lunettes. If the earlier two 9th-century coins were isolated losses, which it is reasonable to assume in the absence of indications to the contrary, as in the case of the Open Cross types, then it is unlikely that both survived into a later phase of currency. The likelihood of later survivals should not be over-emphasised, but should be borne in mind, as it would affect the levels of coin use on the site and the representations of the respective places of origin at different periods during the 9th century.

To the middle years of the 9th century also belong 27 Northumbrian stycas (see Pirie nos 3241–67, below), an unusually high number for a site in Lindsey (Blackburn 1993, 82). They certainly demonstrate connections with Northumbria, but it is unfortunate that only two are stratified, and those in later levels, so that it is uncertain whether all were individual losses, or could include a number of nucleated deposits which might misleadingly enhance their representation. The lack of stratigraphical associations also leaves in doubt whether they were circulating alongside the contemporary, southern broad pennies, or if these entered the site with later coins, whether the Northumbrian coins were current for a time on their own. In either case, they appear to show a requirement for coin for every-day transactions, although there is no evidence of how they were tarified.

The Lunettes type, struck for both the Mercian and West Saxon kings, and the contemporary Archbishop of Canterbury, is represented by three pennies of Alfred the Great, 871–99 (nos 3275–7). Only one coin (no. 3275) was stratified, in a dump containing significant quantities of re-deposited material on the south-east of the site, from Phase 6ii dated to the mid 10th century; and there is no evidence that the Lunettes were deposited together. Although Flixborough was in Mercia, only one of the 9th-century coins is of a Mercian king, six are of kings of Wessex, and one of the Archbishop of Canterbury, whose see lay within the West Saxon kingdom. It has been suggested that the apparent heavy dominance of West Saxon coins implies that they arrived directly at Flixborough as a result of trade along the east coast, but the numismatic context does not support this. Mercian and West Saxon coins circulated freely in both kingdoms, even before the Lunettes type was adopted as a common coinage to facilitate this. Hoards located throughout England show that the high velocity of circulation ensured the rapid mixing of pennies from all sources across political boundaries by a variety of routes and, it can be inferred, sometimes for purposes other than trade. It is also normal for West Saxon coins to outnumber Mercian issues within Mercia itself, in the later Lunette period. This is a reflection of Alfred's higher aggregate output of Lunettes during its later phase. The Beeston Tor hoard, Staffordshire (Thompson 1956, no. 40), contained 20 Mercian and 29 West Saxon coins; and the Duddington hoard, Northamptonshire (TTRC Report 1995–6, 15–16), 11 Mercian and 21 West Saxon coins.

The only hoard of this period of any size from Lincolnshire, found at Walmgate (Archibald, forthcoming b), comprised two coins of Burgred and seven of the West Saxon kings, but this hoard is too small for the higher representation of West Saxon coins necessarily to be significant. The isolated finds from Lindsey, aside from Flixborough, show 3 Mercian to 6 West Saxon (Blackburn 1993, 87–89). In addition, some of Alfred's coins are geographically Mercian products, since they were produced in London and by a number of Burgred's moneyers there; further coins in Alfred's name were struck at other uncertain mints in Mercia. Two of the three Alfred Lunettes from Flixborough (nos 3276–7) belong to this Mercian series. While it is impossible to arrive at a generally applicable ratio, the evidence discussed here and in preceding paragraphs reduces the apparent dominance of 'West Saxon' issues at Flixborough to levels consistent with elsewhere in the future 'Danelaw', after making allowances for small numbers. While some coins may have arrived at Flixborough via the east coast, the coin finds do not prove or require it.

After the Lunettes issue, which ceased production *c.* 875, there is a gap in the coin sequence from Flixborough until a single penny of Edward the Martyr, 974–8 (no. 3278), and then no more until the 13th century (see Ch. 14, below). The presence of 9th-century coins in later dumps should not be taken as evidence of their continued circulation; their status is just as residual as the sceattas in the same re-deposited material. Coins that had circulated for decades would be noticeably worn, but the detail on the two of the three Lunettes from Flixborough, which the writer has examined, is sharply defined. Currency considerations also argue against extended circulation for the Lunettes, even in Lindsey. The base Lunettes were replaced in Anglo-Saxon England following a reform of *c.* 875 by new joint coinages in fine silver for Alfred of Wessex and Ceolwulf II of Mercia, 874–879? A strong case has been made that a unique fragment from the Cuerdale hoard, Lancashire, buried in *c.* 905, is a penny of Ceolwulf II struck at Lincoln (Pagan 1972). If this is accepted, the reform which swept away the Lunettes was already operative in Lindsey before the Mercian king had to give up the eastern part of his kingdom to the Scandinavian invaders.

Although there are no hoards from the Danelaw deposited in the immediate post-Lunettes phase, the pattern of pecking on the Anglo-Saxon coins in the Cuerdale hoard shows that the post-reform types entered the Danelaw successively as they were struck, and not together later (Archibald 1990, 15–18; and forthcoming c). A 'Two Line' type of Alfred struck from *c.* 880 was found near Louth (Blackburn 1993, 88). The Scandinavian invaders in the central Danelaw began to strike large numbers of copies of Alfred's reform types from *c.* 880 successively as they appeared, and they circulated there alongside their prototypes. The reason that these Anglo-Saxon coins, their Danelaw imitations and later Anglo-Scandinavian independent issues are not found at Flixborough is not that Lunettes were still in active use there, but rather that

the character of the settlement was such that it largely managed without them, and any coins which were around were too few in number to ensure representation among the finds. The archaeological record of the later 9th and earlier 10th century explains why coins were less needed and, at the same time, produces evidence of the expedients used to replace them (Loveluck and Atkinson, Volume 1, Chs 6 and 7; Wastling and Rogers below; Loveluck, Volume 4, Chs 7 and 9). It reflects dislocation of trading patterns along the eastern English coast, with exchange links increasingly operating on a regional level only (Loveluck 2001, 103–4), presumably conducted largely by barter. The sudden appearance for the first time of weights for weighing fine metal among the stratified finds, and the presence, unstratified but likely to be of the same period, of a silver ingot, points to an essentially bullion economy (Wastling and Rogers below; Loveluck, Volume, Ch. 7).

The early 10th to early 11th centuries marked another major change in the Flixborough settlement. While there is evidence of great wealth in the massive consumption of livestock, and in the construction of larger buildings, there is no evidence of imports derived from great distances (Loveluck and Atkinson, Volume 1, Ch. 7; Young, this volume, Ch. 12; Loveluck, Volume 4, Ch. 7). Early 10th-century coins are not common as site finds generally, and their absence from Flixborough is not surprising. Coin-finds from the later 10th century are increasingly common, so the discovery of a fragment from a penny of Edward the Martyr, 974–8 (no. 3278) conforms to this pattern. The fact that it is almost certainly of the Lincoln mint reflects the archaeological evidence of the increasing role of Lincoln as a provider of commodities to its hinterland (Vince and Young this volume, Ch. 12; Loveluck, Volume 4, Ch. 7). It also mirrors a similar pattern of the influence of the local or regional mint(s) on coin use more widely in England at this time. The total absence of coins thereafter until the 13th century is unusual on a site of 'manorial' character, as Flixborough then was (Loveluck, Volume 4, Ch. 4; Roffe, Volume 4, Ch. 8). The coins of some periods within this bracket are generally rare as site finds, but a representative from the late Anglo-Saxon period and from the prolific first issue of Stephen's reign might have been expected. Part of the problem may be that the focus of the settlement had again shifted to the east beyond the limits of excavation, and that the buildings in which coins were most commonly used, and their main rubbish dumps, were not investigated (Loveluck and Atkinson, Volume 1, Ch. 7).

Sceattas

by Marion M. Archibald

Catalogue

Notes to the catalogue:

ORDER

Coins found in the excavation and by detectorists are listed in one sequence in numismatic order. A concordance (below), in the order of small find numbers, also serves to isolate detectorists finds.

PROVENANCE

All coins are from the Flixborough excavations, unless noted as detectorist finds. The latter were found by metal detectorists shortly after the completion of the excavation with the permission and cooperation of the landowner, Sir Reginald Sheffield. Thanks are due to Sir Reginald and Lady Sheffield and Irene McGrath for making these coins available for study. These coins are quoted here from records and/or archive drawings and photographs in Humber Field Archaeology (HFA), thanks to Lisa Wastling and Chris Loveluck, and Scunthorpe Museum (SM), thanks to Kevin Leahy.

DESCRIPTIONS

Inscriptions are given when present; illegible letters whose identity can be established from die-duplicates or can be confidently inferred from standardised legends are given within square brackets, but in cases of doubt the space

is left blank. Ligated letters (where one limb serves as part of more than one letter) are underlined. The early Anglo-Saxon pennies on small thick flans are referred to here, following numismatic tradition, as 'sceattas'. Geographical details of hoards are given the first time they are mentioned.

ILLUSTRATIONS

As most of the coins are illustrated on PLs 13.1–13.4, only brief descriptions of the types appearing on sceattas are given. For later pennies and other coins of standard type, only inscriptions are quoted although non-regular and abnormal features are noted. Some coins can be illustrated only from the detectorists' and HFA's line drawings, and a solitary Anglo-Saxon coin and a few of the medieval and later coins known only from earlier notes (nos 3426–9 and 3431; see Ch. 14, below), cannot be illustrated.

Concordance of Saxon and early medieval coins with illustrations

Catalogue no.	RF no.	Shown on plate no.		Catalogue no.	RF no.	Shown on plate no.
3211	7238	PL. 13.4		3245	14090	PL. 13.1
3212	12629	PL. 13.4		3246	50017	PL. 13.1
3213	12072	PL. 13.4		3247	13952	PL. 13.1
3214	6102	PL. 13.4		3248	14099	PL. 13.1
3215	12264	PL. 13.4		3249	11794	PL. 13.1
3216	12987	PL. 13.4		3250	14091	PL. 13.1
3217	6100	PL. 13.4		3251	11798	PL. 13.1
3218	3738	PL. 13.4		3252	14086	PL. 13.1
3219	13387	PL. 13.4		3253	13388	PL. 13.1
3220	4165	PL. 13.4		3254	13100	PL. 13.1
3221	12453	PL. 13.4		3255	11795	PL. 13.1
3222	12201	PL. 13.4		3256	11922	PL. 13.1
3223	10299	PL. 13.4		3257	13389	PL. 13.1
3224	14140	PL. 13.2		3258	11796	PL. 13.1
3225	10783	PL. 13.4		3259	7239	PL. 13.1
3226	FX 88 R9	PL. 13.4		3260	12202	PL. 13.1
3227	8233	PL. 13.4		3261	11801	PL. 13.1
3228	5425	PL. 13.4		3262	11800	PL. 13.1
3229	3817	PL. 13.4		3263	1470	PL. 13.1
3230	831	PL. 13.4		3264	10988	PL. 13.1
3231	14196	PL. 13.2		3265	7233	PL. 13.1
3232	14139	PL. 13.2		3266	11799	PL. 13.1
3233	254	PL. 13.4		3267	12199	PL. 13.1
3234	14025	PL. 13.3		3268	70032	PL. 13.2
3235	4049	PL. 13.4		3269	2007	PL. 13.4
3236	2263	PL. 13.4		3270	14024	PL. 13.2
3237	99	PL. 13.4		3271	10782	PL. 13.3 + 4
3238	Not used	-		3272	6858	PL. 13.4
3239	50015	PL. 13.1		3273	4164	PL. 13.4
3240	11864	PL. 13.1		3274	406	PL. 13.4
3241	7503	PL. 13.1		3275	3568	PL. 13.4
3242	11921	PL. 13.1		3276	1564	PL. 13.4
3243	7235	PL. 13.1		3277	14199	PL. 13.3
3244	2555	PL. 13.1		3278	14198	PL. 13.2

WEIGHTS AND CONDITION

The present weights of the coins are given in grammes and grains, but many coins are not in good enough condition for these to be regarded as precise currency weights. It was considered inadvisable to try to remove further corrosion for conservation reasons, which means that the finer detail on some coins is not legible, and so they are not suitable for die comparison. Where the weight has been affected seriously by corrosion or by chipping, it is noted after the figures. Weights of some of the detectorists' finds are not available; this is denoted by the customary n.r. (not recorded).

METAL

Unless stated otherwise, the coins are silver of a sort, and the percentage of 'silver' present (i.e. silver plus gold where detected) in coins analysed is quoted. These figures are derived from the comprehensive metallic analyses of coins selected by Ian Panter and are given in full in Figs 13.1–13.2. While coins of finer silver in each type are generally earlier than those of base metal, fineness is not an absolute guide, as considerable variation can occur even among die-duplicates.

REFERENCES

References to standard works follow numismatic convention: for types as *BMC* type 37; for individual coins as *BMC* 214, *MEC* 798 etc. denoting numbers of particular coins in these catalogues. Some references conventionally use the author's name as in North 241. Die-duplicates are cited from standard works as d.d. *BMC* 214, and from research papers as d.d. Booth 1998, nos 9 and 10. The form cf. Oxford 219 denotes a coin which, while not a die-duplicate, is broadly similar, but possibly with some different features. Discussion on sceattas is based on Metcalf 1993–4, and references are in the first instance to his volumes and to the versions of earlier classifications used in them. The formula Oxford 195 denotes the coin of that number in the catalogue section of the volumes. Metcalf's drawings in text figs which are not numbered, are cited as Metcalf 1993, 123, no. 5, the page followed by the coin number counted from left to right, top to bottom of the page. Metcalf occasionally mentions in his commentary coins from 'Scunthorpe', or 'near Scunthorpe', which are from the Flixborough site, and includes most, but not all, of the Flixborough coins in his distribution maps. No check-lists of finds by site are included in the published volumes, so cross-references cannot be given. The nearest group in Metcalf 1966 is also quoted for the 'porcupine' sceattas, although, as so often, few of the later coins fall precisely into the substantive types. The discussions in Grierson and Blackburn 1986 have also been used. Also drawn upon is the writer's experience of other hoards, such as Woodham Walter, Essex found in the 1990s, which she is preparing for publication, and excavation groups, published and forthcoming. For later coins, references to types are given in the first instance to North in preference to the now incomplete, and, in some cases, outdated classifications of earlier standard works.

References to particular coins include these older standard works and detailed research papers as appropriate. Where possible, a die-duplicate is noted, in the first instance in the British Museum and its publications, failing that in the *Sylloge* series, then in the 'Coin Register' in the annual volumes of the *British Numismatic Journal*, and elsewhere if known. Preference is given to published coins, but normally only one die-duplicate is noted. Coins in this catalogue are referred to as no.3222, no. 3237 etc. when they are mentioned elsewhere in the catalogue and in the Introduction.

DATING

The issue dates of sceattas remain uncertain, and those suggested below should be regarded as estimations rather than established facts. The duration of sceattas in currency is discussed generally in the Introduction. The issue dates of more of the broad pennies are secure within a few years, but some wide margins remain. The brackets for deposition dates given in the catalogue are those within which coins with a 'normal' life in circulation are most likely to have been originally lost, not the dates of the levels in which they were found (but see also the Introduction). It should be noted that this original deposition date may more often have been earlier rather than later within the suggested bracket, but it should be borne in mind that a particular coin may have survived sometime after the usual terminus for the general type to which it belonged.

MINTS

The minting places of few types of sceattas have been certainly identified, but some tentative attributions which have been made are noted. Even in the early broad penny period, the mints of coins without explicit signatures are also sometimes uncertain, but probable mints are suggested as appropriate.

- 3211 Sceat Series D, Continental Runic type, *BMC* type 2c, possibly Domburg mint. (Pl. 13.4)
 Obv. Profile bust to right
 Rev. Cross with a pellet in each angle
 Wt 0.86g (13.2gr) Silver: 98%
 Ref. cf. Oxford 165
 RF 7238, Unstratified.
 The letters of the obverse inscription appear to be small and neat and are probably literate, but without a legible die-duplicate it is impossible to say definitely. The reverse style is neat and the cross is not the usual pommée type but a rare variety with wedge-shaped arms. Coins of this group are present in the Aston Rowant (Oxfordshire) hoard, buried in c.705–10 which contains both the earlier heavy coins of the type and this later lighter series. The silver content is here as high as the best of the heavy-weight coins. This coin is therefore probably of about the same date as the hoard.
- 3212 Sceat Series D, Continental 'Double Reverse' type, *BMC* type 8, uncertain Low Countries mint. (Pl. 13.4)
 Obv. Standard, four Ls in corners around central annulet
 Rev. Cross with a pellet in each angle
 Wt 1.24g (19.1gr) Silver: 94%

- Ref. cf. Oxford 185
RF 12629, Unstratified.
Metcalf 1993, 191–3 argues that type 8 was issued contemporaneously with, but from a different mint from type 2c (no. 3212) and that it was probably situated a little way south-west of Domburg. This coin again is placed towards the beginning of the type by its regular style, heavy weight and high silver content. Such coins are also present in the Aston Rowant hoard. This type is less common in English finds than type 2c (no. 3211).
- 3213 Sceat Series E, Porcupine type, VICO variety 1, Dorestadt and Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, inverted triangle below
Rev. Standard, VIC around central annulet
Wt 1.27g (19.6gr) Silver: 91%
Ref. cf. Oxford 198
RF 12072, Context 6312, Phase 5a.
This coin was found with the slightly later coin no. 3216. It shows the usual high weight for the group but its silver content is a little lower than the usual mid 90% value. More analyses are needed before it can be assessed whether this decline of a few percent is significant. The VICO series is one of the four early porcupine varieties included in the Aston Rowant hoard. Coins of this particular sub-variety are present, so this example may be dated *c.* 700–10.
- 3214 Sceat Series E, Porcupine type, VICO variety 1b, Dorestadt and Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, inverted triangle below
Rev. Standard, VIC around central annulet (V and C transposed)
Wt 1.27g (19.6gr) Silver: 95%
Ref. cf. Oxford 198 (V and C normal positions)
RF 6102, Context 5503, Phase 4ii.
This coin shows the high weight and fine silver associated with the variety. For discussion and dating see no. 3213.
- 3215 Sceat Series E, Porcupine type, VICO variety 2, Dorestadt and Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, triangle below
Rev. Standard, VIC around central annulet
Wt 1.33g (20.5gr) Silver: 96%
Ref. cf. Oxford 195
RF 12264, Unstratified.
For discussion and dating see no. 3213.
- 3216 Sceat Series E, Porcupine type, Metcalf 1966 D/C (var.), Hallam group, Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, I X I below
Rev. Standard, L+L crescent around central pellet
Wt 1.25g (19.3gr) Silver: 71%
Ref. Found with no. 3213, the earlier VICO type. Obv. close to Metcalf 1993, 231, no. 3215 and rev. cf. no. 3221 which has trefoil of pellets in place of crescent here.
RF 12987, Context 6312, Phase 5a.
Coins similar to this coin were included in the hoard from Hallam, Friesland, Netherlands. This coin is probably to be dated *c.* 715–25.
- 3217 Sceat Series E, Porcupine type, Metcalf 1966 C/D (var.), Kloster Barthe group, Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, IIII below
Rev. Standard, a pellet in each corner around central pellet in annulet
Wt 1.30g (20.1gr)
- Ref. cf. Oxford 219
RF 6100, Context 5503, Phase 4ii.
The group of porcupines to which this coin belongs is not present in the Aston Rowant hoard and is therefore later. Its high weight is characteristic of the better coins (but not as high as the best) represented in the Kloster Barthe hoard from Ostfriesland, Netherlands, whose contents represent a phase which lasted from *c.* 710–15 to *c.* 735. This coin was probably produced *c.* 710–20.
- 3218 Sceat Series E, Secondary Porcupine series, Metcalf 1966 B/D (var.), Kloster Barthe group, Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, IIII below
Rev. Standard, a pellet in each corner around central pellet in annulet
Wt 1.21g (18.6gr) corroded. Silver: 85%
Ref. cf. Oxford 219
RF 3738, Unstratified.
This coin is of slightly baser metal than the best of the Kloster Barthe related coins analysed in Oxford, so it may be slightly later, *c.* 715–25.
- 3219 Sceat Series E, Porcupine type, Metcalf 1966 C (var.), Kloster Barthe group, Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, XIII below
Rev. Standard, four pellets around central annulet, two crescents above, and X and an I composed of four pellets, below
Wt 1.24g (19.1gr) corroded. Silver: 84%
Ref. No close parallel in Oxford but cf. obv. of Oxford 217 and rev. of Oxford 219
RF 13387, Unstratified.
For discussion and dating see no. 3218.
- 3220 Sceat Series E, Porcupine type, Metcalf 1966 A (var.), Kloster Barthe group, Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, III below
Rev. Standard, TTVI around central annulet
Wt 0.93g (14.3gr) Silver: 69%
Ref. cf. Oxford 228
RF 4165, Context 3107, Phase 4ii.
This coin, like Oxford 228 (which has not been analysed), is significantly lower in weight than the better coins in the Kloster Barthe phase such as no. 3217. It also belongs to the lower end of the fineness range which might suggest a date of *c.* 720–30.
- 3221 Sceat Series E, Porcupine type, Metcalf 1966 D/? (var.), Kloster Barthe group, Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, + below
Rev. Standard, LLII irregularly placed around central annulet
Wt 1.16g (17.9gr) Silver: 85%
Ref. cf. Oxford no. 224 (reverse different)
RF 12453, Unstratified.
For discussion and dating see no. 3218.
- 3222 Sceat Series E, Porcupine type, Metcalf 1966 poss. B (var.), Kloster Barthe group, Rhine mouths area. (PL. 13.4)
Obv. Porcupine to right, III (or possibly IIII) below
Rev. Standard, L[] [] I
Wt 1.24g (19.1gr) heavily corroded Silver: 60%
Ref. No close parallel can be cited as details obscured by corrosion, especially on reverse
RF 12201, Unstratified.

This coin's silver content is significantly below the better coins of the Kloster Barthe group and is probably to be dated *c.*725–35.

- 3223 Sceat Series E, Porcupine type, Metcalf 1966 A (var.), Kloster Barthe group, Rhine mouths area. (Pl. 13.4)
Obv. Porcupine to right, III in curve with line of tiny pellets below
Rev. Standard, XX and TT diagonally around central annulet
Wt 1.02g (15.7gr) Silver: 52%
Ref. No close parallel in Oxford
RF 10299, Context 8200, Phase 3biii.
This coin has a very low silver content of 52% with 3% tin so is likely to come at the end of the Kloster Barthe group, say, *c.*735.
- 3224 Sceat Series E, Porcupine type, Blackburn and Bonser 1987 G2 (var.), Franeker group, Rhine mouths area. (Pl. 13.2)
Obv. Porcupine to right, pellets and rectangle below
Rev. Standard, LLII around central pellet in annulet
Wt 1.08g (16.6gr)
Ref. cf. Metcalf 1993, 240, no. 2 (rev. motifs arranged diagonally instead of horizontally as here)
RF 14140 Detectorist find, unstratified
The obverse is related to Blackburn and Bonser G2 but two of the four 'tadpoles' on the reverse of standard coins are replaced by Ls in the corners on the Flixborough example. This variety is represented in the Franeker hoard from near Leeuwarden, Netherlands, later in date than the Kloster Barthe hoard and buried *c.*735 or a little afterwards. This coin may be dated *c.*725–35.
- 3225 Sceat Series E, Metcalf 1966 F (var.), immediately post-Franeker phase, Rhine mouths area. (Pl. 13.4)
Obv. Porcupine to right, body outlined in small pellets, III preceded by two (or three?) pellets below
Rev. Standard LL and X· diagonally around central annulet
Wt 1.22g (18.8gr) Silver: 81%
Ref. No close parallel in Oxford
RF 10783, Unstratified.
This coin is a reverse variant on the group of coins characterised by the pelleted outline to the body of the porcupine which were present in the Franeker hoard. The silver content of this coin is similar to another somewhat lighter Franeker-type coin, Oxford no. 255, with a different reverse. This coin is probably datable to *c.*715–25.
- 3226 Sceat Series G, BMC type 3a, attributed to Quentovic. (Pl. 13.4)
Obv. Profile bust to right with cross in front
Rev. Standard, cross in each corner
Wt 0.39g (6.0gr), fragment of centre of coin only. Silver 81%
Ref. cf. Metcalf 1993, 272, no. 2
FX 88, R9
This coin is of the regular types but its silver is less fine than the best coins of Series G. The style is fairly good (better than coin cited above) but again not of the best (no hair shows under the diadem), and the relief of the bust is lower. It was thus probably struck sometime after the start of the series but before the marked decline of style and silver content, and the degeneration of the uniformity of the designs which mark its later varieties. Hoards suggest

that this type was produced *c.*710–20 and its low presence in the Rhine-mouths area and greater prominence in northern France caused Metcalf to suggest an attribution to Quentovic. The only coin of type G so far found at Vismarest, the site identified with Quentovic, is one of the subsidiary series. See also discussion at nos. 3227 and 3228 and in the Introduction.

- 3227 Sceat Series G, BMC type 3a (subsidiary series). (Pl. 13.4)
Obv. Profile head to right, cross in front
Rev. Standard, central annulet surrounded by three crosses and a group of three pellets
Wt 1.16g (17.9gr)
Ref. cf. Metcalf 1987, no. 10
RF 8233, Context 8153, Phase 5b.
The way the collar nearly meets the cross, the V-shaped ear and eye and other details, together with the rather coarse but diagnostic reverse design place it in the subsidiary series. The obverse is similar to a lighter and base coin found in the Repton excavations (drawn by Metcalf 1993, 273, no. 1) but here the reverse is also of Series G (cf. *op. cit.*, 274, no. 2), not a mule with Series J as at Repton. The present coin has not been analysed which might help with dating but may be tentatively placed *c.*725. See also discussion at no. 3228.
- 3228 Sceat Series G/J, type G2b, BMC type 36. (Pl. 13.4)
Obv. Profile head to right, hand holding cross in front
Rev. Bird to right with smaller bird above, cross in front (as on BMC type 36)
Wt 1.07g (16.5gr). Silver: 74%
Ref. cf. Metcalf 1993, 273, nos 2 and 3
RF 5425, Context 3758, Phase 4ii.
This coin, like the previous one, belongs to the derivative but homogeneous subsidiary series of type G. This group mules obverses originating in Series G with reverses of English types (Metcalf 1993, 272–4). Metcalf notes that coins of this group are of poor silver although the only analysis quoted is of another sub-type, with an obverse similar to the previous coin, but with a reverse of worse style, at 35%. The present coin is of considerably better metal, so is perhaps earlier in this derivative series. The copying of the two-birds reverse pushes the date into the secondary sceatta phase, say into the 720s. It is uncertain whether this derivative series was produced on the Continent or in England, with the East Midlands a possible location. See also discussion and dating at no. 3229.
- 3229 Sceat Series J, BMC type 85, Rigold type BIIIB, 8. (Pl. 13.4)
Obv. Profile head to right
Rev. Bird on cross between two annulets, four pellets in front of bird
Wt 1.01g (15.6gr)
Ref. cf. Metcalf 1994, 348, nos 2 and 3
RF 3817, Context 3989, Phase 6iii.
The coin cited above is in much rougher style than the present coin which appears to be an early version of the type. The head here is small and neat, in better style than any of Series J in Metcalf and closer to that of Series BII, and the bird on the reverse is as good as any. This coin is closely similar to one found at Richborough now in the British Museum but from different dies. The two analyses of this type quoted by Metcalf 1994, 351–2 are in the eighties percent, but he suggests finer coins are likely. This

- coin, which has not been analysed, might be a candidate for such an early coin in Series J, but its weight is right on the average for the type. It was probably produced c.715–20. The place of minting remains uncertain, but see the Introduction to this Section (13.1) for a discussion of Series J, generally.
- 3230 Sceat Series J, *BMC* type 37. (Pl. 13.4)
 Obv. Two heads profile, one-row diadem, towards a cross on stand between them
 Rev. Whorl of four birds
 Wt 1.06g (16.3gr) Silver 19%
 Ref. cf. Oxford 296
 RF 831, Unstratified.
 The weight of this coin is normal for the type. Its low silver content places it at the bottom end of range for the type which Metcalf 1994, 353 found was from as high as 90–92% down to as low as 13.5% – the coin cited is 79% fine. Although coins of Series J *BMC* 36 were included in the Woodham Walter, Essex, hoard buried c.730, *BMC* 37, which is relatively plentiful, was not present. This coin, although not in the best style does not look derivative, so was probably produced towards the end of the type c.730–35.
- 3231 Sceat Series J, *BMC* type 37. (Pl. 13.2)
 Obv. Two heads profile, two-row diadem, towards a cross on stand between them
 Rev. Whorl of four birds
 Wt 1.07g (16.5gr)
 Ref. cf. Metcalf 1994, 352, no. 1 (but present coin shows no ears)
 RF 14196. Detectorist find, unstratified
- 3232 Sceat Series J, *BMC* type 72. (Pl. 13.2)
 Obv. Two heads profile, one-row diadem, towards a cross on stand between them
 Rev. Bird walking to right, motif above mostly off flan (possibly devolved small bird?)
 Wt 1.22g (18.8gr)
 Ref. cf. Metcalf 1994, 355, no. 2; the drawings are so close that this is probably a d.d.
 RF 14139 Detectorist find, unstratified
 Identified from photographs in HFA records. Shear marks can be seen in the angular outline of the original flan at one edge, preserved because the coin was struck off-centre. Technical deficiency here thus parallels the inferior modelling of type 72 noted by Metcalf. This coin is of high weight but has not been analysed. Metcalf suggested that type 72 may have succeeded type 37 at York, or that it is an imitative type from the Low Countries (Metcalf 1994, 355; Naylor 2006, 170). The only analysis available is of the silver plating from a contemporary forgery at 58% and Metcalf 1994, 356 comments that other specimens look base. *BMC* type 72 is not present in Woodham Walter but it is rare, and this and the high weight make one hesitant to place it firmly later than the hoard. The present coin may be tentatively dated c.725–30.
- 3233 Sceat Series N, *BMC* type 41b, attributed to London. (Pl. 13.4)
 Obv. Two facing standing figures holding three long crosses
 Rev. Monster to left, head turned back
 Wt 1.07g (16.6gr)
 Ref. No close parallel illustrated in Metcalf 1994 although the variety is described on p. 462
 RF 254, Context 223, Phase 4ii.
 The obverse is in better style than most of the sub-type with tall slim figures with small round heads, and the central cross reaching the ground, rather than the large ‘turnip’ heads and shortened cross of typical examples. This would probably suggest that it is an early coin within the type. Metcalf has tentatively proposed London as the mint. Oxford coins contained 48% and c.49% silver. Series N is well represented in the Woodham Walter hoard and so this example was probably produced c.720.
- 3234 Sceat Series QIH, probably a mint in west Norfolk. (Pl. 13.3)
 Obv. Profile bust to right holding cross, pellets in field
 Rev. Animal to left, head turned back, pellets in field
 Wt n.r.
 Ref. cf. Metcalf 1994, 492, no. 3; possibly d.d. of Rigold and Metcalf 1977, pl. III, no. 37, found in York
 RF 14025 Detectorist find, unstratified
 This coin is identified from drawings in HFA records. The coin in Rigold and Metcalf 1977 is worn but the obverse detail is exceptionally close to the drawing even to the pellets on the torso (not present on any of the other known examples of this rare sub-type) which can just be distinguished. The reverses are probably the same, although this is not so certain one way or the other in the absence of a photograph. Finds of Series Q in general are concentrated in northern and western Norfolk; they are rare north of the Welland although one of another variety has been found in Lincoln (distribution maps, Metcalf 1994, 485 and 500). Oxford 385 of type QHI contains 72% silver, whereas some of the other varieties of the type are around 85%. This variety is probably to be dated in the 720s.
- 3235 Sceat Series R, Group R4, East Anglia. (Pl. 13.4)
 Obv. Profile bust (triangular shoulder) to right, epa in runes read outwards
 Rev. Standard, LL above and II splayed below, no pellets in field or within central annulet, a cross at each side
 Wt 1.21g (18.6gr). Silver 72%
 Ref. cf. Oxford 401
 RF 4049, Context 3731, Phase 6ii–6iii.
 The weight here is higher but the silver content significantly lower than the 90% of the Oxford coin, so the Flixborough example may be later. The Aston Rowant hoard of c.705–10 included a few early coins of Series R, but not this group. This coin is still relatively early in the long R series and may be dated c.720–30.
- 3236 Sceat, Series R, Group R8 (var.), East Anglia. (Pl. 13.4)
 Obv. Profile bust to right, annulet before epa in runes read retrograde inwards
 Rev. Standard, LL above and II splayed below, crosses at each side
 Wt 1.24g (19.1gr)
 Ref. cf. *MEC* 798
 RF 2263, Context 1835, Phase 6ii–6iii.
 While the typological detail would associate this coin with Group 8, the obverse style is neater and less coarse than normal coins of this generally homogeneous issue. Here the runes are separate and literate, not ligulate or blundered, and read inwardly, retrograde, as in Group 1. This coin is also of higher weight which might suggest an early issue,

but it has not been analysed so it is uncertain whether it was of finer metal than the distinctly lower standard in the upper thirties percent of other Group 8 coins analysed. The style is even better than that of *MEC* 798 from the Cambridge hoard which is lighter in weight and the lay-out of whose inscription conforms to what is normal for the group. The Flixborough coin may represent an earlier phase of this sub-series, and may be dated *c.*710–20.

3237 Sceat, Series U, *BMC* type 23b (var.). (Pl. 13.4)

Obv. Figure standing on curved line, head to right, holding a cross in each hand

Rev. Crested pecking bird to right

Wt 1.17g (18.1gr)

Ref. No close parallel in Oxford

RF 99, Context 1, Topsoil.

The obverse of this coin has features related to both types 23b and 23d. On the reverse the crested bird is particularly well-drawn and clearly of 23b type. Metcalf 1994, 566 comments that the coins of 23b whose style would suggest that they are early, are on a distinctly lower weight standard of 0.75–0.85g compared to the others which are, like the present coin, between 1.05 and 1.25g. Metcalf 1994, 565 draws a coin of type 23b weighing 1.15g found 'near Scunthorpe', but the detail as there represented does not match the present coin. Although there are a number of provenances on the upper Thames, the location of the mint of 23b remains elusive. Coins of Series U are plentiful in the Woodham Walter hoard and this coin may be dated in the early 720s.

The Northumbrian coins

by E. J. E. Pirie[†]

Catalogue

Arrangement

In the list which follows, the stycas are ordered according to the scheme demonstrated in detail in *Coins of the Kingdom of Northumbria, c.700–867* (Pirie 1996). The first phase of production is sub-divided into two consecutive stages: Ia and Ib; the second phase comprises several concurrent groups of coinage. The groups themselves are made up of a number of parts; Group A includes, besides the relevant official issues, a growing number of clusters of irregular coins, of particular styles; Group D, which is separated from C for the convenience of handling a large quantity of material, is entirely composed of irregular issues yet it, too, is sub-divided so that Di comprises clusters of coins which do not so far join into the massive complex of die-linked work recorded in Dii.

Whenever possible, the individual specimen from Flixborough is related to a die-duplicate already known elsewhere. The majority of such references are to coins in the Yorkshire Collections, published in the volume named above, so that their citation begins with the abbreviation *CKN*.

Most of the specimens have been weighed in grammes on an Ohaus (E 4000-D) electronic balance, and the equivalents in grains derived from conversion tables. Die-axes are expressed in degrees. The illustrations (Pl. 13.1) are shown at the scale of 3:2, unless otherwise stated.

SCEATTAS (SERIES Y)

3239 Eadberht, *c.*737–58; Pirie (1996) Class A (Pl. 13.1)

Obv. : · EOTBEREhTVS (the *S* in the form of an inverted *L*), round central cross

Rev. : a stylized stag, facing right

Wt. 1.30g (20.1gr.); die-axis: 90°. Silver: 68%

RF 50015, Unstratified detectorist find. [Illustrated at scale 2:1]

Neither die has been recognised elsewhere, but their combination on one coin is of no little interest. The form of the king's name is usually associated with the varieties which show, on the reverse, the stag facing left. The exception occurs for coins of Class Ai* (Booth 1984, Class G); in that issue the normal reverse has the right-facing stag surrounded by four pellets, in annulets of pellets. In this instance from Flixborough, the reverse depicts a stag whose head is akin to those of Ai* but, without the extra decorative features, otherwise relates to the plain stags of Class Ai (Booth 1984, Class A) on dies which are combined with obverses reading EADBERhTVS.

Arguably, the specimen may support the view that Class Ai* was the earliest issue of the reign, struck before the volume of coinage required entailed output in parallel by unnamed moneyers producing coins which showed right-facing stags, on the one hand, and left-facing beasts on the other. Once the initial, special, occasion of issue was over, the moneyers of Class A went on to use simple reverses which had, for a time, no further ornaments in the field. The specimen is in remarkably good condition, with little or no sign of circulation-wear.

3240 Eadberht, *c.*737–58; Pirie (1993) Class Bi. (Pl. 13.1)

Obv. : · EOTBEREhTVS (the *S* in the form of an inverted *L*), round central cross

Rev. : a stylized stag, facing left

Wt. 1.13g (17.4gr.); die-axis: 90°. Silver: 52%.

RF 11864, Unstratified.

The coin, when found, had some slight surface oxidation; the clarity of the dies seems to evince a small amount of wear from circulation. The specimen has been struck from the same dies as a coin in the British Museum (*BMC* Northumbria 6). Further coins – namely, a sceat from excavations in 1976 at Jarrow, Tyne and Wear, and another specimen, from the Evans Bequest now in the Ashmolean Museum, Oxford – are known to have been struck from the same obverse; they each have a different reverse (Booth 1984, 91–2: BI–3).

STYCAS

Phase I, *c.*790–835

Phase Ia, *c.*790–830; early issues, struck in silver

No specimens of this period have so far been recovered from the site.

Phase Ib, *c.*830–35: first issues struck in copper alloy

3241 Eanred, *c.*830–35; moneyer: Eaduini. (Pl. 13.1)

Obv. : xEANRED REX (the *A*, unbarred; the *N*, reversed), round central *evangelistic* cross

Rev. : +EADVINI (the *A*, unbarred), round central cross

Wt.: 1.15g (17.7gr.): die-axis: 45°

RF 7503, Context 7280, Phase gii.

The coin, which has a distinctive dark patination, shows only slight signs of wear by circulation. The obverse die

is known to have been used in combination with two other reverses (those of *CKN* 83–4); this reverse has not so far been recognised elsewhere.

Phase II, c.837–55: later issues, struck in copper alloy

Group A

3242 Aethelred II, c.841–49; moneyer: Monne. (PL. 13.1)

Obv.: + EDELRED REX, round central *Passion Cross*, of five pellets

Rev.: + MONNE, round central cross

Wt.: 1.00g (15.4gr); die-axis: 180°

RF 11921, Unstratified.

The specimen, which has a small chip from the surface of the obverse, shows only slight signs of wear by circulation. Because of the form in which the king's name is rendered, the coin is attributable to section Ai of his issues; it is possible that the choice of motifs denotes that the specimen was struck during the period c.841–3, before the short usurpation of Reduulf. The dies are the same as those of *CKN* 251.

3243 Irregular issue; date (within the period) uncertain; probably a double-reverse: one moneyer, ostensibly Meruini. (PL. 13.1)

1st die: legend and motif both illegible

2nd die: [+MER]PINI, round central cross

Wt.: 0.66g (10.2gr), worn; die-axis: uncertain

RF 7235, Unstratified.

The coin, which – as an irregular – is made of poor-quality fabric, is now very worn; it is difficult to determine how far this was the result of circulation before loss and how far it is the outcome of subsequent corrosion.

Had the first die now been legible, the coin might have provided welcome evidence of a hitherto unrecorded link between this specimen and others. The second die, on which the runic *wen*, or *W*, appears as *P* so that the name is rendered as *Merwini*, is known on two other specimens: first, on one in the National Museum in Copenhagen (Galster 1964, no. 386; the *Merwini* legend was there not recognised) and then, on one recovered during excavations in 1988 at Carlisle Cathedral (report forthcoming). In both those instances, the *Merwini* die is combined with one which renders the name of Huaetred as *Huaetrei*, round a central pellet-in-annulet motif. In the case of this Flix-borough example, though enough remains of the *Merwini* legend for one to be reasonably sure of the die-identity the first die exhibits no vestige of the annulet. A further combination of dies may be suspected. Such would not be unusual in an idiosyncratic coinage where both the official issues and the irregular (unauthorised) productions are marked by a high incidence of dies having repeated use in a variety of combinations.

The *Huaetred* die, of Copenhagen and Carlisle, echoes the name of one of the moneyers of Phase Ia; the man in question struck in silver during the early years of Eanred's reign. The later irregulars which are attributable to this Group A, rather than to Group D (see below), form the only context, so far, in which the name *Merwini* occurs. That the coin is assigned to this part of the work in copper alloy depends on the style of lettering, as much as on the characteristic use of *wen* (*w*) instead of *V* for *u*. Although few of the irregular dies which show letters of nodose style seem to name a ruler, there is one instance (see *CKN* 471) which records, in that same style, the rendering of

Aethelred's name (EDFLRED: the first *D*, barred in front) which distinguishes section Aii of the king's official coinage.

Another example of the die-combination for Huaetred and Meruini should be mentioned here. It occurs on one of the twenty-three coins recovered in the purse-hoard from Beverley in 1981 (Pirie 1991, no. 881). At the time of discovery, without the Carlisle evidence for comparison, the coin was not correctly identified; although the name Huaetred was unmistakable, the other die was read as an attempt at the name Herred. In the site report, the coin is published as an example of the Herred-based irregulars which are attributable to the end of Phase 1b (about 835); the specimen was thought to be the earliest to occur in that little hoard. Since the mistake was first recognised, a correction has already been made elsewhere (see Pirie 2000, no. 118, with references). It seems appropriate, however, to record the coin's proper identity and date here, as well, in the report of further archaeological work in the Humberside area.

3244 Irregular issue; date (within the period) uncertain; a combination of dies with nonsense legends. (PL. 13.1)

1st die: +HL·IDIAR (the *L* and *R*, reversed), inward-pointing, round central cross

2nd die: +NEVHIA (the *A*, unbarred), round central cross, with a pellet in the second angle

Wt.: 1.01g (15.6gr); die-axis: c.200°

RF 2555, Unstratified.

Neither die has so far been recognised elsewhere, although one very similar to the second has been recorded in the Ripon hoard of 1695 (Pirie, 1982, no. 37). The specimen may be attributed to this group for two main reasons. First, there are signs that the letters (of the second die especially) have the characteristic knobbed terminals; secondly, nonsense legends, such as these, occur in a variety of distinctive styles and in a number of clusters which are separate from the work of Group D, and of Dii in particular.

3245 Irregular issue: nonsense legends. (PL. 13.1)

1st die: +EI [] LEVI, retrograde, round central pellet

2nd die: +EVDLII, retrograde, round central pellet

Wt.: 0.81g (12.5gr), worn; die-axis: 90°

RF 14090, Unstratified detectorist find.

Neither die has been recognised so far on other specimens; the coin may, however, be attributed to Group A on grounds of general style.

Group B

No specimens of this group have so far been recovered from the site.

Group C: Cii

3246 Aethelred II: first reign, c.841–43/4; moneyer: Eanred. (PL. 13.1)

Obv.: +EDILRED REX, round central cross

Rev.: +EANRED (the *A*, unbarred; the *N*, reversed), round central cross

Wt.: 1.00g (15.4gr); die-axis: 90°

RF 50017, Unstratified detectorist find. [Illustrated at scale 2:1]

The specimen is struck from the same dies as *CKN* 720, and has an obverse link with no. 3247, below. The styca coinage is remarkable for the extent to which dies were

used and re-used in various combinations. The obverse of this coin is one of those outstanding for having been combined with sixteen separate reverses for the moneyer Eanred, who, at about the time of Redulf's usurpation, in 843 or 844, shared it briefly with Hunlaf; the latter normally worked for Archbishop Uigmund. The distinction between first- and second-reign issues for Aethelred is seen to depend on the form of central motif. Issues with both motifs in the *cross* tradition are attributed to his first reign; the *cross* forms are normal, too, on the coins for Redulf. Issues with symbols of secular origin – pellet, annulet, or rosette – on one or both dies are assigned to the period following Aethelred's restoration. New obverses and reverses, each with the newly adopted motifs, were used for what may be accounted the principal issues of the time, but all the major moneyers re-used old obverse dies, in combination with new reverses, for subsidiary issues.

The idea that die-linked coins, other than exact die-duplicates, were struck over a period of time can be confirmed by metallurgical analysis, for the composition of coins so related is often markedly different. In this instance, for the two specimens (nos 3246 and 3247), reference can be made to the data in FIG. 13.2.

This specimen, itself, has a distinctly dark patination, but shows little sign of circulation-wear.

- 3247 Aethelred II: second reign, c.843/4–49; moneyer: Eanred. (Pl. 13.1)

Obv.: +EDILRED REX, round central cross

Rev.: +EANRED (the *A*, unbarred; the *N*, reversed), round central pellet-in-annulet; extra pellets in field.

Wt.: 0.82g (12.6gr.); die-axis: 180°

RF 13952, Unstratified.

The coin, which exhibits signs of some wear, is struck from the same dies as *CKN* 966; it has the same obverse as no. 3246, above.

- 3248 Aethelred II: second reign, c.843/4–49; moneyer: Uulfred. (Pl. 13.1)

Obv.: +ÆDILREX (the *A* in the initial diphthong is not barred, but the first *D* is barred in front), round central cross

Rev.: +VVLFRRED, round central pellet

Wt.: 1.07g (16.5gr), slight accretion; die-axis: 90°

RF 14099, Unstratified detectorist find.

The coin, whose legends exhibit little sign of wear from circulation, is struck from the same dies as *CKN* 982.

Group C: Cii

- 3249 Uigmund, Archbishop of York: *temp.* Aethelred II's second reign, c.843/4–49; moneyer: Edelhelm. (Pl. 13.1)

Obv.: +VIGM[VND], round central cross; the end of the legend is off the flan

Rev.: +EDELHELM (each *L*, inverted), round central rosette of pellets

Wt.: 0.98g (15.1gr.), some accretion on rev.; die-axis: 0°

RF 11794, Unstratified.

The coin, which shows some signs of considerable wear, is from the same dies as *CKN* 1583.

Group D: Di (miscellaneous irregular issues); c.843, and later

- 3250 Irregular issue, *temp.* Aethelred II. (Pl. 13.1)

Obv.: +EDILRED, retrograde, round central cross

Rev.: +HEIVREI, retrograde, round central *Passion Cross* (of five pellets)

Wt.: 0.84g (12.9gr); die-axis: 270°

RF 14091, Unstratified detectorist find.

The specimen, which shows signs of some wear, is struck from the same obverse die as *CKN* 1788–90; the reverse die, which seems to have a nonsense legend, has not yet been recognised elsewhere.

- 3251 Nonsense dies. (Pl. 13.1)

1st die: +VDD[], round central cross in circle of pellets

2nd die: +CVDVID (the initial cross is a Greek cross with no serifs), round central rosette of pellets

Wt.: 0.92g (14.2gr.); die-axis: ? 180°

RF 11798, Unstratified.

The coin, which is corroded and worn, cannot be matched exactly with any specific dies, partly because the relevant specimens in the Yorkshire Collections are themselves worn. Yet, one is prepared to add this Flixborough find to the record of a cluster of coins (*CKN* 1827–33), if only because there is enough detail of the second die visible to bring recognition of its similarity to the second die of *CKN* 1833. It is not the same, but, with that of *CKN* 1833, affords an instance of what have come to be termed parallel dies; they were almost certainly cut by the same man at about the same time, for they exhibit only small differences of execution. Parallel dies are known to occur in sets of three, or at least in pairs; it is always possible, of course, that when two such dies are already known, a third will come to light at some later stage.

- 3252 Nonsense legends. (Pl. 13.1)

1st die: +CVDVI (the *C*, square in form; the *D*, reversed), retrograde, round central *Passion Cross*

2nd die: EIIDVEV (the initial *E*, reversed), retrograde, round central cross

Wt.: 0.57g (8.8gr); die-axis: 90°

RF 14086, Unstratified detectorist find.

In spite of its markedly low weight, the coin has survived in very good condition; it is a better specimen than its die-duplicate, recorded for the Yorkshire Collections as *CKN* 1834.

- 3253 Nonsense dies. (Pl. 13.1)

1st die: XM·REIDE (the *M*, runic ?), retrograde, round central cross

2nd die: possibly DVEVNVD (the *N*, and the second *D*, reversed), retrograde; or DVNVEVD (the *E*, and second *D*, reversed), clockwise; round central pellet-in-annulet

Wt.: 0.84g (12.9gr.), chipped; die-axis: 135° (as illustrated)

RF 13388, Unstratified.

The coin, which shows remarkably little trace of wear, provides a welcome record of two known dies in a combination which has not been recognised elsewhere. The first die is one of those used for *CKN* 1854; the second is a better example of one for *CKN* 1850.

One ought, perhaps, to consider a further possible reading of the second die: namely hVNREVD, that being an attempt at the name of Hunred. Such an identification may be considered unlikely, in this early unofficial context, for no moneyer so called is known in the north-east until the middle of the 10th century. Nevertheless, such an interpretation cannot be ruled out altogether, for Hunred's inclusion in the Northumbrian *Liber Vitae* indicates that the name was known in the area at this period.

- 3254 Nonsense dies. (Pl. 13.1)
 1st die: +EDL·VV, retrograde, round central pellet
 2nd die: uncertain reading; arguably, ++DDYYII (each *Y*, runic ?), retrograde; possibly, ++DDVNVNII (*VNVN*, ligatured), retrograde; round central pellet
 Wt.: 1.00g (15.4gr.); die-axis: *c.* 345°
 RF 13100, Unstratified.
 The coin exhibits some degree of wear, particularly on the first die. Although the three coins which follow (nos 3255–7) are themselves even more worn, by circulation or by corrosion (or by both), it can be seen that nos 3255–6, and very probably 3257, also, are struck from the same pair of dies. Since neither has been recorded elsewhere, the recovery of several examples of the combination from the one site may be accounted especially interesting (see Discussion, below).
- 3255 Nonsense dies: the detail of each is the same as those of no. 3254 above, and of no. 3256 (and probably also 3257) below. (Pl. 13.1)
 Wt.: 1.06g (16.3gr.); die-axis: 45°
 RF 11795, Unstratified.
- 3256 Nonsense dies: although the flan itself is so irregular in outline that the legends do not appear in their entirety, the dies are certainly those used for nos 3254 and 3255, above, and probably also for 3257, below. (Pl. 13.1)
 Wt.: 0.98g (15.1gr.); die-axis: ? 270°
 RF 11922, Unstratified.
- 3257 Nonsense dies: the specimen is so worn that detail is blurred and distorted to the point at which certain die-identity with the coins numbered 3255–6 above, cannot be claimed; yet, if it is *not* their duplicate, then the piece has at least been struck from very similar dies. (Pl. 13.1)
 Wt.: 0.65g (10.1gr.); die-axis: *c.* 240°
 RF 13389, Unstratified.
- 3258 Nonsense dies. (Pl. 13.1)
 1st die: +VVLEDE, retrograde, round central cross
 2nd die: +EADV·V; central motif uncertain
 Wt.: 0.79g (12.2gr.), worn; die-axis: ? *c.* 315°
 RF 11796, Unstratified.
 Since no other example of an overstrike has yet been recognised among surviving stycas, one hesitates to suggest that the second die (whose reading is far from certain) of this specimen is struck over the remains of an earlier impression. No duplicate of this coin can be traced elsewhere.
- 3259 Nonsense dies. (Pl. 13.1)
 1st die: +R[]DVVL·E, retrograde, round central pellet – possibly enclosed by an inner circle of pellets
 2nd die: +[]EADE (the *A*, unbarred), retrograde, round central cross
 Wt.: 0.58g (8.8gr.), chipped and worn; die-axis: 180°
 RF 7239, Unstratified.
 Neither die can be matched in the Yorkshire Collections. Since no certain example of the name of Reduulf has yet been recognised among the plethora of irregular dies, one hesitates to suggest that the reading of this first die could be identified as an attempt to render the usurper's name. The specimen has a distinctive dark patina.
- 3260 Nonsense die, combined with one naming an official moneyer: (Pl. 13.1)
 1st die: +VVE[], retrograde, round central pellet (? or cross of pellets – the *Passion Cross*)
 2nd die: +EA·RDVVLE (the *A*, unbarred), round central *Passion Cross*
 Wt.: 0.90g (13.9gr.), worn; die-axis: *c.* 250–260°
 RF 12202, Unstratified.
 In spite of the fact that the irregular coinage has very many instances of dies ostensibly for the official, Earduulf, this particular example cannot be matched in the Yorkshire Collections; nor can the first die. The specimen has a distinctive dark patina.
- Group D: Dii (the main die-linked complex of irregulars); *c.* 843, and later
 The issues represent five strands of work: three principally reflect the official coinage (of Group C), but include some nonsense; two, with a great many nonsense dies, form background clusters of imitations.
- 3261 Reflectives I: Aethelred II / Earduulf. (Pl. 13.1)
 Obv.: +EILRED RE, retrograde, round central pellet
 Rev.: +EAEDVVL·F (the *A*, unbarred), round central cross
 Wt.: 0.84g (12.9gr.); die-axis: 0°
 RF 11801, Unstratified.
 The specimen is struck from the same obverse as that of *CKN* 1912–18, and is the duplicate of a coin from Bolton Percy, 1847 (Pirie 1981, no. 422).
- 3262 Reflectives I: Nonsense. (Pl. 13.1)
 1st die: +ENL·ELDXX (the *N* and second *E*, reversed), round central *Passion Cross*
 2nd die: +EADEVVE (the *A*, unbarred), round central *Passion Cross*
 Wt.: 0.86g (13.2gr.); die-axis: *c.* 180°
 RF 11800, Unstratified.
 The first die is that used for *CKN* 1947–8; the second die has not so far been recorded elsewhere.
- 3263 Background I: Nonsense. (Pl. 13.1)
 1st die: +EARDVVC (the *A*, unbarred), round central *evangelistic cross*
 2nd die: +FOMVND (the *N* and *D*, reversed), retrograde, round central *Passion Cross*
 Wt.: 1.13g (15.9gr.); die-axis: 225°
 RF 1470, Context 1462, Phase 6iii.
 The specimen is from the same dies as *CKN* 1978.
- 3264 Reflectives II: Aethelred II / Earduulf. (Pl. 13.1)
 Obv.: +EDILRED RE, retrograde, round central rosette of pellets
 Rev.: +EA·RDVV (the *A*, unbarred), round central rosette of pellets
 Wt.: 1.06g (16.4gr.); die-axis: 180°
 RF 10988, Context 6472, Phase 5b–6i.
 The specimen, which shows signs of some wear, is from the same dies as *CKN* 2025.
- 3265 Background II: Nonsense. (Pl. 13.1)
 1st die: +EV+R·DVL·E, retrograde, round central asterisk enclosed by an inner circle of pellets
 2nd die: +EA[]·JDNVE (the *N* and final *E*, reversed), retrograde, round central rosette of pellets
 Wt.: 0.98g (15.1gr.); die-axis: ? 270°
 RF 7233, Unstratified.
 The specimen, which is considerably worn, is probably a duplicate of *CKN* 2081; the first die is certainly that used for *CKN* 2080–6.

- 3266 Reflectives III: ostensibly a double-obverse, for Aethelred II. (PL. 13.1)
 1st die: +EDIIREVD+, retrograde, round central cross
 2nd die: +EDREDE, retrograde, round central pellet
 Wt.: 0.88g (13.6gr.); die-axis: 315°
 RF 11799, Unstratified.
 The specimen, which has a distinctive leaf-green patina, shows very little sign of wear. Its dies are those of *CKN* 2130.
- 3267 Reflectives III: Aethelred II / Eardulf. (PL. 13.1)
 Obv.: +EDIL.RED, retrograde, round central rosette of pellets
 Rev.: +EARDVVLE (the A, unbarred), retrograde, round central pellet-in-annulet
 Wt.: 0.88g (13.6gr.); die-axis: c.30°
 RF 12199, Unstratified.
 The specimen, which shows signs of some wear, is struck from the obverse of *CKN* 2181–90. The *Eardulf* die cannot yet be matched in the Yorkshire Collections or elsewhere. Its style is, indeed, acceptable for a coin of authorised work, and it is somewhat remarkable that its use cannot be recognised among the output of the prolific moneyer, Eardulf. Had it been traced there, this specimen from Flixborough would have provided an example (of which a few are already recorded) of a link between the regular issues and the flux of unofficial production.

Discussion of the Northumbrian coins

These coins, which have just been listed, are of considerable interest on a number of counts. It is not just a matter of there having been recovered from Flixborough as many as 29 specimens of Northumbrian origin, when the total of post-Roman coins before AD1000 is no more than 67. It is not just a matter, either, of 27 of the northern issues being seen to represent the coinage of a comparatively short period, c.830–c.855. It is, rather, a question of recognising that, although it is by no means unusual for Northumbrian coins to be recovered south of the Humber, no fewer than 18 of the 26 coins, struck during the years c.837 to c.855 and now found at this major site, must be identified as irregular issues. Only five (nos 3242 and 3246–9 in the catalogue) are certainly official work. Further, it is also a question of recognising that, at a time when there are many thousands of stycas in the Yorkshire Collections – at York and Leeds – (Pirie 1996), so few coins from Flixborough contribute so many new details to the total record of dies. It has been clear for some time that any small group of site-finds is capable of adding something to our knowledge of the dies and their use, often repeated in various combinations, in the production of the coinage required, whether that was authorised or unofficial. Yet, the extent of such a contribution from Flixborough is remarkable. At this juncture, however, none of the relevant coins provides a link which will draw one or other of the clusters waiting in Group Di into the main complex of Dii. Such links can well be expected to appear in due course.

Brief summaries of the material have recently been included in an inventory of Northumbrian coin-finds (Pirie 2000). Two entries relate to the site: no. 66, for a single

sceat (the second in the present list), and no. 221 for most of the stycas. It is somewhat unfortunate that not all the relevant specimens were known to the writer in time for those records to be complete.

The inventory as a whole makes it clear just how much has changed in recent years in relation to our understanding of the coins' distribution outside Northumbria itself. There is a rapidly-growing number of finds, of both sceattas and stycas, in Southumbrian territory, especially in the eastern counties, as well as through the midlands and along the south coast. The circumstances of most discoveries are those of detectorist search; controlled excavation has occurred in London as well as at Flixborough. Earlier references to the few known extra-territorial recoveries having originally been Viking souvenirs should, one would suspect, really be treated now as something of a joke. The coins were probably taken south by travelling Northumbrians. Since the stycas, at least, formed a robust coinage of practical low denomination, it could well have been welcomed in the penny-bound kingdoms as a much-needed medium of small change.

The small range of official issues known from this site in Lindsey mirrors to some extent that recorded in other coin-lists, from both inside and beyond Northumbria. Flixborough is not alone in having no coins of the usurper, Reduulf; even the Whitby excavations (Pirie 2000, no. 152) recovered only one example amongst a total of well over 100 stycas. Most of Reduulf's known coins have come from the principal hoards. Even so, they have occurred as stray finds both in the Torksey area (near Lincoln) and in London (Pirie 2000, nos 236 and 268, respectively).

Flixborough, too, is not alone in not having coins of Aethelred's successor, Osberht, or of Osberht's contemporary, Archbishop Uulfhere. In this respect, the Whitby excavation record is similar, as are the coin-lists from several other sites. Just what this negative evidence might signify, in relation to the circumstances which ended activity at such settlements, for a time at least, will have to be a matter of debate. In another particular, it used to be argued that the main mass of irregular issues was late in production, as if they circulated only after the official coinage had ceased. It seems as if both Whitby and Flixborough give the lie to this, and support the view that the political troubles, stemming from Reduulf's *coup*, in the 840s, gave earlier impetus to the spate of unofficial coinage, for both Whitby and Flixborough lack coins of Osberht, from the early 850s, but have long runs of irregular material.

Just how far this evidence from the site, with its weighting in favour of the irregular coinage of Northumbria, will contribute to future discussion concerning the purpose of these particular issues may, at this stage, remain an open question. It is already evident that the unofficial coins were made in such numbers that it is reasonable to suppose their circulation virtually forced the closure of the authorised mint-workshops, early in the reign of Osberht. Arguably, the full flux of irregulars was the outcome of political

turmoil, stemming from the short-lived usurpation of Reduulf, about 843 or 844. Whether or not Flixborough comes to be seen as a settlement, somehow closely involved with this unrest, perhaps cannot yet be judged.

Arguably, too, many (if not all) of the irregulars were regional in production. Four specimens from Flixborough (nos 3250–53 in the catalogue) appear to support that contention, for their like is not known in the hoards from York and that neighbourhood, or in the major northern deposit recovered at Hexham in 1832. There seems to be some stylistic relationship, at least, between these examples and some of the coins recovered, in 1981, in the Beverley purse-hoard (Pirie 1991, nos 884–9). It appears possible, therefore, that they were among those made at some *atelier* in the neighbourhood of Beverley, north of the Humber, rather than in Lindsey itself.

It is, perhaps, an attitude of mind which identifies the legends on some of the irregular issues as nonsense. That there were some 9th-century makers of unofficial coins who were only imitating imitations of the regular issues may be true enough. They seem to have used dies on which were cut a random choice of crude letters. How far they, working in the background of the true reflectives, followed the practice of producing dies in sets (known now as parallel dies) remains to be monitored. Yet, closer study of some dies among the irregulars has already led to the suggestion (Pirie 1994, 22) that there are, among them, instances of so-called nonsense which are readable as personal names of Celtic or British origin. There is no evidence in the authorised coinage, as we know it, for the registration of place-names; it may be thought totally unacceptable, therefore, to suggest the presence of such on some of the unofficial productions. Yet, since one possible reading for a die (for no 3254, above) seems to be DVNVNII, the question of that having been an attempt at naming a place should not be dismissed or entirely ignored. Indeed, another die (for no. 3253) can be read, clockwise, as DVNVEVD. Such hints should at least alert us to the need to bear this in mind when taking stock of the evidence as a whole. Their contribution to the study of the total Northumbrian coinage is yet incalculable.

To sum up: to the ongoing study of the Northumbrian coinage, this evidence from Flixborough contributes a variety of details; their significance may be, perhaps, out of all proportion to the number of specimens involved.

Pennies

by Marion M. Archibald

For notes on the catalogue format, see 'Sceattas' section above.

- 3268 Carolingian. Pepin III, the Short, 751–68, denier. Quentovic mint. (PL. 13.2)
 Obv.: Rx F, two pellets between the letters, contraction mark above.
 Rev.: QVCCI / VVIG (see plate, for letter forms) above and below a line, with two contraction marks
 Wt.: 1.24g (19.1gr) corroded, broken in two

Ref.: cf. Gariel vol. I, pl. I, 18 and vol. II, pl. III, 51; Völckers 1965, 123, pl. I, 19 and 160, pl. XXIV, 8; Morrison and Grunthal 1967, no. 69

RF 70032, Detectorist find, unstratified

This coin is included on the basis of Scunthorpe Museum records. An internal chronology for Pepin's issues has yet to be established, Grierson and Blackburn (1986, 128) preferring to regard the RP and RF groups as contemporary at different mints throughout the broad penny period from its introduction c.755, to the end of the reign in 768. Coins of this reign were still around in quantity in France c.775–85, as demonstrated by the hoard from Imphy near Nevers, and some survived as late as c.790–4 to be included in the Ilanz II hoard from Switzerland, so the coin from Flixborough could have been brought to the site a decade after Pepin's death, or even, although increasingly less likely, sometime later. See also, Introduction.

- 3269 Archbishop Ceolnoth of Canterbury, 833–70. Penny, Group I, c.833–c.850, Canterbury mint, moneyer Biornmod. (PL. 13.4)

Obv.: +CIALNO / DARCEP

Rev.: +BIORNMODMONET

Wt.: 1.32g (20.3gr). Silver 91%

Ref.: North 1994, 241; d.d. BMC 214

RF 2007, Context 2021, Phase 6iii.

The issues of this date were effectively superseded by the Lunettes type, so that this coin is likely to have been deposited originally within the period 837–70.

- 3270 Offa of Mercia, 757–96. Penny, probably London mint, produced in the early 760s, moneyer possibly Odard. (PL. 13.2)

Obv.: [O]F / ·R M in two lines, a bar between with a central cross of four pellets and a pellet at the right end and two pellets visible at the left end; contraction marks over OF and across the front limb of R; a long bar at the base of the F.

Rev.: Probably Od / a[R]d in two lines with a central cross of four pellets (see discussion, below).

Wt.: 1.03g (15.9gr) corroded and broken, with about a quarter missing.

Ref.: Type not recorded in North 1994; cf. Chick 1997, pl. 2, 12–14 (moneyer Mang), particularly the fragment, no. 12.

RF 14024. Detectorist find, unstratified

This coin is quoted from photographs and weight in HFA records. It belongs to an early issue of Offa's broad penny coinage, attributed to London, which was unknown until three coins of a single moneyer, Mang, were discovered recently at two locations. The obverse inscription most closely resembles Mang coin no. 12 in being set out in two lines of letters, **OF / RM** with prominent contraction marks above and below a cross of four pellets and unquestionably indicating Offa Rex Merciorum. The layout of the reverse inscription, again with a central cross of four pellets, and the interpretation of the moneyer's name is not so straightforward, as one letter is missing entirely and another is equivocal. The clean edges to the breaks show that the coin was intact until recently, and it is unfortunate that one vital fragment is no longer extant. I am grateful for discussions about the reverse reading which I have had with the Offa specialist, Derek Chick, and the numismatic philologist, Dr Fran Coleman. The letters are a mixture of

capital and lower case letters as found elsewhere on Offa's coinage. The undisputed letters are **O**, **d**, **d**, read from the centre outwards, followed by the missing area, and then the doubtful one divided from the **O** by a bar. The latter could be taken (abnormally) as an indication of the start of the legend, or as a contraction mark similar to those of the obverse. All the previously recorded coins of the early Mang group have the moneyer's name laid out in two lines, so perhaps the most straightforward interpretation, suggested by Mr Chick, is to read the reverse inscription, also in two lines, as **Od** / **a[R]d**, interpreting the doubtful visible letter as a lower case **a**, with an **R** in the missing area ligulate with the **a**, giving the moneyer's name as Odard. A slight difficulty is that, on analogy with the Mang coins, the final **d** here is wrongly aligned, read outwardly from the centre like the first **d**, and not from the outside as would be expected in a two-line inscription. Remembering, however, that the die-cutter had to engrave the inscription and individual letters retrograde onto the die, a minor inconsistency of orientation may be acceptable. Reading the legend circumscriptionally outwards from the centre, and the bar as the contraction mark at the end of a longer moneyer's name would also be possible, but would present greater difficulties, and need not be rehearsed here.

The Flixborough coin provides evidence that this issue, rare though it is, was probably produced on a somewhat larger scale than had been previously envisaged. Neither of its known moneyers apparently worked later in the reign, but whether this was a result of administrative changes, commercial or political factors, or even a gap in production, it is not possible to say. The date of the introduction of Offa's broad pennies is uncertain. This coin could theoretically have been struck as early as c.760, but is possibly of the early 760s. It could have survived in circulation until the reform of the coinage late in Offa's reign c.793, although a deposition date earlier rather than later within this bracket is more likely.

- 3271 Berhtwulf of Mercia, 840–52. Penny, Group I Potrait type, c.845–c.848, Bust A, probably London mint, moneyer Osulf. (PLs 13.3 and 13.4)
 Obv.: [+]BERHT[VLFREX] bust to right
 Rev.: [+]OSVLF[MONETA] cross-crosslet
 Wt.: 0.23g (3.5gr) fragment. Silver 41%
 Ref.: North 406; same dies Booth 1998, nos 9 and 10 (no. 9 found at Middle Harling, Norfolk)
 RF 10782 (unstratified excavation find) and RF 14078** (detectorist find, unstratified)
 Only a small fragment with a sector of the outer inscription of this coin was found in the excavation, but the rest of it was discovered by a detectorist, and was identified from drawings in the HFA records (weight not noted). The dies are of the same style as those for Æthelwulf of Wessex struck at Rochester, but Berhtwulf's coin was probably struck at London. Osulf is not known for the later varieties of Group I, so his production probably ceased earlier than the limiting date of the group as a whole. The silver of the present coin is significantly baser than that of the only other coin of the reign so far published (Booth 1998, no. 22, also of Group I) at 76.11%, and of a just earlier coin of Æthelwulf of Wessex at 73.99% (Metcalf and Northover 1989, 118–19, no. 51). This might suggest that the debasement was rapid, but clearly more

analyses will be necessary before secure conclusions can be reached. Hoards show that coins of this period were effectively superseded by the baser Lunettes issues, so this coin was probably originally deposited within the period c.845–c.870.

- 3272 Æthelwulf of Wessex, 839–58. Penny, Phase 4, c.852–58, Inscribed Cross type, Rochester mint, moneyer Maninc. (PL. 13.4)
 Obv.: +AE[DEL]VVLFRE
 Rev.: +MANI / NC / MO / N / E / T / A
 Wt.: 1.21g (18.6gr). Silver 88%.
 Ref.: North 618.
 RF 6858, Context 6300, Phase 6iii–7.
 The rather crude bust and large lettering of this coin, unlike the good style of most Inscribed Cross coins (cf. nos 3273–4), place it at the beginning of the type, when the Kentish mints reopened following the disruption caused by the Viking raids recorded in the Chronicle for 851, and before the expansion in mint activity during the type when 'new' moneyers were added and dies of improved style introduced. The rough style represents continuity from that of the preceding issue of Phase 3 at Rochester, in which the moneyer Maninc / Manninc had also participated. Hoards show that coins of this period were effectively superseded by the baser Lunettes issues, so this coin was probably originally deposited sometime within the period c.852–870.
- 3273 Æthelberht of Wessex, 858–65. Penny, Inscribed Cross type, 858–c.862/4, Canterbury mint, moneyer Heaberht. (PL. 13.4)
 Obv.: +AEDELBEARHTRE+
 Rev.: +HEABEA / RHT / MO / N / E / T / A
 Wt.: 1.15g (17.7gr) corroded and chipped. Silver 32%.
 Ref.: North 620
 RF 4164, Context 3107, Phase 4ii.
 Heaberht is first known in this type, but later works for Alfred in his first (Lunettes) type at Canterbury. Hoards show that coins of this period were effectively superseded by the baser Lunettes issues, so this coin was probably originally deposited sometime within the period 858–c.870.
- 3274 Æthelberht of Wessex, 858–65. Penny, Inscribed Cross type, 858–c.862/4, Canterbury mint, moneyer Hunbearht. (PL. 13.4)
 Obv.: [+AEDEL]BEARHTR[E+]
 Rev.: +HVN[BEA] / RHT / [MO / N / E / T / A]
 Wt.: 0.38g (5.8gr) fragment. Silver 62%.
 Ref.: North 620
 RF 406, Context 51, Phase 4ii.
 Although the uniformity of the main series of Inscribed Cross coins means that the coins of Canterbury and Rochester (if any) cannot be distinguished on style, Hunbearht was a Canterbury moneyer in Phase 3 of Æthelwulf's reign, so probably continued to be active there. Hoards show that coins of this period were effectively superseded by the baser Lunettes issues, so this coin was probably originally deposited sometime within the period 858–c.870.
- 3275 Alfred of Wessex, 871–99. Penny, Lunettes type (a), Canterbury mint, moneyer Herebald. (PL. 13.4)
 Obv.: +AELBRED / REX

Rev.: +HEREBAL / · DMO · / · NETA ·
 Wt.: 1.04g (16.1gr) corroded. Silver 56%.
 Ref.: North 624; dd. *BMA* 468 from the Croydon (Whitehorse), Surrey hoard of 1862, buried c.872.
 RF 3568, Context 3255, Phase 6ii.
 Hoards suggest that the base silver Lunettes coins were demonetised, when Alfred, in association with Ceolwulf II of Mercia, reintroduced fine silver coins c.875. This coin was probably deposited 871–c.875.

- 3276 Alfred of Wessex, 871–99. Penny, Lunettes type (c), a mint in Mercia, moneyer Eadmund. (Pl. 13.4)
 Obv.: +A[ELBRED]REX
 Rev.: [E]ADMVN / DMON / ETA
 Wt.: 1.26g (19.4gr), heavily corroded and bent
 Ref.: North 627
 RF 1564, Unstratified.

Variety (c) with the lunettes broken at the angles is a rare group struck late in the Lunettes issues, and is dated by Pagan no earlier than 873. Two of the coins from the Repton excavations were of this variety (Pagan 1986a and 1986b). Eadmund has not been previously published as a moneyer of Alfred in the Lunettes type of any variety, and he is not known for Alfred's father or brothers who preceded him on the West Saxon throne. The only other appearance of a moneyer of this name in the reign is an 'Edmund' using dies of Canterbury style in his latest Two-Line type, but he is almost certainly not the same person, as there is then an unbroken series with some versions of this name well into the 10th century. Eadmund is also not recorded as a moneyer of Burgred at London, although the style of the bust here (what can be determined of it under the heavy corrosion) is acceptably of Mercian style. This coin was probably deposited c.873–5, but for further discussion of the date and location of this group see the Introduction.

- 3277 Alfred of Wessex, 871–99. Penny, Lunettes type (d), mint in Mercia, moneyer Diarulf. (Pl. 13.3)
 Obv.: +AELBRED / REX
 Rev.: DIARV[LF] / MON / [ETA]
 Wt.: n.r., incomplete and in two fragments
 Ref.: North 628; almost certainly a die-duplicate of *BMA* 456 from the Beeston Tor, Staffs., hoard, buried c.875.
 RF 14199. Detectorist find, unstratified
 This coin has been identified from drawings in HFA records. Diarulf was a moneyer of Burgred at London. For discussion of the date and context of this issue, see the Introduction. Hoards suggest that the base-silver Lunettes coins were demonetised when Alfred, in association with Ceowulf II of Mercia, reintroduced fine silver coins c.875. This coin was probably deposited c.873–5.
- 3278 Edward the Martyr, 975–8. Penny, north-eastern mint, probably Lincoln, moneyer uncertain. (Pl. 13.2)
 Obv.: no part of inscription survives
 Rev.: no part of inscription survives
 Wt.: n.r.
 Ref.: North 763
 RF 14198. Detectorist find, unstratified
 This coin was identified from photographs in HFA records. The style of the bust with open back is characteristic of mints in the north-east, particularly Lincoln (Jonsson 1987, especially pp. 89–90). As isolated losses at this period are often from a local mint, a Lincoln association

is quite likely. The small area of the coin surviving makes die-comparison difficult, and no identity has been certainly found to establish this. This coin was probably deposited originally 975–c.980.

13.2 Investigative conservation of the sceattas and stycas

by Ian Panter

Both the sceattas and the stycas were submitted to further investigation to determine elemental compositions. As it was not possible to drill into the body of each coin, surface examination was the only method available, using energy dispersive X-ray fluorescence (using the Link XR200 at the Archaeology Department, University of Durham). Such a method is only able to analyse the exposed surface of a metal, and because of the possibility of surface enrichment, either through differential corrosion or some other form of surface alteration, the technique can only be considered as a semi-quantitative process. Most of the coins had either a stable patinated surface (the copper alloy based coins) or a dull silvery oxide surface (the silver based coins), so the results obtained using this technique can be used as a fairly reliable indicator of elemental composition, although more precise analyses can be achieved only by extracting unaltered alloy from the body of each coin.

The principal elements looked for were copper (Cu), silver (Ag), zinc (Zn), tin (Sn), lead (Pb) and gold (Au), as well as antimony (Sb) and arsenic (As) as the main trace elements.

The Sceattas

A total of 19 sceattas were analysed and the results are presented in FIG. 13.1.

With one exception, the sceattas are primarily silver, although most from this group have been debased by the addition of copper as well as small proportions of tin and lead, but not zinc. In the few cases where gold has been detected, this element has probably been introduced into the alloy with the silver as a contaminant.

Of interest are coins no. 3225 (RF 10783) and 3240 (RF 11864), both series E ('porcupine') issues, and having an almost identical alloy composition. Given the semi-quantitative nature of the EDXRF technique, this may either be coincidental, or indicative that the coins were made from the same alloy supply.

The stycas

A total of 23 stycas were analysed and the results are tabulated in FIG. 13.2.

Earlier studies on collection of stycas using XRF (Gilmore 1987, 160) revealed that the early coins were made from a silver/copper alloy with added tin, whilst later stycas were made from a silver/brass alloy with less tin content. The 'official' coins identified here (nos 3242, 3247 and 3249: RFs 11794, 11921 and 13952) all have

Find No.	Context	Date	Series	Cu	Ag	Au	Zn	Sn	Pb	As	Sb
831	u/s	730–40	J	60%	19%	nd	2%	5%	10%	nd	trace
3738	u/s	720–30	E	13%	81%	4%	nd	nd	1%	nd	trace
4049	3731	730–50	R	22%	72%	nd	nd	2%	nd	trace	trace
4165	3107	720–30	E	27%	69%	nd	nd	1%	nd	nd	trace
5425	3758	730–40	J	24%	72%	2%	0.5%	1%	1%	nd	trace
6102	5503	715–25	D	4%	90%	5%	nd	nd	nd	nd	trace
7238	u/s	715–25	C	Nd	98%	nd	nd	nd	nd	nd	nd
10299	8200	----	----	43%	52%	nd	nd	3%	nd	trace	trace
10783	u/s	700–30	E	17%	78%	3%	nd	nd	nd	nd	trace
11864	u/s	700–30	E	17%	76%	3%	nd	1%	1%	nd	trace
12072	6312	700–30	E	8%	88%	3%	nd	nd	nd	nd	trace
12201	u/s	700–30	E	37%	60%	nd	nd	nd	nd	nd	trace
12264	u/s	700–30	E	5%	96%	nd	nd	nd	nd	nd	nd
12453	u/s	700–30	E	10%	85%	nd	nd	nd	nd	nd	nd
12629	u/s	710–30	D/E	4%	94%	nd	nd	nd	nd	nd	nd
12987	6312	700–30	E	26%	71%	nd	nd	nd	nd	nd	trace
13387	u/s	700–30	E	14%	80%	4%	nd	1%	1%	nd	trace
50015	u/s	----	----	26%	68%	nd	nd	2%	1%	nd	trace
R9	u/s	700–30	G	7%	81%	nd	nd	4%	3%	nd	trace

Fig. 13.1. Analysis of the sceattas.

Find No.	Context	Date	Group	Cu	Ag	Au	Zn	Sn	Pb	As	Sb
1470	1462		Dii	67%	0.5%	Nd	11%	9%	12%	nd	trace
2555	u/s	837–55		11%	0.8%	Nd	0.7%	0.5%	87%	nd	trace
7233	u/s		Dii	74%	1%	Nd	6%	nd	18%	nd	trace
7235	u/s	837–55		25%	Nd	Nd	nd	32%	42%	nd	trace
7239	u/s		Di	71%	Nd	Nd	nd	22%	7%	nd	trace
7503	u/s	830–35	Ib	48%	36%	Nd	10%	3%	2%	trace	trace
10988	6472		Di	73%	0.4%	Nd	10%	1%	14%	trace	trace
11794	u/s	843/4–849	Cii	64%	16%	Nd	6%	8%	2%	2.5%	trace
11795	u/s		Di	20%	4%	Nd	nd	3%	72%	trace	trace
11796	u/s		----	44%	6%	Nd	nd	28%	21%	nd	trace
11798	u/s		Di	72%	Nd	Nd	2%	11%	14%	nd	trace
11799	u/s		Dii	70%	0.6%	Nd	8%	3%	16%	nd	1.7%
11800	u/s		Dii	62%	0.7%	Nd	9%	11%	16%	trace	0.5%
11801	u/s		Dii	69%	0.9%	Nd	10%	6%	14%	trace	0.7%
11921	u/s	841–49	A	73%	11%	Nd	7%	2%	4%	1.5%	trace
11922	u/s		Di	32%	3%	Nd	nd	20%	43%	trace	trace
12199	u/s		Dii	68%	0.4%	Nd	nd	23%	8%	nd	trace
12202	u/s		Di	72%	Nd	Nd	nd	25%	2%	trace	trace
13100	u/s		Di	43%	1%	Nd	nd	20%	34%	trace	trace
13388	u/s		Di	72%	0.5%	Nd	8%	6%	11%	2.0%	0.9%
13389	u/s		Di	14%	1%	Nd	nd	24%	60%	nd	trace
13952	u/s	843/4–849	Ci	70%	8%	Nd	11%	6%	2%	2.4%	trace
50017	u/s		---	65%	17%	Nd	4%	8%	2%	3.1%	trace

Fig. 13.2. Analysis of the stycas.

substantial quantities of zinc, although coin no. 3249 (RF 11794) has marginally more tin. All three though, have low levels of silver.

Another cluster can be seen with those coins grouped into the Dii category (so called 'unofficial' issues, see Pirie 1992). Here the coins are characterised by having lead as the predominant constituent of the alloy, again with low levels of silver. It is possible that differential corrosion has led to surface enrichment, but high contents were recorded on both sides of each coin. This suggests that the addition of a relatively large quantity of lead to the alloy was intentional, and the end result may have been a coin which resembled a silver alloy, but obviously did not contain any silver.

13.3 Silver ingot for bullion-based exchange **by Nicola Rogers**

No. 3289 (RF 12198; FIG. 11.3; PL. 13.6) is an ingot of debased silver which was recovered as an unstratified find; it has an elongated oval shape and several faces are smooth, indicating that it was probably cast in an open one-piece stone mould, although ingot moulds of brick or tile are also known (Bayley 1992, 767). The impurity of the silver which was melted to form this ingot suggests that it may derive from coinage (Bayley 1992, 799), and was perhaps cast during the first half of the 10th century, when no contemporary coins were deposited at Flixborough and an alternative system of precious metal exchange involving bullion, hack silver and earlier coins may have been in operation (Loveluck 2001; Loveluck, Volume 4, Ch. 7).

[Catalogued below with the mensuration weights]

13.4 Lead and lead alloy mensuration weights **by Lisa M. Wastling**

Four forms of lead mensuration weights were recovered: four cylindrical weights, one truncated pyramid, three disc, and four cone-shaped weights – a large example of the last type bore an iron suspension loop, attached to a large iron link. The non-suspension weights would have been used with balance pans, though no evidence of these was recovered from the site. Four of the weights were recovered by metal detecting, close to the area of excavation.

One of the cylindrical weights (no. 3286; RF 10952) is of special interest, as this appears to represent a measurement of two units of weight of 8.55g. A line divides the weight across the upper surface and sides into two equal halves (FIG. 11.3). The cone weight (no. 3281; RF 14241) with the raised cross may have represented four units of weight of 3.5g. A similar form of raised division was used on medieval disc weights, such as that from Billingsgate, London (Egan 1998, fig. 233, 990).

Three examples of disc-shaped weight were recovered; the largest of these is no. 3288 (FIG. 13.3). Another two thin

lead discs (nos 3288a and 3288b: RFs 3656 and 3766) may have functioned as mensuration weights or counters.

The form of the suspension weight (no. 3279; RF 3884; FIG. 11.3; PL. 13.5) recovered from a mid 10th-century dump (3891), suggests use with a steelyard, probably to measure commodities other than metal. It is thought, however, that steelyards were common in Roman Britain, and not used subsequently until the 13th century (Cherry 1991, 47). If used with a steelyard, the actual weight of no. 3279 (RF 3884) would not have needed to conform to a particular standard, being used as a counter-balance on the scale-bearing arm, though it does compare well with two of the suggested 'standards' below. However, the iron loop has extensive, and the lead, moderate, corrosion, which will have caused a deviation from the original weight.

Kruse (1992, 78) stated that the distribution of known Late Saxon weights reflected the Yorkshire and East Anglian distribution shown by the balances. The location of Flixborough within Lincolnshire, may reflect a general eastern distribution of such finds. Excavations at Lincoln have also produced weights which may be of Late Saxon date, though none could conclusively be assigned to the period (*ibid.*).

The fact that the stratified mensuration weights at Flixborough were from the late 9th-century and later contexts, and that none occurs earlier, may indicate transition to a bullion-weight economy – possibly in reflection of Scandinavian influence and coin shortages. The silver ingot (no. 3289; RF 12198; FIG. 11.3; PL. 13.6) with a weight of 15.6g seems to point towards this, though unfortunately, it was unstratified. It is possible that the ingot may have been intended to weigh a specific amount.

Hinton (1996, 60) suggested that the increased use of weights from the 9th century may relate to differences in the mode of trade from this period onwards. He attributed the lack of weighing equipment prior to this period at *Hamwic* (Southampton) to coinage being accepted at face value, rather than being dependent on metal weight (*ibid.*, 100), and the possibility that Southampton merchants were dealing in commodities not requiring weighing.

The lead mensuration weights and silver ingot were checked against the three 'standards' used by Kruse (1992, Table 1): namely, a postulated Anglo-Saxon unit of 3.1g (suggested by Smith in 1923b), a Scandinavian unit of 4.07g and a Dublin unit (suggested by Wallace: 1987) of 4.43g (see FIG. 13.4 below). Scull (1990, 190) suggested that early Saxon weights may have used systems based on two standards with weights close to the inferred ideal weight standards of the Merovingian and Byzantine *tremisses*, with units of c.1.33g and c.1.52g, respectively. It was decided not to compare the Flixborough weights with these, as their light weight would allow so small a deviation from the 'standard' by which to judge the 'fit'.

Based on the deviation from the standards, four of the weights showed close correlation to the Anglo-Saxon, one to the Scandinavian, and two to the Dublin standard. Close correlation was considered to be within 0.5g of the

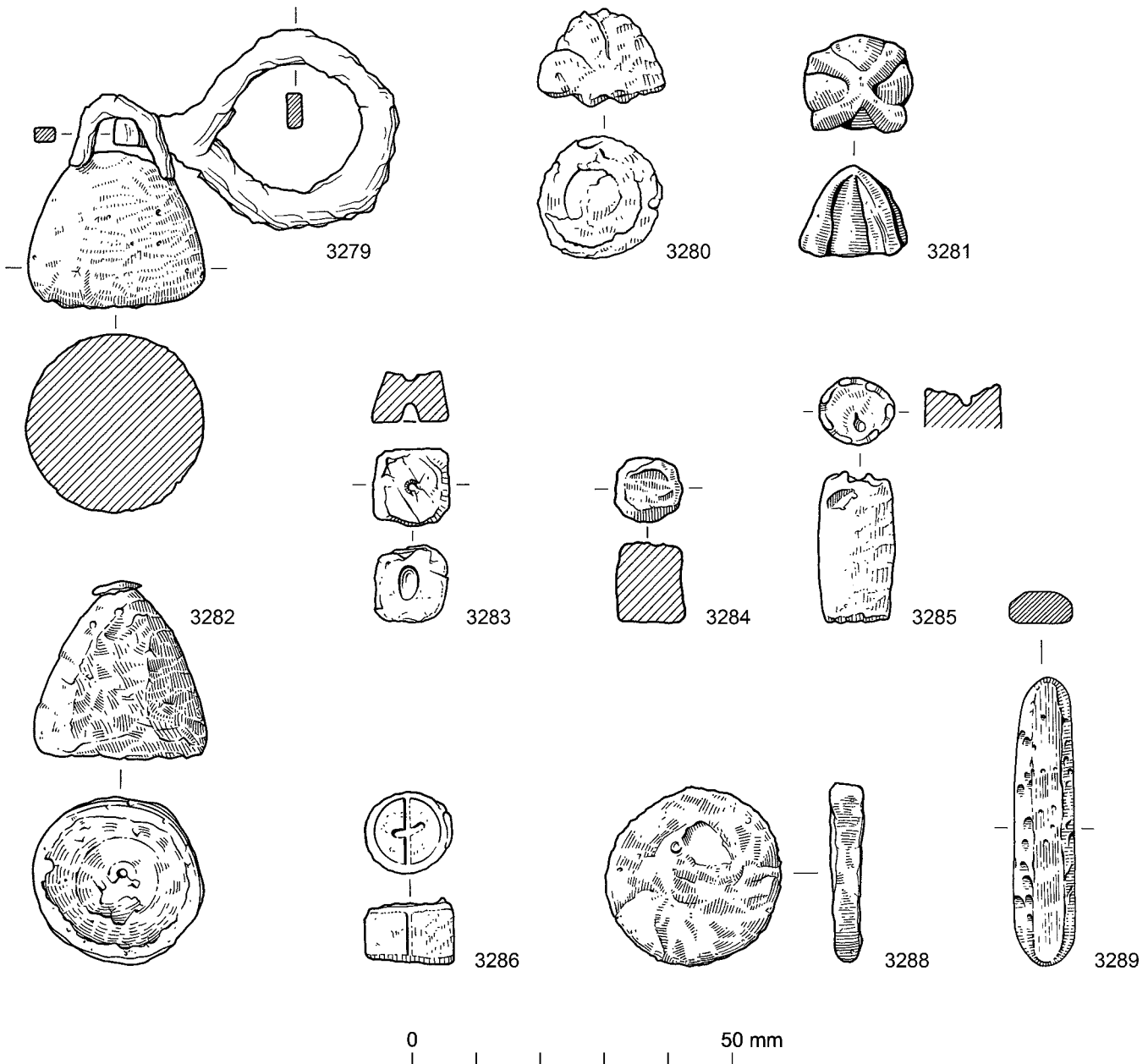


FIG. 13.3. Lead and lead alloy mensuration weights, and a silver ingot. Scale 1:1.

standards and their multiples. There was some overlap with the weight of 24.6g (no. 3285; RF 7957), where 8x the Anglo-Saxon standard is equivalent to the Scandinavian system of truncated sphere weights in units of c.24g (Kruse 1988). Kruse has used Neilsen's figure of 24.4 ± 0.8 g to obtain a unit of 4.07 grams for comparison (Neilsen 1983).

Catalogue of mensuration weights (FIG. 13.3; PLS 13.5–13.6)

3279 Suspension weight

Form: Conical, cast lead weight with slightly indented base,

bearing an iron suspension loop at the apex. Connected to the loop is an annular iron link with either a hooked or looped attachment.

Size: Basal Diam. 30mm, Ht of weight 25mm. Loop: Ht c.12mm, W.c.11mm, Th.c.3mm. Complete link: Diam. 32.5mm, W.of link c.10.5mm, Th. of link c.3.5mm. Overall Wt 133.2g. (FIG. 13.3; PL. 13.5)

RF 3884, Context 3891, Phase 6ii.

3280 Weight

Form: Miscast conical, flat-based object. Flash or casting slag adheres to base. A nick on top, and a protuberance on one side also apparently represent casting flaws.

Size: Diam. 19mm, Ht 13.5mm. Wt 23.2g. (FIG. 13.3)

Condition	Type	Phase	RF No.	Weight (g)	X base unit	3.1 unit	4.07 unit	4.43 unit
NS	Drum-shaped	u/s	14242	4	x1 / x1 / x1	+0.9	+0.7	+0.43
G	Truncated pyramid	u/s	169	6.3	x2 / x2 / x1	-0.1	+1.84	-1.87
G	Drum-shaped	5a–6	3727	10.8	x3 / x3 / x2	-1.5	+1.41	-1.94
NS	Conical	u/s	14241	14	x5 / x3 / x3	+1.5	+1.22	-1.7
G	Drum-shaped	u/s	10952	17.1	x6 / x4 / x4	+1.5	-0.82	+0.62
F	Conical	7+	168	23.2	x7 / x6 / x5	-1.5	+1.22	-1.7
G	Drum-shaped	u/s	7957	24.6	x8 / x6 / x6	+0.2	-0.18	+1.98
NS	Conical	u/s	14243	100	x32 / x25 / 23	-0.8	+1.75	+1.89
F	Suspension	6	3884	133.2	x43 / x33 / 30	+0.1	+1.11	-0.3
G	Silver ingot	u/s	12198	15.6	x5 / x4 / x4	-0.1	+0.68	+2.12

Key:

G = Good condition (Very little or no corrosion products)

F = Fair (Moderate corrosion)

NS = Not seen

FIG. 13.4. Comparison of weights and the silver ingot with postulated units (after Kruse, 1992).

- RF 168, Context 1, Topsoil.
- 3281 Weight
Form: Conical, cast, with a flat base and decorated with a raised cross with the centre at the apex. The cross may either represent the division of the weight into 4 units, or it may have been used as a gaming piece.
Size: Diam. 15mm, Ht. 16mm. Wt. 14g. (FIG. 13.3)
RF 14241, Unstratified. Metal-detected.
- 3282 Weight
Form: Conical, cast, with a flat base.
Size: Diam. 27mm, Ht. 32mm. Wt. 100g. (FIG. 13.3)
RF 14243, Unstratified. Metal-detected.
- 3283 Weight
Form: Truncated pyramid, slightly tapered from bottom to top. The pyramid may have originally been taller, but subject to subsequent adaptation to a different required weight. Bears a cavity (L.4.5mm, Depth 3mm) in base, and a small rough dot on the top.
Size: L.12mm, Max. W.11mm, Ht. 11.5mm. Wt. 6.3g. (FIG. 13.3)
RF 169, Context 1, Topsoil.
- 3284 Weight
Form: Drum-shaped, flat-based casting, very slightly waisted at mid-point. Possibly lightly trimmed on top, well preserved.
Size: Max. Diam. 11mm, Ht. 11.5mm. Wt. 10.8g. (FIG. 13.3; PL. 13.6)
RF 3727, Context 3610, Phase 6ii.
- 3285 Weight
Form: Drum-shaped, flat-based casting, slightly expanded at mid-point. Has an indentation in the 'base', and a small depression on the 'top'.
Size: L.23mm, Max. Diam. 12.5mm. Wt. 24.6g. (FIG. 13.3)
RF 7957, Area C east, Unstratified.
- 3286 Weight
Form: Drum-shaped flat-based casting. Base bears a thin ?inscribed circumferential line c.1.5mm from outer edge, and another extends across the diameter of the top, dividing it into two equal halves. This continues, slightly offset, up one side of the object and possibly indicates that the weight represents two units of measurement. Smoothed by wear on sides and top.
Size: Basal Diam. 9.5mm. Top Diam. 8.5mm, Ht. 10mm. Wt. 17.1g. (FIG. 13.3)
RF 10952, Unstratified
- 3287 Weight
Form: Drum-shaped. The base bears a hollow, probably as a result of weight adjustment
Size: Diam. 9mm, Ht. 9mm. Wt. 4g.
RF 14242, Unstratified. Metal-detected. Not illustrated.
- 3288 Weight
Form: Disc. Plain, bearing a slightly rough appearance.
Size: Diam. 28mm, Th.4mm. Estimated weight c.25g. (FIG. 13.3)
RF 14101, Unstratified. Metal-detected.
- 3288a Counter or weight
Form: Sub-oval, flat.
Size: L.15.5mm, Max. W.15mm, Th.1mm. Wt. 1.3g. Not illustrated.
RF 3656, Context 3597, Phase 5b.
- 3288b Counter or weight
Form: Oval piece of sheet, with a V-shaped fragment missing due to having been bent and recently re-flattened.
Size: L.20.5mm, W.19mm, Th.1mm. Wt. 2.5g. Not illustrated.
RF 3766, Area C, Unstratified.
- 3289 Silver Ingot
Form: 'Finger ingot', elongated oval shape, with a flat base and chamfered top. Several faces are smooth – probably cast in an open mould.
L.44mm, W.9mm, Th.5mm. Wt. 15.6g. (FIG. 13.3; PL. 13.6).
RF 12198, Unstratified.

14 Prehistoric, Romano-British and High Medieval Remains

Lisa M. Wastling, Peter Makey, Peter Didsbury, Bryan Sitch, Nicola Rogers, Patrick Ottaway and Marion M. Archibald
with contributions by Brenda Dickinson, Geoff Gaunt and Kay Hartley

Chs 1–13 have examined the evidence for activity at this site between the 7th and the 11th centuries. This chapter examines the material evidence for all other activity at this multi-period site.

The earliest artefactual material comprises an assemblage of flints, ranging in date from the Mesolithic to the Early Bronze Age. Iron Age activity is attested by finds of hand-made pottery and sling-shots.

The earliest structural activity on the site is represented by some probable later Roman deposits and cut features (see Volume 1, Chs 3 and 4). Not only was a small amount of Roman material associated directly with these, but the excavations also yielded a substantial collection of Roman coins, pottery, ceramic building materials, a penannular brooch, a jet pin, and fragments of worked stone, in later contexts; there is also a fragment of tessera (see Ch. 2.1, p.108. no. 947). Whilst some of these finds from later contexts, along with unstratified material, may relate directly to the Roman occupation of this site, there is also material present which has clearly been brought onto the site from elsewhere – e.g. the possible fragment of a stone altar and the tessera, which have probably been introduced onto the site with building materials robbed from a nearby higher-status Roman site, such as could be found locally at Dragonby or Winteringham.

Medieval and later activity is represented by a small collection of pottery, coins, metalwork and a stone roofing tile.

14.1 Prehistoric remains

Small quantities of prehistoric worked flint were recovered from most of the areas examined, indicating some form of exploitation of this ridge at intervals between the Mesolithic and the Beaker period: though certainly noteworthy, the occurrence of Mesolithic material on this site is by no means unique for the area. Later evaluations in 1997 on an area to the north demonstrated that there had also been extensive Iron Age activity on the same ridge: this has helped to put some of the residual Iron Age material from the 1989–91 excavations into context. The residual Romano-British material recovered amongst the Anglo-Saxon settlement remains also seems to be largely derived from the near vicinity of the excavated site; whilst the 12th- to 14th/15th-century artefacts are likely to reflect peripheral activity at the western extremity of the settlement or settlement foci comprising North Conesby (Loveluck and Atkinson, Volume 1, Ch. 7; Loveluck, Volume 4, Ch. 2).

14.1.1 Prehistoric lithic material

by Peter Makey

Note: the term cortication is used throughout this report to identify the natural discoloration of a flint's surface resultant from the internal re-formation of cortex on a struck surface. Care must be taken to avoid confusion with the term cortex, which is used for fully formed cortex (i.e. a flint nodule's 'skin'). Patination is taken to imply an often waxy discolouration of a flint caused by external resilification (cf. Shepherd 1971, 117). Areas where lithic remains were recovered are referred to by 'site area' (see Loveluck, Volume 1, Ch. 2, Fig. 2.3).

Introduction

The excavation produced a total of 95 (567g) pieces of prehistoric struck flint. Despite the residual nature of the assemblage, only 23 pieces (24%) exhibit signs of breakage. Eight pieces of flint were originally allocated recorded finds (RF) numbers, but have been catalogued as natural and have been subsequently discarded.

A large proportion of the stratified material derives from the fills of post-holes.

The assemblage composition, character and phases of deposition are given in FIGS 14.1 to 14.4, hence they are not individually catalogued.

ASSEMBLAGE STATE AND DISTRIBUTION

A markedly high proportion (24%: 23 pieces) of the material is in a fresh state that does not appear consistent with its contextual residuality. Some of the freshest-looking material comes from unstratified contexts.

Forty percent of the material (38 pieces) exhibits traces of cortication to varying degrees. There is some disparity in the degree to which different typological forms have been corticated. This is most notable with regard to the blades and bladelets, of which respectively four (80%) and eight (80%) pieces exhibit this trait; compared with 14 (46.6%) of the flakes. The blades and bladelets are also the most corticated pieces in the assemblage; cortication tends to be extensive and light grey to white in colour. Only three of the scrapers (25%) exhibit this trait.

Major movement of archaeological deposits is reflected in the distribution and state of the lithic assemblage.

RAW MATERIAL, REDUCTION TECHNOLOGY AND SEQUENCE

Most of the struck pieces have been manufactured on flint that appears to have been derived from the local gravels or boulder clay. The flint is predominately light olive-grey to olive-grey in colour (*Munsell* 5Y 4/1–5Y 6/1) and, where present, the cortex is of a smooth brownish pebble variety. Two of the chunks (RFs 14361 and 14362) may have been obtained from local estuarine or beach sources. A single, yellowish-grey (*Munsell* 5Y 8/1) flake is the only piece that does not appear to have come from the above sources: this piece looks consistent with material found in small quantities in the lower chalk of the Yorkshire and Lincolnshire Wolds.

The majority of the struck pieces can be assumed to have been knapped via the application of hard hammer technique. A hard hammer-stone was recovered (RF 14279) from area E (no. 3290, below).

An unstratified discoidal core (RF 1954) from area T has re-flaked cortical facets.

More than 50% of the assemblage comes from tertiary stages of lithic reduction; flints from primary reduction stages are virtually absent. It is probable that initial lithic reduction was carried out at the site of raw material procurement.

TRAITS

Most of the retouched implements have been moderately to heavily used – particularly the scrapers; however, about one-sixth of the un-retouched pieces exhibit traces of edge attrition, consistent with utilisation. Two un-retouched

Flint ID	Total No.	No. Broken	Wt. (g.)
Cores	7	1	107.9
Core-rejuvenation flakes	1	NA	11.8
Chunks	11	NA	150.7
Flakes	30	6	84.5
Spalls	1	NA	0.1
Blades	5	1	15
Bladelets	10	5	11.4
Utilised			
Edge-utilised flakes	2	1	4.7
Edge-utilised blades	1	1	2.7
Retouched			
Miscellaneous retouched	6	NA	85.6
Edge-retouched flakes	1	NA	14.1
Serrated-edged blades	1	1	2.2
Backed blades	2	2	2.2
Microliths	2	NA	0.3
Arrowheads: Leaf	1	1	1
Piercers / Points	2	1	16.1
Scrapers	12	3	56.7
TOTALS = 95		23	567

FIG. 14.1. Composition of the combined excavated and unstratified flint assemblage.

flakes (RFs 3550, 14378) and a blade (RF 13344) have been utilised to such an extent that the use wear resembles intentional retouch.

Traces of burning are present on only nine (9.5%) of the pieces. The distribution of this trait is uneven, but it is notable that five of the burnt pieces are from site area E, although there was no correlation with specific feature types. The burnt material deposited in area E (the shallow valley leading into the centre of the excavated area) is consistent with material that has been in or near a fire.

The flints

CHUNKS

The non-bulbar component of the flint assemblage is proportionally high, being in the ratio of *c.*1: 7.6.

Three of the chunks have been rolled, and all are of olive-grey flint. Eight pieces (*c.*73%) retain cortex and represent secondary stages of lithic reduction.

FLAKES, SPALLS, BLADES AND BLADELETS

Although there are too few intact pieces in the assemblage for any useful statistical analysis to be conducted, some basic traits can be discerned. The breadth: length ratios of the debitage is summarised in FIG. 14.3. Only 20% of the flint flakes are broken. Forms vary, but most are squat and semi-regular with lengths predominately in the 9–23mm range, and breadths in the 10–26mm range. Striking platforms are predominately single-flaked and uncorticated. Over 58% (14) of the intact pieces are from tertiary stages of lithic reduction. There is no apparent size differentiation between corticated and uncorticated flakes. The assemblage contains only one piece (RF 13486) that has been classified as a spall (here defined as a flake of less than 10mm in length).

For recording purposes, the blades have been divided into blades and bladelets, following the criteria defined by Tixier (1974). Bladelets are here defined as blade-like pieces with a length of less than 50mm and a width of less than 12mm. The length should typically be more than twice that of the width.

Half of the bladelets are broken, yet breakage has occurred in only one (20%) of the blades. Crested forms predominate in both the blades and bladelets – 10 pieces being single-crested, and three being double-crested. Most specimens are fine, with almost parallel sides. Of the intact blades and bladelets, only one example retains any trace of cortex. There was a slightly higher incidence

of bladelets being recovered from post-holes than from other contexts.

CORES AND CORE-REJUVENATION FLAKES (FIGS 14.2 TO 14.4) The Hurst Fen (Suffolk) system (J. G. D. Clark *et al.* 1960) has been used to classify the cores. Seven cores are present in the assemblage: six are intact, the remaining fragment is unclassifiable. The pieces are in varying states of freshness, and despite the fact that three of the cores come from post-holes, there is no discernible spatial patterning to their distribution. Their incidence is given in FIGS 14.2 to 14.4, and the typological forms are set out below.

Dimensions vary, with maximum lengths between 26 and 39mm, and maximum breadths in the 21 to 33mm range. Weights range from 8 to 24g, with the mean average being 15g. All examples exhibit flake removals: these are typically small and squat, being in the 20 × 10mm range. The average number of removals is nine, with most cores appearing to have been worked to exhaustion. Two of the cores (class B1, RF 11665, and class A2, RF 14370) possess a very light degree of light grey cortex, and the unstratified discoidal core has a dense white cortication. The assemblage contains only one core-rejuvenation flake (RF 1636, context 1449): this is a burnt, chunky cortical removal that has been struck down the face of a core, and retains traces of five small flake removals.

UTILISED FLAKES AND BLADES

Two flakes (RFs 3550, 14378) and one blade (RF 13344) possess a higher than usual degree of edge attrition, that is consistent with the pieces having been used as knives.

RETOUCHED IMPLEMENTS

The assemblage includes six pieces that possess miscellaneous retouch that cannot be classified. Five were manufactured on flakes, and one (RF 14377) on a chunk. Two of these implements (one flake, one chunk) were manufactured on thermal removals. One retouched flake (RF 3175) resembles the initial stages in the production of an arrowhead; it is likely that this piece represents an abortive attempt to produce a leaf-shaped arrowhead.

THE EDGE-RETOUCHED FLAKE

The sole edge-retouched flake (RF 5328) came from dump deposit 3891. This piece is a heavily damaged, plunging secondary flake, with a trimmed platform and an unretouched convex distal end. It resembles a long end-scraper in form, although the retouch is on the right-hand margin. This retouch is crude, irregular and minimally invasive.

A2	X	1	Single platform with flakes removed part of way round.	Corticated light grey.
B1	X	1	Two parallel, opposed platforms on the same face.	Corticated light grey.
B2	X	1	Two opposed platforms, one at an oblique angle.	
C	X	1	Four platforms in two opposed sets.	
E	X	1	Keeled, with three platforms.	
Discoidal	X	1	Flat.	Dense white cortication.
Unclassifiable	X	1	Fragment.	

Flint type	Total No.	No. Broken	Weight (g.)	Phase						
				0	2 – 3bi	3bi – 5a	5a – 6ii	6ii – 6iii	6iii – 7	
Cores	7	1	107.9	2	1	2	2			
Core-rejuvenation flakes	1	NA	11.8					1		
Chunks	11	NA	150.7		2	3	3	2	1	
Flakes	30	6	84.5	3	2	1	16	5	3	
Spalls	1	NA	0.1			1				
Blades	5	1	15	1		2	1	1		
Bladelets	10	5	11.4	3		2	4	1		
UTILISED										
Edge-utilised flakes	2	1	4.7			1		1		
Edge-utilised blades	1	1	2.7	1						
RETOUCHED										
Miscellaneous retouched	6	NA	85.6	1		2	1	2		
Edge-retouched flakes	1	NA	14.1				1			
Serrated-edged blades	1	1	2.2			1				
Backed-blades	2	2	2.2			1			1	
Microoliths	2	NA	0.3			1			1	
Arrowheads: Leaf	1	1	1	1						
Piercers / Points	2	1	16.1		1		1			
Scrapers	12	3	56.7	1	2	4	4	1		
TOTAL = 95		23	567	13	8	21	33	14	6	

FIG. 14. 2. Flint assemblage composition and incidence by phase

Breadth: Length ratios of all intact flakes, blades & bladelets.

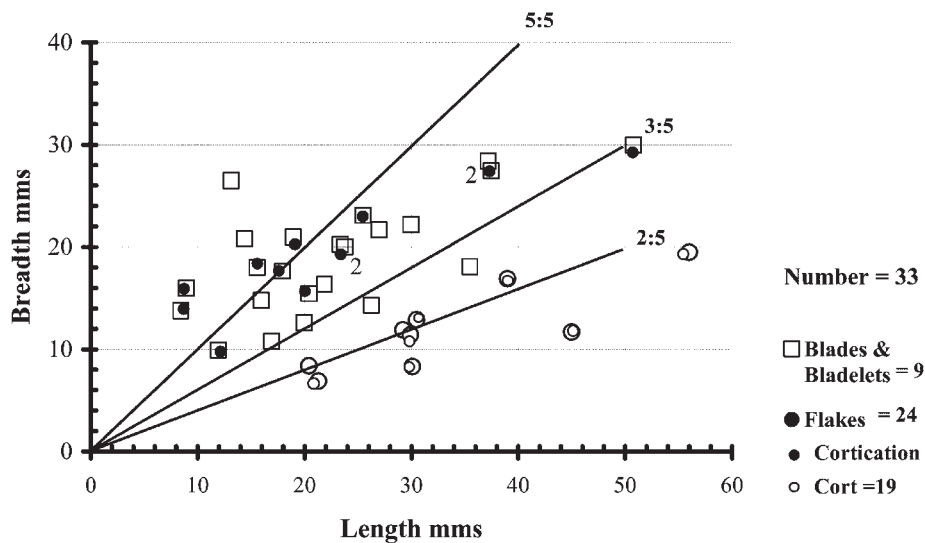


FIG. 14.3. Breadth to length ratios of flint debitage.

THE SERRATED-EDGED BLADE

A fragmentary, double-crested, serrated-edged blade (RF 4181) was recovered from the fill of a post-hole (context 4177). The distal end of the piece has been snapped after loss. The implement has received backing retouch on its right-hand side, and has been serrated on its left-hand margin. These serrations consist of 12 very fine teeth of 1mm depth and 1mm breadth, which are slightly abraded. It is probable that this implement has been heavily used.

MICROLITHS

The microliths comprise a scalene triangle (RF 1416) from a post-pad (context 1293) in Area E, and an edge-blunted point of rod form (RF 7215); the latter example came from the fill (context 7210) of a post-hole in area D. The scalene triangle has been manufactured in fine-grained light olive-brown (*Munsell* 5Y 5/6) till flint. The edge-blunted point was manufactured from fine-grained, olive-grey (*Munsell* 5Y 4/1) till flint. Neither of the pieces is corticated, and both are in a markedly fresh state. They are consistent with the microlithic assemblages of the later Mesolithic; regionally, many microlithic assemblages are known, of which Risby Warren is the most notable (Riley 1978).

Microliths similar to the Flixborough examples are also known from local assemblages dominated by non-geometric forms: for example, the site at Hall Hill, West Keal (May 1976, 35, fig. 18) contains comparable pieces, although the majority are non-geometric forms. Jeffery May (*ibid.*) has contrasted the Hall Hill material with the assemblage from Sheffield's Hill, near Scunthorpe: on the basis of their smaller forms, he proposed a date around the 6th millennium bc for these local sites. Nationally,

geometric assemblages tend to be of mid 7th millennium bc date (Jacobi 1976); hence, a mid 7th to 6th millennium bc date would appear to be probable for the Flixborough examples.

Backed-blades

THE ARROWHEAD

A single arrowhead is represented by a slender basal fragment of an unstratified, almost kite-shaped leaf type of Green's (1980) size 3, form Cu (RF 50009). The piece has been manufactured on a fine-grained olive-grey till flint (*Munsell* 5Y 4/1); its breakage appears to be post-depositional. Regionally, this is a middle/early later Neolithic form, slightly larger examples of which occur with burials of the Duggleby phase (Green 1980, 85) c.2700–2150 bc (Manby 1988, 38). A leaf-shaped example of similar size, though slightly less pointed form, is known from the nearby Neolithic site of Normanby Park (Riley 1973, 59, fig. 24).

PIERCERS AND POINTS

There are two examples of points/piersers in the assemblage (RFs 6476 and 13545). One example (RF 13545) is formed by bi-lateral retouch of a broad spurred flake, and was found in the fill of a pit (context 12243) in site area F; the other example came from a layer in area B, and is a broken piece of sub-triangular form. This latter piece possesses a fine straight, bifacial scalar retouch along one of its lateral margins, and a right-angle formed by the conjunction of this and an area of straight transverse retouch. The opposed lateral margin has abrupt, slightly convergent, convex retouch; the convergence appears to be forming

a point, but this has been snapped. This implement bears some similarity to a chisel arrowhead, but the striking edge would appear to be too blunted for such a use. The intact example (RF 13545) possesses heavy macroscopic traces of use, whereas the broken example possesses micro-wear. These are probably of later Neolithic or Early Bronze Age date – a period which is poorly represented in the published flint assemblages of North Lincolnshire.

SCRAPERS (FIGS 14.2 TO 14.4)

The scraper assemblage contains 12 examples of a variety of forms. Their morphological traits are summarised in FIG. 14.4, and their overall distributions in FIGS 14.2 and 14.3.

Most are small, with lengths ranging from 16 to 40mm, and with the average being 24–25mm. Breadths range from 16–36mm with no preferred breadth, although the median average is c.21mm. The preferred breadth : length ratio lies in the 4:5 to 6:5 range. Their thickness varies from 5 to 12mm. The only scraper showing traces of platform (butt) preparation (RF 4713, context 2722) is a lightly corticated extended end-scraper from area A/B. Primary flake edge angles vary, and all examples exhibit traces of utilisation.

Five of the 12 scrapers (c.42%) were found in post-holes. Four of these came from one post-hole (context 2127, RFs 14368, 14375, 14376) in area F: these comprised two unclassifiable forms (one of which was fragmentary), plus one lightly corticated example that had been retouched on both ends and its right-hand margins, and one that had been retouched along both lateral margins. A small extended end-scraper (RF 7254) from a wall foundation (context 1731) in area B was of ‘button’ form, and of a type that is most frequently found in the region’s Beaker assemblages.

Some of the smaller scrapers are consistent with

examples from Mesolithic and Beaker sites. Nationally, the relatively small dimensions of these scrapers compare favourably with Beaker-associated specimens from beneath round barrows at Chippenham, Cambridgeshire and Reffley Wood, King’s Lynn, Norfolk (Healy 1984, 10). Regionally, they are of notably smaller dimensions than the material from Normanby Park (Riley 1973), and compare favourably with possible Beaker examples from Risby Warren, Area 10 (Riley 1978, 10).

14.1.2 The hammer stone

by Lisa M. Wastling

A hammer stone was recovered from 10th-century dump 3730. This object appears to be the result of the *ad hoc* use of a burnt stone, possibly originally from the edge of a hearth.

Given the presence of the admittedly small but constant element of Romano-British and Iron Age material in the area of excavation, this is probably a residual find.

Two hammer stones were found in late Saxon and early Medieval deposits during the excavations at Cheddar (Rahtz, 1979, 236), though they too are potentially residual.

Catalogue

Lithological identification by Geoff Gaunt

3290 Hammer stone.

Material: Sandstone, Upper Carboniferous or Middle Jurassic. Erratic.

Form: Oval, burnt and cracked with impact scars at both ends, post-heating.

Size: L.70mm, Max. W.44mm. Max. Th.42mm [Not illustrated.]

RF 14279, Context 3730, Phase 6ii.

Scraper class	Total Number	Breadth : Length Ratios (intact scrapers = 9)									Reduction	
		3:5 – 4:5			4:5 – 5:5			5:5 – 6:5			S = Secondary	
	(Broken)										T = Tertiary	
End	0 (2)										Butt type	
End, extended	2					T-D	*	S-SF			D = Dihedral	
End & side, right	1				S-SF			S-SH			SF = Single flake	
End, double & side, right	1									S	*	SH = Shattered
Side, right	1										Cortication	
Side, double	1	T									* = Corticated	
Discoidal	1				T-SF						Traits	
Unclassifiable	2 (1)				S		T	*			Intact scrapers	
	12	1			3			2			1	
Primary edge angles	55	60	65	70	75	80	85	90	60–75	70–85		
Intact & broken scrapers. N=12	1	2	0	2	0	2	1	2	1	1		

FIG. 14.4. Scraper typological form.

14.1.3 Prehistoric pottery

by Peter Didsbury

A total of 10 sherds of prehistoric pottery, weighing 587 grams, was submitted for examination. All this material was apparently extracted from the context sequence at an early stage of the post-excavation process and bagged together as 'Vessel 20' (drawing no. 344), though it is now clear that an estimated three vessels are present. Much of the material is unmarked or marked 'U/S', and there is a high degree of discrepancy between the markings on sherds and those on the packaging. The individual vessels are described below.

Catalogue (none illustrated)

3291 Seven body and base sherds, weighing 499 grams, from a large jar with a basal diameter perhaps as large as c.200mm. Average wall thickness is c.15mm. The fabric is hard-fired and tempered with abundant fine sand, together with sparse larger rock fragments, typically angular light-coloured flint, up to 4mm in size. The core is very dark grey and the surfaces are reddish-brown, well-burnished on the exterior and wiped smooth on the interior. Multi-directional wipe marks and *striae* are visible on the interior, as is the occasional grass or straw impression. The vessel appears to have been hand-built, though a slow wheel may have been involved in its manufacture. Two sherds have encircling decoration formed by broad grooves separated by ridges or cordons. Neither sherd represents the full extent of the grooved zone(s).

The general fabric and decorative characteristics of this vessel suggest a Late Iron Age date as most appropriate, though the small number of non-joining sherds involved, and the difficulty of orienting them correctly, makes it difficult to cite close published parallels. Late pre-Roman Iron Age vessels from Dragonby would seem to afford the best parallels, perhaps some of the large grooved and cordoned vessels of Type Groups 15 and 18 at that site (May 1996, 415–416 and fig. 19.7). Vessels accorded to these type groups appear through much of the ceramic sequence at Dragonby and continue into the early Roman period.

(Marked sherds come from contexts 5503 and 5862 and U/S. Unfortunately, some of them were in packaging marked 5864).

3292 Two body sherds, weighing 83 grams. These are body sherds similar in all respects to those described above, except inasmuch as they have a very dark grey interior surface and variable dark grey, reddish-brown and buff exterior.

(One sherd is unmarked, the other marked 5862. Their packaging bears the number 5319).

- [Un-numbered in the catalogue sequence]:. One sherd, weighing 5 grams. This is a wall sherd from a hand-built vessel, 15mm thick. The fracture shows a fully reduced interior and a light red exterior, these zones being of approximately equal thickness. The fabric is fairly hard-fired, with sparse to moderate amounts of mixed and ill-sorted stone temper, generally angular and dark-coloured, and up to c. 4mm in size. A Later Bronze Age or earlier Iron Age date might be appropriate.
(The sherd is unmarked).

Sherds have been allocated to contexts wherever possible above. It should be noted that this group of material also contained empty packaging marked with the number 11711.

14.1.4 The sling-shots

by Lisa M. Wastling

Four fired-clay sling-shots were found during the excavation. One is of ovoid form, two are sub-spherical and the fourth is incomplete (though probably also sub-spherical). All four have small chips missing from their surfaces; whether this is the result of utilisation, or post-depositional damage, is not apparent. The complete examples vary in weight between 45 and 61g, and appear more consistent in size than weight – an observation also made by Poole at Danebury (1984b, 398).

Fired clay sling-shots have been found on Iron Age and Romano-British settlements in the region. At Dragonby, extensive excavation produced 56 examples (Waddington and May 1996, 340), whilst single examples were found at Winterton and Old Winteringham (Stead 1976, 226–7). Three out of the four sling-shots at Flixborough are sub-spherical. Whilst Greep (1987) appears sceptical of this form, examples have also been found at Dragonby (Elsdon and Barford 1996, fig. 13.10), and a possible example during excavation at Brough-on-Humber (Wacher 1969, fig. 47). For the distribution of sling-shots in Britain, see Greep (1987), and Elsdon and Barford (1996).

Slingers were commonly used in warfare in the Iron Age and early Roman period, and are portrayed on Trajan's Column in Rome (Greep 1987, 192). Caesar in his *De Bello Gallico* mentions that they were in use by his own forces, and that the Belgae used them to assault Bibracte in 57BC. According to Waddington and May (1996, 340), this is the only direct reference to sling-shot being used in Iron Age warfare.

Sling-shot of three different media have been found in Britain: stone, fired clay and lead. Greep (1987, 183) associated lead examples with military sites of the Roman period, whilst Waddington and May (1996, 340) noted that stone sling-shots appear to be more common on hillforts, and that fired-clay examples are associated with smaller or undefended settlements.

Eight stone sling-shots were recorded at Dragonby, in contrast to 56 clay shot (*ibid.*, 340); whilst 11 fired-clay sling-shots were recovered from the hillfort at Danebury (Poole 1984, 398), compared with over 12,000 sling stones (L. Brown *op. cit.*, 425).

At hillforts, stock-piling of suitable stones would have been necessary, in order to be prepared for attack, and it is these hoards of stones which have been recorded; whilst on small undefended settlements, stone shot would have been collected in lesser amounts, perhaps when needed. These occasional finds could be easily dismissed as a natural occurrence, and, therefore, are likely to be under-recorded; whereas fired-clay examples, easily recognisable as man-made artefacts, are likely to be retained.

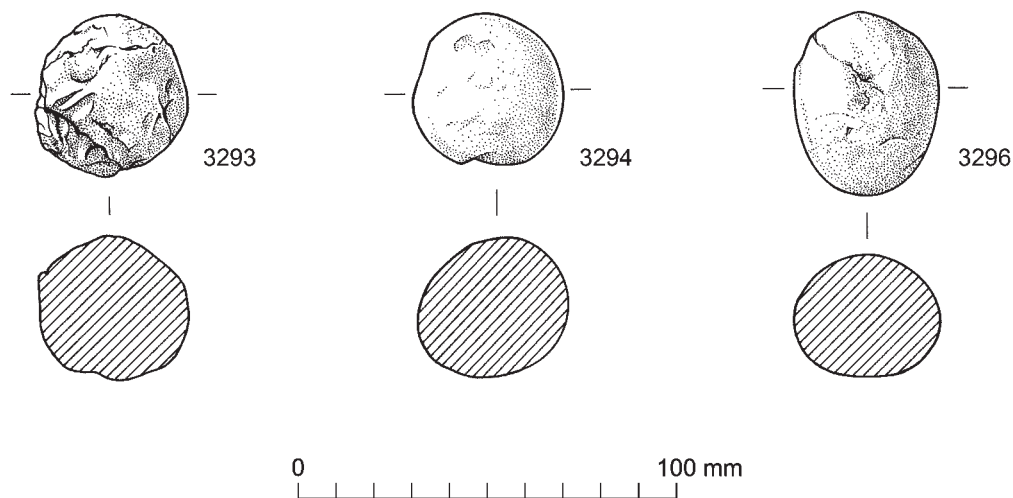


FIG. 14.5. Sling-shots. Scale 1:2

The use of the sling-shot at Flixborough need not be associated with warfare. The sling was a useful hunting weapon, and was possibly used for both game and wildfowl. It is certainly easier, and involves less manpower to manufacture clay sling-shot for hunting, than arrowheads – a factor that may have been taken into account, given the likely rate of arrow loss and breakage.

Ryder (1983, 737) mentions the use of slings in shepherding, to deter predators and to turn straying sheep back to the flock: and indeed they were used in this capacity until comparatively recently. They are mentioned, at least in literary terms, in early 17th century Spain. In *Don Quixote* (de Cervantes 1604: 1950 edition, 138) the shepherds used them against Don Quixote as he attacked their flock, having mistaken it for an army:

... they unbuckled their slings and began to salute his ears with stones the size of their fists.

Three of the Flixborough sling-shots were found in dump deposits of Phases 5a, 5b and 6ii, and the fourth in an occupation deposit of Phase 5a – with deposition dates ranging from the mid-9th to 11th century. It is likely that these sling-shots originated from reworked Iron Age deposits.

The majority of residual Iron Age and Romano-British pottery was also recovered from dump deposits: Iron Age features are now known to have existed within close proximity to the area of excavation. These were sealed by a layer of windblown sand in the same manner as the Anglo-Saxon phases of the excavated site (see Volumes 1 and 4).

Although the sling-shots are most likely to be of Iron Age date, there is a small possibility that they may have

been used during the Saxon phases of the site – though the author is unaware of any being found that can be securely dated to this period. The sling-shots recovered from a 10th- to 11th-century ditch fill at Cheddar were in an assemblage which also contained residual Roman material (Rahtz 1979, 72); whilst two examples from West Stow belong to the Iron Age phases of that excavation (West 1990, 60–1).

Catalogue and fabric description (FIG. 14.5)

All four sling-shots are of very similar fine fabric. The clay may have been worked specifically for the purpose of sling-shot manufacture, or may have been a by-product of pottery production. The differences in colour are due to their being open-fired on a bonfire, and receiving uneven heat. The method used for fabric description was based on that recommended for pottery fabric recording, outlined in Orton *et al.* (1993, 231–42).

Colour ranges from black, 2.5/N through to dark grey 10YR 4/1, with the occasional area of light yellowish-brown 10YR 6/4, or yellowish-brown 10YR 5/4

Hardness hard

Feel smooth

Texture fine to irregular

Inclusions abundant fine quartz sand. (Sparse grass/chaff observed in the broken section of RF 4605 may be an accidental inclusion.)

3293 Sling shot, ovoid. Complete. The surface is cracked, and a small area has a vesicular appearance due to heat. L.41mm; W.36mm; Wt.56g (FIG. 14.5) RF 3131, Context 3081, Phase 5b.

3294 Sling shot sub-spherical. Complete. L.38mm; W.34mm; Wt.45g (FIG. 14.5)

RF 4238, Context 3891, Phase 6ii

3295 Sling shot. Incomplete.

L.38mm; W.36mm; Wt.43g

RF 4605, Context 2773, Phase 5a.

3296 Sling shot. Complete, oval in shape, almost egg-shaped.

L.45mm; W.35mm; Th.31mm; Wt.61g (FIG. 14.5)

RF 8198, Context 6886, Phase 5a.

14.2 Romano-British remains

We have already seen that there is evidence for extensive Iron Age activity nearby along the Lincoln Edge and the windblown sand spurs, which have built up against it; however, rather more evidence of Romano-British date was found, including the first possible structural evidence for activity on and immediately adjacent to the excavated site.

The contexts from which Romano-British finds were recovered fall into two main categories. There are a small number of cut features and deposits from the site, which contained mainly 4th-century material (see Loveluck and Atkinson, Volume 1, Chs 3 and 4). This 4th-century material is residual in the earliest Anglo-Saxon occupation periods. From Period 3, and especially in Periods 4, 5 and 6 earlier Romano-British artefacts (dating from the 1st to 3rd centuries AD) were imported and discarded in refuse deposits in the excavated area, showing that in parts of the Anglo-Saxon settlement the inhabitants were disturbing earlier Romano-British remains (see Loveluck Volume 4, Ch. 3). The field to the east of the excavated area has also produced quantities of Romano-British finds which have been found in field-walking.

The presence of a reused fragment of a portable altar recovered from the excavated site, from a Phase 6iii deposit, suggests that at least some of this Romano-British material has been robbed from a reasonably high status site, such as a villa (e.g. Winteringham, or possibly Dragonby), in the area, and has been brought onto the site during the Anglo-Saxon period for reuse as building material. It is possible that the single tessera recovered from the site (cat. no. 947, this volume, Ch. 2.1, above) could also have been robbed from a nearby Roman mosaic, although it could equally be an import of the Mid to Late Anglo-Saxon period. It is also possible that other items of Romano-British date are present amongst finds from Saxon contexts (e.g. amongst the ironwork).

14.2.1 The Roman coins

by Bryan Stith

Twenty-three Roman coins found at Flixborough were examined and identified. Three of the coins date from the late 1st century/early 2nd century, three from the 3rd century and the rest (17) from the 4th century AD. All but three coins were firmly identified. The earliest coins are of the later 1st or early 2nd century AD, a commemorative denarius for Faustina I, wife of Antoninus Pius (AD 138–61), which was found fused together with another

denarius (unidentified because of concretion) and a denarius in the name of Julia Mamaea, mother of Severus Alexander (AD 222–35). Two later 3rd century coins demonstrate the deterioration in the silver content of the denarius in its subsequent incarnation as the double denarius or antoninianus. Both are issues of Tetricus I (AD 270–3), and the reverse legends COMES AVG and SPES AVG are common.

The bulk of the coins date from the 4th century AD. Starting with a reduced follis of Constantine I (as emperor) with the legend COMITIAVGGNN, there are common issues and contemporary copies of the House of Constantine such as URBS ROMA, GLORIA EXERCITUS, and CONSTANTINOPOLIS dating from the 330s and 340s AD, three fallen horseman copies of AD 354–64 (no. 3311, unusually has the Roman soldier standing on the left, not the right), a copy of an issue of Magnentius (AD 350–3), and common issues of the House of Valentinian, including GLORIA NOVI SAECVLI (Gratian), SECVRITAS REIPVBLICAE (Valens) and two GLORIA ROMANORVM issues of Valentinian of the 360s and 370s AD. The sequence comes to an end with a VICTORIA AVGGG issue of Arcadius of the period AD 388–402, one of the last issues to arrive in Roman Britain before the province was abandoned early in the 5th century AD. The dates given are the dates of minting, not the date of loss or deposition.

The Roman coins from Flixborough are similar to samples from other Romano-British sites. They comprise common issues and contemporary copies, with the exception of the two coins that were clearly part of a hoard. Otherwise the sample consists largely of coins that are for the most part of small module, low precious-metal content, very worn, and presumably were of low value, or contemporary copies. For the most part these must represent the coins that the owners could afford to lose, and it is likely that they entered the archaeological record as rubbish.

During the later 3rd and 4th centuries AD periodic coin reforms, suppression of the coinage of failed usurpers and the supply of high value coins that were inappropriate to the needs of the population in the province resulted in a rapid turnover of the coins in common currency and waves of copying (Boon 1974; Reece 1987, 20). The coins represented in the Flixborough sample are mostly from periods when coin losses were more frequent: radiates and radiate copies of the later 3rd century AD, Constantinian issues and contemporary copies of the 330s and 340s AD, fallen horseman copies of AD 354–64 and Valentinianic issues of AD 364–78. The Flixborough sample includes only two radiates – of Tetricus I of AD 270–3 – and the bulk of the coins are of the 4th century AD. Even the very worn examples of the later 1st/early 2nd century could have stayed in circulation into the 3rd century AD. The relative scarcity of coins prior to the 4th century, however, need not necessarily denote absence of occupation of the site at that time because of the small size of the sample, but the predominance of 4th-century coins may well be significant.

In order to demonstrate this point, the Flixborough coins were compared with samples of coins from other Romano-British sites in North Lincolnshire. The interpretation of Roman coinage from sites in Britain has a well-established methodology (Casey 1974; Reece 1987). Usually the results of the coin identifications are plotted on a graph, such as a coin histogram, or presented in a table. Accordingly the information from the Flixborough coins has been presented in tabular form (FIG. 14.6); the coin periods ranging from Claudius (AD 43–54) to Honorius and Arcadius (AD 388–402), following the coin periods developed by John Casey (1980). It must be stressed that the Flixborough sample is too small to carry out this exercise with anything like a claim to authority, but it does demonstrate in a limited way to what extent these coins follow the familiar pattern of coin losses from rural sites in Roman Britain. In order to show how Flixborough's sample relates to the local pattern of coin loss, the Flixborough results were plotted against those from other Romano-British sites in North Lincolnshire, namely Old Winteringham I and II and Winterton (FIG. 14.7) using the coin lists prepared by Peter Curnow (Curnow 1976). The data were converted into coin losses per 1000 coins to enable comparison of small samples like Flixborough with larger samples such as Old Winteringham I and II using the formula:

$$\frac{\text{coin losses per 1000}}{\text{per period}} = \frac{\text{no. of coins}}{\text{per period}} \times \frac{1000}{\text{total no. of coins}}$$

Allowing for the fact that the presence of a single coin in a small sample can give very high readings per 1000 coins, this exercise enables a number of points to be made. Prior to AD 260 when there is a marked increase in coin losses on most of the sites, only one site – Old Winteringham I – has high readings in the early 1st century AD, reflecting the site's strategic importance at a time when the Humber Estuary formed the northern frontier of the Roman Empire, and this was commented upon in the coin report (Curnow 1976). The other sites show an apparently random scatter of occasional coin losses during the two centuries between AD 43 and AD 260. In Period 18 (AD 260–73) Flixborough has the lowest readings of the four sites. Thereafter, Flixborough's pattern of coin loss is similar to those of Old Winteringham I and Winterton, although clearly a larger sample would make the comparison more valid statistically. The comparison shows that Old Winteringham II coin losses were very low during the 4th century, but the other three sites including Flixborough share a common profile, which is characterised by peaks and troughs, reflecting the vicissitudes of the Roman currency and repeated attempts at reform. The periods of broad similarity of coin loss are highlighted to make this clearer.

From this we can deduce that Flixborough's very small sample follows the local and national pattern of coin losses on Romano-British rural sites. Admittedly, later 3rd-century radiates were not as common as might have been expected, but coin losses were high in Periods

23 (AD 330–48), 24 (AD 348–64) and 25 (AD 364–78). This characteristic profile is very familiar nationally and can be demonstrated on numerous sites in the East Riding of Yorkshire to the north of the Humber (e.g. Stith 1998). Such a pattern of coin loss must reflect occupation of the site during the later 4th century AD. Absence of coin losses in particular periods such as Periods 19 (AD 273–86) and 26 (AD 378–88) merely confirms that the factors affecting these sites were inherent to the Roman currency and not site-specific. The relative scarcity of late 3rd-century AD radiates, however, could suggest abandonment or perhaps different usage of the site, but we need to make allowance for the very small size of the Flixborough sample. A larger sample might well prove to be more typical of the general pattern for rural sites.

Catalogue of Roman coins

- 3297 Copper alloy as, possibly of Trajan (AD 98–117). EW/EW. Concretion. Nice round flan.
Obv. Bust (r.). Small head in relation to size of flan.
Rev. Illegible because of concretion.
Diam. 25mm, Weight 6.17g
RF 5289, Context 3758, Phase 4ii.
- 3298 Commemorative issue of silver denarius of Faustina I (died AD 141), wife of Antoninus Pius (AD 138–161). W/W.
Obv. Female bust with top bun facing r.
DIVA FAVSTINA
Rev. Figure standing facing l. (much concretion)
Diam. 17mm, Weight 3.21g
RF 11865, Unstratified. Found attached to RF 12872
- 3299 Silver denarius with much concretion.
Obv. Male head r.
Rev. Figure (standing or seated?)
(M?)P...
Diam. 17mm, Weight 2.19g
RF 12872, Unstratified, Originally stuck together with no. 3298 (RF 11865).
- 3300 Incomplete silver denarius in the name of Julia Mamaea (died AD 235), mother of Severus Alexander (AD 222–35). SW/SW. Some concretion.
Obv. Female bust r.
IVLIAMA [MAEAAVG]...
Rev. Female figure stg (l.)
[VENV]SVICTRIX
Diam. 18mm, Weight 1.80g
As RIC 358
RF 765, Context 463, Phases 2–3bv.
- 3301 Copper alloy antoninianus of Tetricus I (AD 270–3). W/SW.
Obv. Radiate bust facing r.
[IMP...TETR]ICVSPFAVG
Rev. Female deity standing facing l. holding palm frond and right arm raised.
[COME]SAVG
Diam. 16mm, Weight 2.47g
RIC 56/57
RF 7236, Unstratified, Area C East.
- 3302 Copper alloy antoninianus of Tetricus I (AD 270–3). VW/VW. Thin flan.

Coin Period	Name	Dating	No. of Coins
0	Pre-Claudian	Pre AD 43	0
1	Claudian	AD 43–54	0
2	Neronian	AD 54–68	0
3	Flavian I	AD 69–81	0
4	Flavian II	AD 81–96	0
5	Trajanic	AD 96–117	1
6	Hadrianic	AD 117–38	0
7	Antonine I	AD 138–61	1
8	Antonine II	AD 161–80	1?
9	Antonine III	AD 180–92	0
10	Severan I	AD 193–217	0
11–17	Severan II	AD 217–60	1
18	Gallic Empire	AD 260–73	1 + 1c
19	Aurelianic	AD 273–86	0
20	Carausian	AD 286–96	0
21	Diocletianic	AD 294–317	1
22	Constantinian I	AD 317–30	0
23	Constantinian II	AD 330–48	2 + 3c
24	Constantinian III	AD 348–64	4c
25	Valentinianic	AD 364–78	4
26	Theodosian I	AD 378–88	0
27	Theodosian II	AD 388–402	1
Unidentified			2
Total			23

c=contemporary copies

FIG. 14.6 Chronological profile of the Roman coins from Flixborough (coin periods from Casey 1974, 1980).

Coin Period	Date	Flixborough	Old Witheringham I	Old Witheringham II	Winterton
0	Pre AD 43	0	27	0	10
1	AD 43–54	0	138	0	0
2	AD 54–64	0	166	0	0
3	AD 64–81	0	27	0	0
4	AD 81–96	0	27	7	10
5	AD 98–117	47	27	0	10
6	AD 117–38	0	54	0	20
7	AD 138–61	47	27	0	0
8	AD 161–80	47	0	0	0
9	AD 180–92	0	27	0	0
10	AD 193–217	0	27	7	0
11–17	AD 217–60	47	0	28	20
18	AD 260–73	47 + 47c	194 + 138c	190 + 56c	178 + 59c
19	AD 270–86	0	0	0	0
20	AD 286–96	0	0	14 + 7c	30
21	AD 296–317	47	0	7	10
22	AD 317–30	0	0	21	59
23	AD 330–48	95 + 141c	54	275 + 35c	218 + 30c
24	AD 348–64	188c	27	70 + 120c	69c
25	AD 364–78	188	0	120	198
26	AD 378–88	0	0	0	0
27	AD 388–402	47	0	28	10
Unidentified		95	27	14	69
Total		36	142	101	23

c=contemporary copies

FIG. 14.7 Chronological profile of Roman coin losses from sites in North Lincolnshire (results presented as coin losses per 1000 coins).

- Obv. Radiate draped bust facing r.
Rev. Spes standing facing l. holding hem of dress, flower in r. hand
Diam. 17mm, Weight 1.11g
Copy as RIC 130
RF 541, Context 535, Phase 6ii.
- 3303 Copper alloy reduced follis of Constantine I, struck AD 310–12. W/W.
Obv. Laureate cuirassed bust (r.)
CONSTANTINVS PFAVG
Rev. Sol standing facing l. wearing radiate crown
COMITI AVGGNN
Mm. * RIC (London) 153
PLN
Diam. 22mm, Weight 2.77g
RF 12782, Context 10772, Phases 2–4ii.
- 3304 Copper alloy contemporary copy of centenionalis of Constantine II as Caesar dating from AD 341–6.
Obv. Laureate cuirassed bust r.
[CONSTANTINVS]IVNNOBC
Rev. Two soldiers standing facing two standards
[GLOR IA]EXE[R CITVS]
Mm. ˘PLC Copy as RIC VII (Lyons) 249, struck AD 322
Diam. 15mm, Weight 1.74g
RF 895, Unstratified (Area A).
- 3305 Extremely worn contemporary copy of a Gloria Exercitus (1 standard) issue of the House of Constantine of the period AD 341–6.
Obv. Bust facing r.
Rev. two soldiers standing facing single(?) standard
Diam. 13mm, Weight 0.85g
RF 3405, Context 3107, Phase 4ii.
- 3306 Copper alloy centenionalis of Constantine I of AD 333–4, commemorating Rome. Struck on small flan. SW/W.
Obv. Helmeted bust of Roma (l.)
VRBS ROMA
Rev. Wolf and twins
Mm. _____
TRS RIC VII (Trier) 561
Diam. 15mm, Weight 1.97g
RF 1148, Context 1147, Phase 6iii.
- 3307 Copper alloy commemorative Urbs Roma issue of centenionalis of Constantine I struck AD 330–1. SW/SW.
Obv. Helmeted bust of Roma facing l.
[VRBS] ROMA
Rev. Wolf and twins
Mm. PLG as RIC VII (Lyons) 242, Diam. 17mm
Weight 2.31g (with concretion)
RF 12796, Unstratified.
- 3308 Copper alloy contemporary copy of Constantinopolis issue of Constantine I of AD 330–5, made c. AD 341–6. W/W.
Obv. Helmeted bust of Constantinople facing l.
Illiterate legend: CONS... OLIS (back to front)
Rev. Victory on prow holding shield
Mm. .PLC as RIC VII (Lyons) 246
Diam. 13mm, Weight 0.95g
RF 7234, Unstratified, Area C Middle.
- 3309 Copper alloy contemporary Fallen Horseman copy on large flan of date AD 354–364. SW/SW.
Obv. Crude pearl diademed bust facing r., illiterate legend
Rev. Soldier (r.) standing over fallen horseman (l.), hand raised in supplication, illiterate legend
Diam. 19mm, Weight 1.96g
RF 1980, Unstratified.
- 3310 Copper alloy contemporary Fallen Horseman copy of AD 354–364. W/W.
Obv. Diademed bust facing r.
[CONSTAN]TIVS[PFAVG]
Rev. Leg of Roman soldier r. standing over fallen horseman (l.)
[FELTEMP REPARATIO]
Mm. PLC copy as Late Roman Bronze Coinage II (Lyons) 253
Diam. 15mm, Weight 1.12g
RF 10614, Context 4 (Area B), surface of natural subsoil.
- 3311 Copper alloy Fallen Horseman copy of AD 354–364. W/W.
Obv. Crude bust facing r.
Rev. Crude matchstick Roman soldier standing (l.) attacking fallen horseman (r.)
Diam. 14mm, Weight 1.14g
FLX 93, RF 50016, Unstratified.
- 3312 Copper alloy contemporary copy of an issue of Magnentius (AD 350–3). W/W.
Obv. Crude male bust facing r., A behind head
DNM...PFAVG
Rev. Two victories standing facing holding shield with inscription
VOT V MVLX
[VICTORIAEDDNNAVGETCAE]
Diam. 17mm, Weight 1.45g
RF 13199, Unstratified.
- 3313 Copper alloy Gloria Novi Saeculi issue of Gratian (AD 364–78). W/SW.
Obv. Pearl-diademed bust facing r.
DN GRATIANVS AVGG AVG
Rev. Emperor standing facing looking l. holding chi-rho standard and shield
[GLOR]IANO VISAECVLI
Mm. TCON Late Roman Bronze Coinage II (Arles) 529
Diam. 18mm, Weight 2.02g
RF 2471, Context 2438, Phase 5b.
- 3314 Incomplete copper alloy Securitas Reipublicae issue probably of Valens (AD 364–78), struck AD 367–75. Thick flan. VW/VW.
Obv. Pearl-diademed, draped bust (r.)
[DNVALEN]SP[FAVG]
Rev. Victory facing l. holding wreath
SECVRITAS REIPVBLICAE
Mm. [OF I]
LVGP as Late Roman Bronze Coinage II (Lyons) 305
Diam. 17mm, Weight 2.49g
RF 3134, Context 3107, Phase 4ii.
- 3315 Copper alloy Gloria Romanorum issue of Valentinian (AD 364–7). W/W.
Obv. Pearl-diademed draped bust r.
DNVALENTINI ANSPFAVG
Rev. Emperor dragging kneeling captive and holding

standard

GLORIARO MANORVM

Mm. OF | I ? Mint-mark missing off edge of flan.

Diam. 18mm, Weight 1.78g

RF 42, Context 1, Topsoil.

- 3316 Copper alloy Gloria Romanorum issue of Valentinian of AD 364–7. SW/W.

Obv. Rosette diademed bust facing r.

DNVALENTINI ANVS[PFAVG]

Rev. Emperor dragging captive towards r. holding standard

GLORIA[RO MANORVM]

Mm. O | F | III ? (concretion, but probably LVG variation)

Diam. 18mm, Weight 2.4g

RF 6956, Context 6300, Phase 6iii–7.

- 3317 Copper alloy Victoria Augg issue of Arcadius (AD 383–408), struck AD 388–402. W/W.

Obv. Pearl-diademed draped bust r.

DNAR[CADIVS...]

Rev. Victory facing l. holding wreath

VIC[TORIA AVGGG]

Diam. 14mm, Weight 1.19g

RF 2865, Unstratified.

- 3318 Incomplete copper alloy contemporary copy on oval flan. W/W. Probably later 4th century AD.

Obv. Draped bust facing r.

...SAVG

Rev. Victory l. with wreath?

Diam. 12mm, Weight 0.59g

RF 12912, Unstratified.

- 3319 Small copper alloy coin, thick flan (c.1.5mm), probably later 4th century AD.

Obv. Bust facing right.

Rev. Possibly figure standing facing

RF 900, Unstratified.

14.2.2 The Romano-British pottery

by Peter Didsbury (with contributions by Brenda Dickinson, Kay Hartley, and Lisa M. Wastling)

Introduction and methodology

A total of 233 sherds of Romano-British pottery, weighing 3,342g and having an average sherd weight of 14.3g, was recovered during the excavations. Of this material, 10 sherds weighing 254g (c.5–10% of the total, according to the measure of quantification chosen) was unstratified. The material has a maximum possible date range from the late 1st century to the later 4th or early 5th century AD, and appears to be entirely residual within its contexts (see further below, *Discussion*).

In view of the absolute residuality of the material, the emphases in studying this assemblage were placed on:

1. Establishing the nature and date-range of the pottery, which presumably derives from settlement activity in the near vicinity.
2. Examining the chronological/spatial distribution of the pottery.
3. Examining the material for cross-contextual “joins”, in the interest of elucidating earth-movement across and

into the site.

The potential of the material for these purposes was particularly constrained by small size and lack of diagnostic sherds (there were, for example, only 20 rim sherds).

Material was quantified by number and weight of sherds, and a computerised data-base constructed, relating the incidence of Romano-British material to the main categories of stratigraphic and other site information (available for scrutiny in the site archive). In the database, fabrics are referred to by the same alpha-numeric codes employed for the present author’s report on the pottery from Glebe Farm, Barton-upon-Humber (Didsbury, unpublished). In the catalogue below, a simplified series of fabric codes is employed, as follows:

GW greyware

CC colour-coated ware

WW white ware

The remainder of this report consists of a discursive treatment of the main findings, followed by full catalogues of the samian and mortaria, with a selective catalogue of the coarsewares. Taphonomic and distributional aspects of the assemblage are touched upon only briefly below, but have been used to inform discussions elsewhere in Volumes 1 and 4.

Discussion

The earliest Roman wares recovered consist of Hadrianic or Antonine samian, and a greyware jar which, on typological grounds, could belong to the final quarter of the 1st century AD (catalogue no. 3345). The latest are lid-seated jars of the kind found in profusion at The Park, Lincoln, and conventionally held to have been in use in Lincolnshire from the mid 4th century AD to the close of the Roman period (Darling 1977). As at Lincoln, these jars appear in two broad fabric types, one employing coarse, non-soluble grits, while the other is calcareously tempered. Sherds in these two fabric groups, referred to below for convenience as Group X and Group Y sherds respectively, formed 54% of the total pottery by sherd number, and 45.2 % by sherd weight. It is probable that all the Group X sherds derive from a single vessel, the rim of which is represented in context 4849, a Phase 3b pit-fill; while Group Y sherds represent a minimum number of two vessels, with rim sherds occurring in a variety of contexts through to Phase 5 – the earliest being in context 4673, a Phase 2 soakaway fill. *Body* sherds of these very distinctive vessels are indisputably present as early as Phases 1a and 1b, where they occur, for example, in pit-fills 4410 (Group X), and 4792 and 4630 (Group Y). It may be noted that the calcareous temper of the Group Y sherds is uniformly leached out, in contrast to that of the Middle Saxon calcareously tempered sherds from the site.

Period	No. of sherds	Wt. (in grams) & % of assemblage
1	6	67 (2%)
1–2	4	69 (2%)
2	19	163 (4.8%)
2–3	35	354 (10.5%)
1–3	1	14 (0.4%)
3	39	815 (24.3%)
3–4	6	106 (3.2%)
4	11	53 (1.5%)
4–5	5	49 (1.5%)
5	20	281 (8.4%)
3–5	2	12 (0.3%)
5–6	4	60 (1.8%)
6	45	592 (17.7%)
6–7	2	7 (0.2%)
7 & 7+	7	145 (4.3%)
U/S	27	555 (16.6%)
Totals	233	3342 (99.5%)

FIG. 14.8. Incidence of Romano-British pottery by main site periods

Two ceramic vessels of uncertain function (FIG. 14.10) by Lisa M. Wastling

Two enigmatic and distinctive ceramic vessels were retrieved during the excavation (FIG. 14.10). Both are dish-like in form and have been manufactured from modified larger vessels, post-firing. Some small areas of the original surfaces of the vessels are apparent, though most of the original exteriors have been ground away to obtain the desired form. The interiors of the pots have also been ground to obtain their new shape. Presumably they were made for a specific function, though that has not yet been ascertained.

The fabrics of both would not be out of place within the Romano-British greyware tradition (Didsbury pers. com). They may have been manufactured from the bases of pedestal jars. Their deposition suggests however, that residual Roman ceramics were utilised to make pots for use during the mid to late Saxon phases of the site. They were recovered from a phase 2 soakaway in Building 6 and one of the Phase 6ii dumps.

The form of these modified vessels is such that there appear to be neither mid to late Saxon nor Roman period ceramic parallels.

A number of different functions may be postulated, such as unguent pots, ink or paint pots, salt containers for table-use, water or food dishes for caged birds, small lamps or vessels employed in metal-working.

The lack of burning points against use as part of high temperature processes or lamps, unless the objects are unused. Both dishes do however display a white, calcareous deposit, which may point to their having contained water

or urine-based contents. One (RF 4483, no. 3355) was recovered from a feature referred to as a soakaway, so the residue may conversely be due to depositional factors.

Identification may be further aided by lipid analysis and/or x-ray fluorescence (XRF), as this was not undertaken during the post-excavation programme. It may however be difficult to distinguish between residues from the initial and secondary use of these vessels.

Catalogue (see FIGS 14.9–14.10)

Context and recorded find data, together with illustration number, are bracketed at the end of each entry.

THE SAMIAN

(Identifications by Brenda Dickinson)

A small amount of samian was recovered, amounting to nine sherds, weighing 149g. The material derives from Periods 3, 5 and 6, principally from occupation deposits and dark soils. The earliest is Hadrianic or Antonine and from Central Gaul, while the latest is East Gaulish ware of the late 2nd or early 3rd century. There are no signs that any of this material has been collected for secondary use in the post-Roman period, and the intrinsic interest of the assemblage is restricted to a stamped sherd of Macconius ii (see below, no. 3323).

- 3320 Body sherd. Central Gaulish. Hadrianic or Antonine.
Context 1284, Phase 6iii (vessel 1284.2).
- 3321 Body sherd. Bowl. Central Gaulish. Hadrianic or Antonine.
Context 1459, Phase 6iii (vessel 1459.1).
- 3322 Body sherd. Central Gaulish. Hadrianic or Antonine.
Context 1728, Phase 5b (vessel 1728.1).
- 3323 Basal sherd. Form 31. East Gaulish. Fragmentary stamp of Macconius ii, die 1a. [MA\CCON]IVS FE. The “A” has no cross-bar, and the right-hand diagonal is formed of two parallel strokes. The die was used at Haute-Yutz on form 27, suggesting that this sherd is early to mid Antonine. The stamp shows background striations, indicating that the die was probably made from a re-used sherd.
RF 2592, Context 1728, Phase 5b.
- 3324 Body sherd. Form 36? Central Gaulish. Mid to late Antonine.
Context 1834, Phase 6ii–6iii (vessel 1834.2).
- 3325 Basal sherd. Mortarium, *probably* form 45. Central Gaulish, Lezoux. Very heavily worn inside, quite well worn under footring. *c.* AD 170–200.
RF 3503, Context 2784, Phase 3a (vessel 2784.2).
- 3326 Rim. Small form 37. East Gaulish, Rheinzabern. Ovolo with straight narrow core, double borders widely separated, and a tongue on the left swelling at the tip. Similar to Ricken and Fischer 1963, E.30. Late 2nd or early 3rd century.
Context 6465, Phase 3bii (vessel 6465.1).
- 3327 Body. Form 79 or Ludowici Tg⁷. Central Gaulish. Mid to Late Antonine.
Context 8731, Phase 5b (vessel 8731.1).
- 3328 Flake. Central Gaulish. Hadrianic or Antonine.
Context 10296, Phase 6i–6ii (vessel 10296.6).

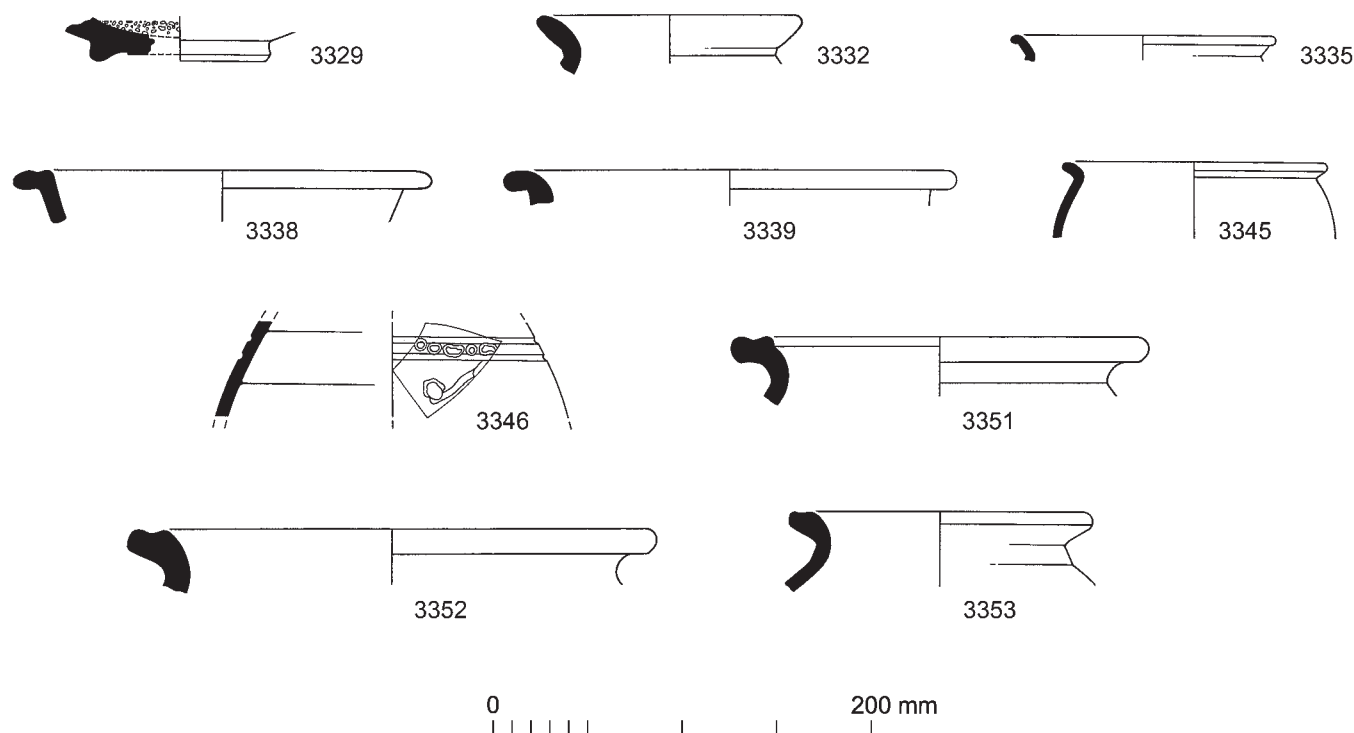


FIG. 14.9. Romano-British pottery. Scale 1:4

THE MORTARIUM

(Identification and catalogue entry by K. H. Hartley)

A single mortarium sherd, weighing 34g, comes from context 4323, a Phase 3bi–4i dump.

3329 Vessel 8. Base sherd with an unusually well-formed footring for a coarseware mortarium. Orange-brown fabric with white slip. Inclusions: frequent, random and ill-sorted quartz. Trituration grit: black iron slag. Mortaria in this fabric and with this type of trituration grit were made at potteries at Cantley, Catterick, Swanpool and probably elsewhere in the 3rd and 4th centuries. This is likely to be from Swanpool or Cantley. (FIG. 14.9)

Context 4323, Phase 3bi–4i (vessel 4323.1).

OTHER POTTERY

A selective catalogue of the coarsewares, comprising rims and other diagnostic sherds, is given below. Full details are contained in the site archive.

3330 Yellow-buff body sherd with self-slipped/polished exterior. Flagon?

Context 8189, Phase 5b (vessel 8189.1).

3331 GW. Flange fragment from straight-sided flanged bowl. 3rd or 4th century.

Context 669, Phase 5a–5b (vessel 669.3).

3332 Vessel 5. GW. Jar with everted rim, rim diameter 140mm, and slight neck. 2nd or 3rd century? (FIG. 14.9)

Context 1246, Phase 6iii (vessel 1246.1).

3333 GW. Small jar/beaker with everted rim, rim diameter

100–120mm. 2nd century?

Context 1453, Phase 6iii.

3334 GW. Red-brown surfaces and thick margins, grey core. Abundant unidentified stone temper and iron slag? in the 1–3mm range, extrusive through both surfaces. Hackly fracture. Thick-walled (12mm). Base of jar?

Context 1453, Phase 6iii (vessel 1453.4).

3335 Vessel 4. GW. Jar. Cf. Coppack 1987, fig. 129.11, in a group from Goltho closing in the mid 2nd century; also Gillam 1957 type 138, 2nd to mid 3rd century. (FIG. 14.9)

Context 1462, Phase 6iii (vessel 1462.2).

3336 CC. Worn beaker body sherd. Orange core, red interior, dark brown exterior. Probably Nene Valley.

Context 2027, Surface of natural subsoil (vessel 2027.2).

3337 GW. Light grey ware. Pedestal base with perimeter groove on the underside. Possibly from an Antonine or Severan carinated jar.

Context 2184, Phase 6iii (vessel 2184.2).

3338 Vessel 6. Fabric RB2. Late redware. Fairly coarse, pinkish-buff fabric with polished red-brown surfaces. Straight-sided flanged bowl. Mid 3rd to 4th century. (FIG. 14.9)

Context 2512, Phase 3a (vessel 2512.1).

3339 Vessel 3. GW. Black surfaces, grey core, buff margins. Sandy fabric including greensand quartz, grog in the 2–4mm range, and voids of leached out calcareous temper. Jar/bowl with horizontally everted rim. Cf. Didsbury unpublished, no. 256, from Glebe Farm, Barton, probably 2nd century; Darling 1984, fig. 15, no. 66, from clearance levels beneath the Colonia rampart at Lincoln. There

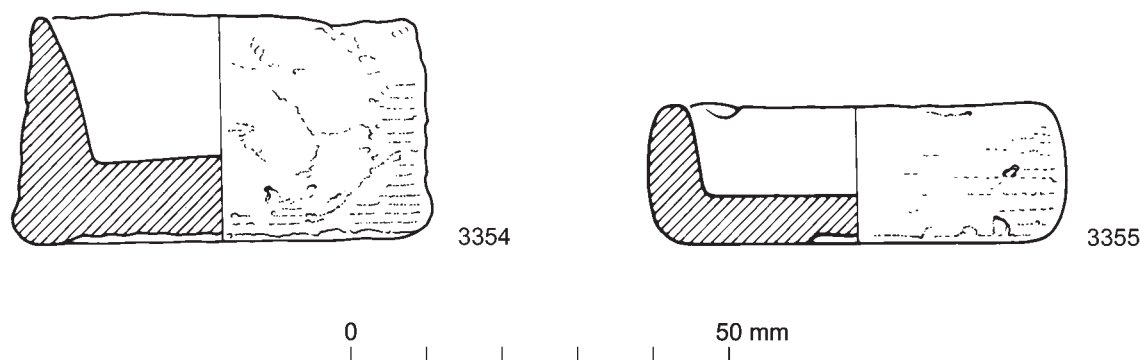


FIG. 14.10. Two ceramic vessels of uncertain function. Scale 1:1.

- are two further examples of this rim form among the unstratified material (cat. no. 3349). (FIG. 14.9)
Context 3236, Phase 6ii (vessel 3236.1).
- 3340 WW. Flagon? Fine, hard, white inclusion-free fabric with burnished cream exterior. Cf. cat. nos 3347 and 3348.
Context 6235, Phase 3bv (vessel 6235.2).
- 3341 CC. Red colour-coat, internally and externally, though worn on interior. White sandy fabric with occasional red inclusions and some voids. Footring base (c. 85mm diameter) of dish/bowl. Mid 3rd to 4th century.
Context 6235, Phase 3bv (vessel 6235.2).
- 3342 CC. Worn beaker body sherd. Off-white core, yellow-buff interior, dark brown exterior. Not attributed to source.
Context 6472, Phase 5b–6i (vessel 6472.2).
- 3343 WW? Two joining sherds of fine, pinkish-orange, flagon? fabric.
Context 6485, Phase 6ii–6iii (vessel 6485.6).
- 3344 GW. Probably the “blue-burnished grey ware” of Dragonby, where it was common in the 2nd and early 3rd centuries. Flat jar base with perimeter groove on underside. Cross-contextual join with a sherd in context 6465.
Context 6489, Phase 6ii–6iii (vessel 6489.8).
- 3345 Vessel 2. GW. Jar in hard, light grey ware. Typologically, with its globular body and short everted rim, it suggests a date in the late 1st or earlier 2nd century. Jars of similar shape, for which Swan suggests a date in the last third of the 1st century, were made with rusticated decoration at Dragonby Kiln 4 (May 1996, fig. 20.32, no. 1415; May, Gregory and Swan 1996, 574–82). (FIG. 14.9)
Context 6492, Period 2 (vessel 6492.1).
- 3346 Vessel 7. CC. Sandy greyware-type fabric with crazed black exterior colour coat, and white over-slip *en barbotine* decoration of dots and curved lines. Jar. Probably Swanpool and 4th century. (FIG. 14.9)
Context 6920, Phase 4i–5a (vessel 6920.8).
- 3347 WW. Flagon? Fine, hard, white inclusion-free fabric with burnished cream exterior. Possibly from a carinated shoulder? Cf. cat. nos 3340 and 3348.
Context 8189, Phase 5b (vessel 8189.1).
- 3348 WW. Flagon? Fine, hard, white inclusion-free fabric with burnished cream exterior. Cf. cat. nos. 3340 and 3347.
RF 10140. Context 8200, Phase 3biii.
- 3349 GW. Two rims as cat. no. 3339, one possibly from the same vessel.
Unstratified.
- 3350 GW. Off-white core with grey surfaces, a common fabric in the Humber Basin in the Antonine period. Out-turned rim from necked jar? Possibly cf. May 1996 fig. 20.16, no. 1082, from Dragonby, of later 2nd-century date.
Unstratified.
- 3351 Vessel 9. Fabric X. Quartz-tempered jar with single lid-seating. Later 4th century. (FIG. 14.9)
Context 4899, Phase 4i–5a.
- 3352 Vessel 10. Fabric Y. Vesicular jar with single lid-seating. Later 4th century. (FIG. 14.9)
Context 6798, Phase 6i (vessel 6798.3).
- 3353 Vessel 11. Fabric Y. Vesicular jar with single lid-seating. Later 4th century. (FIG. 14.9)
Context 4679, Phase 3bi–3bv (vessel 4679.1).
- Two ceramic vessels of uncertain function*
(catalogue entries by Lisa M. Wastling)
- 3354 Miniature dish, with straight sides and narrow pointed rim. Ground or filed to form from the base of a vessel of Romano-British greyware fabric. Has a white deposit on the interior base and lower wall which reacts with dilute hydrochloric acid. (FIG. 14.10)
Diam. 53mm Height 29mm Wt. 60.6g
RF 5327 Context 3891 Phase 6ii
- 3355 Miniature dish, with straight sides and rounded rim. Ground or filed to form from the base of a vessel of Romano-British greyware fabric. Has a cream coloured deposit on the exterior base and vessel wall which reacts with a dilute hydrochloric acid. (FIG. 14.10)
Diam. 50mm Height 18mm Wt. 39.8g
RF 4483 Context 3968 Phase 2

14.2.3 The Romano-British ceramic building material

by Lisa M. Wastling

370 fragments of Roman ceramic building material weighing 39.905kg were recovered by excavation. This material was divided into two fabric groups: A and B.

Group A consisted of the tiles with fine homogeneous fabrics, and group B contained material of a much coarser fabric with the addition of grog, and sparse organic temper. Fabric B appeared to have been fired to a higher temperature than those of group A (some of which were powdery and easily abraded). Much of the material had, however, been affected by secondary burning.

The group B material is very consistent and appears to be of a single fabric; however, group A consists of more than one fine fabric type.

Due to the fragmentary nature of the material, 9% by weight was unidentifiable, though of the same fabrics as the identified material. That this amount represents 36% by number is indicative of the small fragment size. All further percentages in this report will therefore represent percentage by weight.

All of this material was recovered from contexts of Anglo-Saxon or later date.

Brick

The majority of identified fragments were of brick, representing 50% of the assemblage. These vary in thickness from 26 to 49mm. The majority were of fabric A, though 17 fragments were of fabric B. Eighteen fragments bore deep finger-scoring on the upper surface, possibly to act as keying for mortar. Eight were in the form of a cross or saltire, and possibly all were of saltire form – as in only one instance was the corner present to show that the cross was of this orientation. One example had a curved finger-mark.

A single brick was rain-pitted on the upper surface, indicating that prior to firing it had been laid out to dry in the open, or at the edge of an open-sided structure.

A single example of a possible voussoir brick was found, with a thickness over the length of the fragment varying from 25 to 31mm.

One brick fragment was identifiable by type: a *bessalis* in fabric B brick from context 956. This has a complete width measurement, of 198mm with a thickness of 43mm. The measurements of Roman brick manufactured in Britain are based on the Roman foot, consisting of 12 Roman inches and corresponding to 296mm. The *bessalis* was based on a measurement of eight inches, corresponding to 197mm; their main function was as pillars for hypocaust heating systems.

This example also has an interesting mark on its upper surface. A linear object, such as a rod or roundwood stick of 17mm in width, with a probable circular cross-section and extending along the length of the tile, has fallen onto

the tile to leave an impression; this had occurred when the tile was laid out to dry, pre-firing. The surface of this object had been covered with sand, which had remained on the surface of the tile after removal; when the object was retrieved, the individual must have leant on the tile, leaving a deep impression of the heel of their right hand in the corner of the tile. Their left hand has also left the impression of the nails of the middle three fingers, as they have picked the object off the tile.

This in turn implies that the tile was located in the middle of an area of tiles, which had to be leant over to retrieve the object. The dimensions of the impression appear slight, possibly suggesting an adult with slim hands, or a child.

Tegulae

Tegulae represented 31% of the material by weight. All were of fabric group A. The thickness of *tegulae* was measured only on fragments which had surviving evidence of flanges, and was taken as close to the centre of the tile as possible; thicknesses varied from 17 to 27mm. Eleven complete flange profiles were noted, all of which were different. None bore signatures or any evidence of stamps.

Five fragments bore an upper cutaway, and a single fragment from hearth 466 had a lower cutaway; this has a similar form to the type B cutaway at Castleford (Betts 1998, 227, fig. 97), though with a smaller chamfer at the base.

Two fragments had a vitrified glassy deposit the same as that on the hearth daub from context 466 (see Wastling, Ch. 4.2, above). One fragment was from hearth 466, and the other was from context 12218.

Imbrices

Imbrices represented just 3% of the material by weight. All were of fabric group A. The fragment size of this group was very small; they had possibly been broken into smaller fragments in order to be incorporated in hearths, which necessitated the use of flat material.

Flue tile

Flue tile represented 5% of the material by weight. The majority was of fabric group A, with just two fragments of fabric B. Fourteen of the 24 fragments have combed keying, using combs of 4, 5, 6, 7 and 8 teeth. Five tiles showed evidence of corner angles, indicating that they were of box or half-box form. Two had tapering circular vents – one on an uncombed surface, with a diameter of 15–25mm, and the other on a combed surface of 19–28mm diameter (from context 3349). This latter tile has primary sooting internally and rising up from the vent, indicating use within a building with a working hypocaust heating system, such as a bathhouse, or high-status building; the direction of the sooting also gives evidence of fragment orientation. Tapered circular vents were found on flue tiles from Binchester Roman fort, Co. Durham (Brodribb 1987,

76, fig. 33, f).

Possible louver fragments

Four fragments of tile with a curved and rounded surface were found. These appeared to have been fired to a lower temperature than the other material, appearing more like terracotta in texture. All were bright orange in colour. These fragments were perhaps part of a louver or chimney pot.

Discussion

Roman ceramic building material was recovered from 169 contexts. All had either been reused from the 7th century onwards, or was residual. The material which was found *in situ* was used to make up hearth and oven bases, and 52% of the re-deposited brick and tile had either adhering hearth daub (daub fabric A), signs of burning, or both.

Eight fragments still bear evidence of primary mortar, and two fragments (a brick and a flue tile) have small amounts of white plaster adhering. The mortar is pinkish in colour, due to crushed tile inclusions.

The mean fragment size of the brick and tile assemblage is small at 108g. It is possible that tiles may have been reused several times, since the buildings of which they were originally a part had passed out of use, in addition to residual material being continually reworked.

Webster (1979, 287) states that the tile industry ceased to flourish in the late 4th century, after which most disused buildings were subjected to a process of tile recovery.

Mean fragment sizes between tile used for hearth construction (bearing hearth daub and/or burning) and the rest of the assemblage, differ by only 10g: this indicates that the material selected for hearth and oven floors does not differ greatly from other Roman ceramic building materials from the site. It may also indicate that the material used to construct hearths was not brought to the site specifically for that purpose, but was already a residual element on the site, and hence has the same assemblage make-up. If the brick and tile had been brought to the site, specifically to construct hearth and oven bases, then larger fragment sizes would have been expected from the hearth material, with residual material showing greater fragmentation: this was found not to be the case.

The origin of the ceramic building materials may have lain within the immediate locality of the site, as there are two distinct residual Roman elements in the pottery assemblage. One is of early date, consisting mainly of samian ware, and found in the later phases of the occupation sequence (Loveluck, Volume 4, Ch. 3), and the other of 4th-century material, in the earlier phases (see section 14.2.2, above).

14.2.4 A copper alloy penannular brooch

by Nicola Rogers

This copper alloy brooch (no. 3356; RF 14124), with coiled terminals and a long pin with a decorative collar, was unstratified. This form falls into Fowler's (Fowler 1960)

Class C, which has been refined by White into Classes Ca and Cb, differentiated by the hoop section (White 1988, 9); the circular section of no. 3356 (RF 14124) places it in White's Ca class.

Penannular brooches have been recovered in the British Isles from Iron Age through to Anglo-Saxon contexts (White 1988, 6), and Class Ca forms are known from the early Roman period (*ibid.*, 9). In his survey of Roman objects from Anglo-Saxon graves, White notes examples of both iron and of copper alloy recovered from many Saxon cemeteries, including Castle Bytham, Lincs. (*ibid.*, 10, fig. 2, no. 6), and Holywell Row, Suffolk (*ibid.*, 11, fig. 4, no. 3). Two Class Ca brooches were also found amongst material containing other Saxon brooches from South Ferriby, Lincs. (Sheppard 1907, 261, pl. XXVII, nos 3, 6). White notes that most Anglo-Saxon graves containing penannular brooches appear to date from the later 5th–mid 6th centuries, although a few also occur in 7th-century graves (White 1988, 23). He stresses that the problem of residuality makes it very difficult to determine whether a brooch is Roman and reused, or post-Roman in date (*ibid.*, 23–4); whatever the date of manufacture of no. 3356 (RF 14124), it seems likely that its use at Flixborough, if used at the site at all, occurred in the earliest phases of Saxon occupation. The fact that the object is unstratified, however, suggests that it could represent a Roman find with no connection to later occupation on the site.

Catalogue (not illustrated)

3356 Copper alloy. Complete, Fowler's Class C, bow of circular section, with coiled terminals; long pin of circular section with decorative collar. Bow diam. 23mm; bow section Diam. 1.7mm. Pin L. 38.3mm; section Diam. 1.6mm RF 14124, Unstratified.

14.2.5 A Romano-British sculpted stone fragment

by Lisa M. Wastling

A fragment of worn and abraded sculpted stone (no. 3357; RF 14055) was retrieved from Period 6 dump 1283. The form of the decoration bears close affinities to the motifs used on Romano-British altars, tombstones and dedication stones, such as the crescent, lunula or pelta (Collingwood and Wright 1965, *passim*). A portable altar fragment recovered from the excavations at Dragonby bears some similarities to this piece (Wilson 1996, fig. 15.3).

This stone may have been plundered from a nearby Roman site for use as building material. The location of the Roman settlement at Dragonby is only some 2.5 miles (4km) from Flixborough. It has also been suggested that the stone lamps may have been made from re-used Roman building stone (see Gaunt, Ch. 5.9, above).

Catalogue (Fig. 14.11)

Lithological identification by Geoff Gaunt

3357 Sculptural fragment.

Material: Limestone, fine-grained pale brownish-cream, partly bioclastic and sparsely oolitic. Upper part of

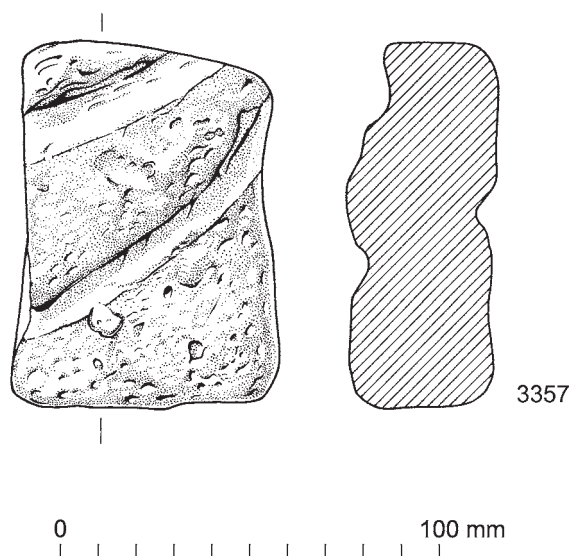


FIG. 14.11. Sculpted stone fragment. Scale 1:2.

Scunthorpe Mudstones.

Form: Sub-rectangular block, with two wide (c.11.5–16.5mm, Max. Depth c.6mm) curving grooves converging towards one corner. Abraded and possibly water-worn. (FIG. 14.11).

Size: L.95mm, W.70mm, Th.45mm.

RF 14055, Context 1283, Phase giii.

14.2.6 A stone pestle

by Lisa M. Wastling

A single example of a chalk pestle (no. 3358; RF 5342) was recovered from a Phase 6ii dump (3891). Chalk, being a soft stone, would probably have been suitable only for the grinding or pounding of material such as foodstuffs. The majority of pestles for use with relatively soft substances may have been of wood, such as those in more recent ethnographic contexts, in Africa and the West Indies for example. This would explain their lack of survival. No fragments of mortars were found during the excavations. There is the possibility that this object is residual, and relating to Romano-British or earlier activity. A sling-shot of probable Iron Age date was recovered from the same deposit (see above).

Catalogue (FIG. 14.12)

(Lithological identification by Geoff Gaunt)

3358 Pestle

Material: Chalk, fine-grained, Ferriby Chalk Formation.

Form: Elongated oval, bearing multiple small indentations and striations, increasing towards the rounded end, with two V-shaped grooves on one surface, flattened and slightly polished on the opposite face; broken at one end. Ovoid in section. (FIG. 14.12).

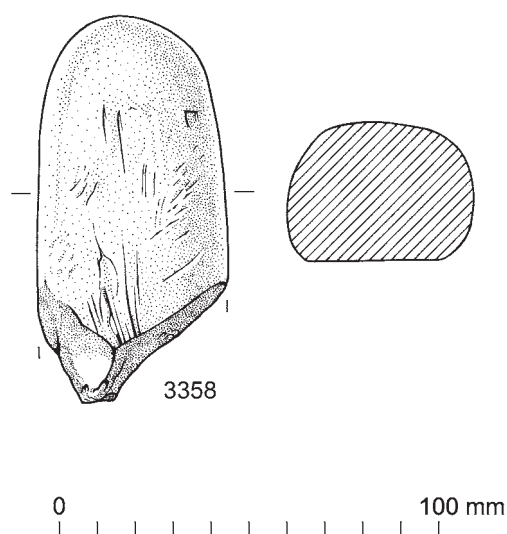


FIG. 14.12. Stone pestle. Scale 1:2.

Size: L.104mm, Max. W.49mm, Max. Th.36mm.

RF 5342, Context 3891, Phase: 6ii.

14.2.7 The jet pin

by Lisa M. Wastling

A jet pin (no. 3359), consisting of two adjoining shank fragments, was recovered from samples of two different contexts. These were the fill of post-hole 8733, which cuts path 8092 in Phase 5a, and an occupation deposit/yard 6464 in Phase 3bii. These two deposits, though in differing phases are laterally approximately five metres apart.

It is likely to be of 3rd century or later date, as the use of jet in the Roman period was uncommon before this time (Allason-Jones 1996, 8). The source of the material is likely to have been the area around Whitby, in North Yorkshire.

Catalogue (not illustrated)

3359 Pin. Incomplete section of hipped shank. In two fragments.

L.31mm, Diam.5.5–7mm. [Not illustrated]

RF 14419 Context 8734, Phase 5a; and RF 14420 Context 6464, Phase 3bii

14.3 High Medieval and later remains

There is clear structural evidence for a limited amount of peripheral settlement activity on this site during Period 7 (12th–14th centuries: see Loveluck and Atkinson, Volume 1, Ch. 7) and this may relate to a re-planning of the settlement in the Anglo-Norman period (Loveluck, Volume 4). In addition to finds contained in these stratified contexts, there is also a small amount of material deposited on the

site throughout the medieval and post-medieval periods – presumably reflecting both agricultural uses of this hill-slope, and casual losses from visitors. This section of the report discusses all material which is clearly later than the Norman Conquest. In addition, material of uncertain date has been included here – although it is recognised that some of this may well be residual from earlier occupation.

14.3.1 Medieval and later pottery

by Peter Didsbury

A total of 169 sherds of medieval and later pottery, weighing 1635 gm and having an average sherd weight (hereafter ASW) of 9.7 gm, was recovered from the excavations. Of this material, 43 sherds (25.4%) were unstratified. The total date-range was from the 12th to 20th centuries.

The medieval pottery amounted to 111 sherds, weighing 1245 gm. The overall ASW of this assemblage was 11.2gm, individual fabrics exhibiting values in the 3–15gm range (FIG. 14.13). The date-range was from the 12th to 14th, or possibly the 15th, century.

At the time the Flixborough medieval pottery was analysed, there was no established fabric type-series for North Lincolnshire, and a simple terminology, capable of being applied to assemblages of small, worn and redeposited material, was therefore adopted. This was largely based on the regional tempering traditions of the Humber Basin noted by Hayfield (1985), and by comparison with named fabrics known to have been used on both banks of the Humber in the medieval period. A detailed medieval fabric series for North Lincolnshire sites has since been constructed by Jane Young, Alan Vince and the present author, while working on the St Peter's Church, Barton-upon-Humber project, but it has not been practicable to revise the Flixborough data to conform with this.

The following fabric types were recognised:

- *Beverley 1- and 2-type ware* (Watkins 1991; Didsbury and Watkins 1992): applied to material sharing the characteristics of 12th- to early 14th-century Beverley wares, but not necessarily products of that industry.
- *Coarse Sandy ware*: regional tempering tradition. Some sherds may be the specific fabric of the same name common on sites in Hull and East Yorkshire in the 14th century (Watkins 1987).
- *Fine and Medium Sandy ware*: regional tempering traditions.
- *Humberware*: the dominant ware in the Humber Basin in the 14th and 15th centuries.
- *Orangeware*: the regional tempering tradition which includes Beverley ware.
- *Stamford ware*: as described in the literature (Kilmurry 1980).
- *Unattributed Gritty ware, Unattributed White ware*: self-explanatory generic terms.

The earliest material in the medieval assemblage is probably two sherds of splash-glazed Beverley 1-type, which should pre-date the mid 12th century. Splashed fragments may also be present among the Medium Sandy ware. Glazing on the rest of the Beverley 1 sherds, as with all the other fineware fabrics, is of the suspension type. Interestingly, almost the entire assemblage seems to consist of jug sherds, though the Gritty and White ware sherds are probably from coarseware vessels, and there is a pipkin rim fragment among the Beverley 2-type ware. It will be seen that Beverley 2-type and its Orangeware equivalents account for 50% of the entire medieval assemblage, strongly suggesting that the period when the greatest amount of medieval material entered the taphonomic record was the

Fabric	% sherds	% weight	ASW (gm)
Coarse Sandy	6	4	7
Fine Sandy	11	8	8
Humberware	7	6	10
Medium Sandy	12	19	11
Orangeware	22	18	9
Beverley 1-type	8	9	12
Beverley 2-type	28	32	13
Stamford?	1	<1	3
Unattributed Gritty	2	<1	3
Unattributed White	1	<1	5
Unattributed	3	3	13
Totals	101	100	

FIG. 14.13. Fabric profile of the medieval pottery assemblage.

13th and first half of the 14th century. There is a dearth of chronologically diagnostic material among the sand-tempered fabrics, but there is no reason to suppose that they are not broadly contemporary with the Orangewares. The small amount of Humberware may well have been contemporary with the latest Orangeware fabrics, rather than extending the sequence into the 15th century.

The great majority of the medieval material occurs in the dark soils and occupation deposits of Periods 6 and 7, though there is occasional intrusive material present as early as Phase 2–3a. These occurrences are discussed individually in the site narrative (Volume 1).

As far as post-medieval and modern pottery is concerned, it is sufficient to note that 58 sherds were present, weighing 390 gm – the earliest is a sherd of 15th- or 16th-century Coal Measures fabric from dump 3275 (Phase 5a–6i) – and that the other fabrics are the common regionally and nationally available products of the period, viz. Blackware, Staffordshire Slipware, Glazed Red Earthenware, and Unglazed Red Earthenware (flowerpots etc.). Modern material includes Pearlware, Creamware, Porcelain, Industrial Whitewares and Brown Stonewares.

14.3.2 Medieval and later non-ferrous metal objects

by Nicola Rogers

Buckles

Two unstratified buckles (nos 3360–1; RFs 837 and 840) are of post-medieval forms.

Pendant loop (FIG. 14.14)

Found unstratified, no. 3362 (RF 10950; FIG. 14.14) is a medieval pendant loop, which would have been attached to a belt via a bar mount, and possibly used to hang a purse or knife (Egan and Pritchard 1991, 219, fig. 138).

Triple-lobed mounts (FIG. 14.14)

Two unstratified mounts (nos 3363–4; RFs 11934, 13185) were both originally triple-lobed, with rivets for attachment. This form is medieval, with similar examples from York coming from early-mid 15th century or later deposits (Ottaway and Rogers 2002, 2905, e.g. nos 13369 and 14418, fig. 1479); another found in Norwich came from a 15th–17th century context (Margeson 1993, 40, no. 276).

Miscellaneous mount (FIG. 14.14)

The fragmentary no. 3365 (RF 12749; FIG. 14.14), possibly a box mount, is decorated with perforated stamped rings and rocked tracery; although rocked tracery ornament has been found on a few objects dating from the late 9th century (Rogers 1993a, 1350), it is much more commonly found on medieval objects. The multi-foil surround on no. 3366 (RF 50004) is also indicative of the medieval period, when petalled mounts were commonly used to decorate books and belts (Ottaway and Rogers 2002, 2906–7).

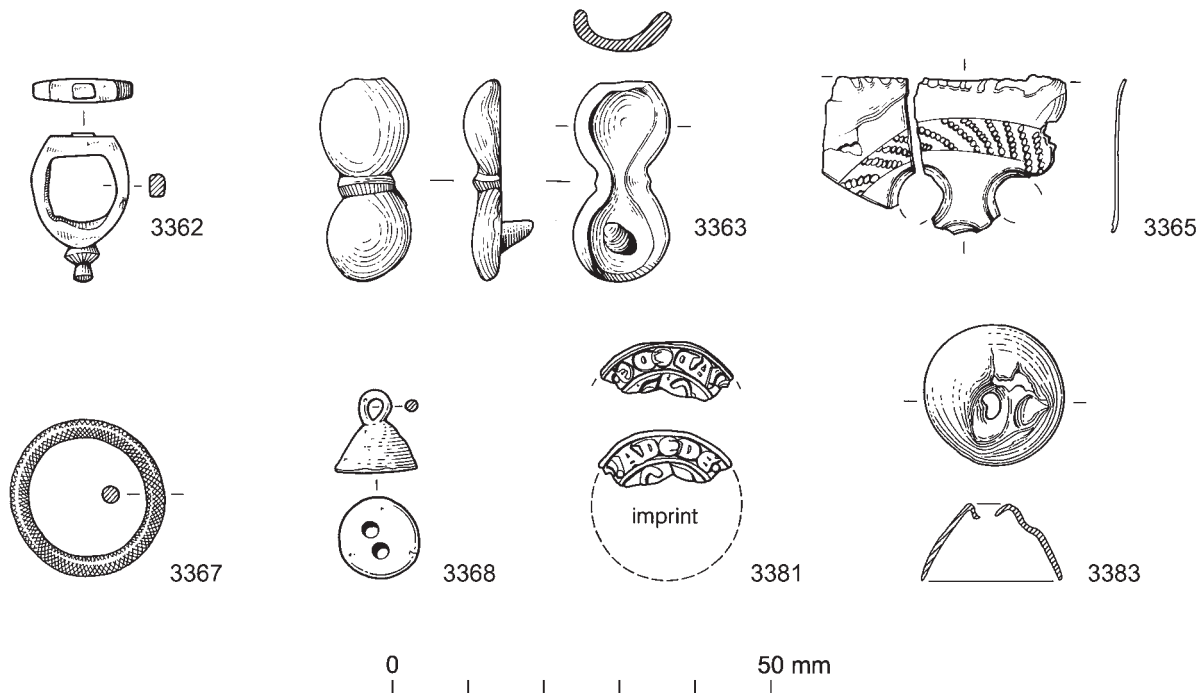


FIG. 14.14. Medieval and later non-ferrous objects. Scale 1:1.

Annular brooch (FIG. 14.14; PL. 14.1)

A small unstratified brooch is made of gold. No. 3367 (RF 12237; FIG. 14.14; PL. 14.1) is formed from double-strand wire wound around a core which is also probably gold (see analyses). Although lacking a pin, the ring appears too small to be a finger-ring, and its closest parallel would appear to be another gold brooch, complete with pin, which was found in a mid-late 13th-century deposit at the Vicars' Choral College at The Bedern, York (Ottaway and Rogers 2002, 2911, no. 14507, fig. 1486). Two similar brooches, one of silver, the other of copper alloy, have also been found in London in late 12th-century contexts (Egan and Pritchard 1991, 256, nos 1339–40).

Buttons (FIG. 14.14)

Apart from one possibly medieval button (no. 3368; RF 12568; FIG. 14.14), all those recovered appear to be post-medieval or modern, and with one exception derive from topsoil or are unstratified; the exception is no. 3369 (RF 3824), which must have been intrusive in its Phase 6iii dark soil deposit.

No. 3368 (RF 12568; FIG. 14.14) is a composite button, made up of a flat upper face and plano-convex lower face with loop through – the two halves having been soldered together. This type of button has been recovered from a number of medieval sites across England; these sites include York, where they came from mid 13th–early 14th century deposits, at which time they may have had an ornamental rather than functional role (Ottaway and Rogers 2002, 2918–19, nos 14452–3, fig. 1491).

Lace tag

No. 3380 (RF 7) is a lace tag, decorated with cross-hatching and retaining traces of the leather lace inside. It was found in an unstratified context, but is likely to be medieval – perhaps 15th century or later; similar examples found in York have come from this period (Ottaway and Rogers 2002, 2920–21).

Medieval seal matrices (FIG. 14.14)

Both seal matrices recovered at Flixborough (nos 3381–2; RFs 11924 and 14245) were found in unstratified contexts. Only part of one edge of the discoidal no. 3381 (RF 11924; FIG. 14.14) survives; the lettering appears to be: ADEDE, but too little remains to enable identification of the full inscription. A fragment of a tail below suggests a beast – perhaps a lion – motif. Although the fragmentary nature of no. 3381 (RF 11924) makes a full identification impossible, it is possible to suggest a date of the 13th century for this seal, when this form was in use (Alexander and Binski 1987, 396).

No. 3382 (RF 14245) has a faceted stem of hexagonal section, the matrix being cut into the discoidal lower end; the upper terminal is pierced forming a looped handle, used for attachment to the person. The motif depicts a bird with a feather over it, and the legend appears untranslatable,

although the letters appear to include: ICSRIC. It has been noted that a considerable proportion of seals, particularly from the cheaper end of the market, had legends which are garbled or unintelligible (Alexander and Binski 1987, 275, no. 196 vii), and no. 3382 (RF 14245) appears to fall into this category. Its form indicates a probable date of the late 13th–mid-15th century (Spencer 1984, 377).

Bell (FIG. 14.14)

No. 3383 (RF 103; FIG. 14.14) is a rumbler bell fragment recovered from topsoil, but which may be medieval. Medieval rumbler bells are made from two hemispheres of sheet metal, the edges folded over and sealing in an iron pea; possible uses include on harness, as jesses on hawks, collars on hounds, and as dress decoration (Biddle and Hinton 1990, 725–6). No. 3383 (RF 103) may date from the 13th–16th century, from which period similar bells are known (see for example Harvey 1975, 254–5, nos 1711, 1726; Biddle and Hinton 1990, 725–6; Ottaway and Rogers 2002, 2947).

Miscellaneous object

An unstratified copper alloy object (no. 3384; RF 97) appears to be a mount; quadrant-shaped at one end, with incised decoration, the rest of the object is stepped forward and appears to show a lion's head at one side. The mount has two perforations and three rivets on the back. It has been mercury-gilded. Perhaps a bridle mount, no. 3384 (RF 97) is likely to be post-medieval in date.

Catalogue of non-ferrous objects (FIG. 14.14)**BUCKLES**

3360 Copper alloy. Frame fragment, of trapezoidal section, one corner and parts of two sides survive with scalloped edge. There is a square projection at the corner, on each side of which there are oval facets on upper face with notched edges and inset leaf-shaped motifs.
L.28.2 W.14.2 Section W.5.8, Th.2.9
RF 837, Unstratified.

3361 Copper alloy. Shoe buckle, square, double-looped.
L.15.3 W.15 Section W.1.6 Th.1.5
RF 840, Unstratified.

PENDANT LOOP (FIG. 14.14)

3362 Copper alloy. D-shaped, with collared knop.
L.19.3, W.12.5, Th.3.3. (FIG. 14.14)
RF 10950, Unstratified.

TRIPLE-LOBED MOUNTS (FIG. 14.14)

3363 Copper alloy. Fragmentary, double-lobed, further lobe broken off, collar between lobes which are domed, one lobe with rivet shank.
Diam. 12.4 L.26.4. (FIG. 14.14)
RF 11934, Unstratified.

3364 Copper alloy. Fragmentary, other lobes broken off, domed, remains of shank underside.
Diam. 11.3 Th.0.8
RF 13185, Unstratified.

MISCELLANEOUS MOUNTS (FIG. 14.14)

3365 Fragments (2), adjoining, of sheet, irregularly shaped, two edges cut, others broken, torn rivet-hole at each end, decorated with perforated stamped rings and rocked tracery.

L.29.5, W.20.1, Th.1.1. (FIG. 14.14)

RF 12749, Unstratified.

3366 Of sheet, sub-circular, with central hollow dome, surrounded by punched multifoil.

Diam. 26.6 Th. 0.8 Height 9.1

RF 50004, Unstratified.

BROOCH (FIG. 14.14; PL. 14.1)

3367 Gold. Annular, made of multi-strand, single-twist wire; pin lost.

D.20.7 Internal diam.15.4 (FIG. 14.14; PL. 14.1).

RF 12237, Unstratified.

BUTTONS (FIG. 14.14)

3368 Copper alloy. Composite, plano-convex with loop, flat face with two stamped dots.

Diam. 10.7, Loop L.10.6. (FIG. 14.14)

RF 12568, Unstratified.

3369 Copper alloy. Circular, shallowly domed.

Diam. 16.5, Th.2.3

RF 3824, Context 3989, Phase 6iii

3370 Copper alloy. Modern.

Diam. 16.6, Th.3

RF 28, Context 1, Topsoil.

3371 Copper alloy. Modern.

Diam. 16, Th.1.2

RF 102, Context 1, Topsoil.

3372 Copper alloy. Modern.

Diam. 19.6

RF 842, Unstratified.

3373 Copper alloy. Discoidal.

Diam. 15.7 Th.2.8

RF 4345, Unstratified.

3374 Copper alloy. Discoidal.

Diam. 12.8 Th.1.6

RF 5772, Unstratified.

3375 Copper alloy. Discoidal with loop.

Diam. 13.6 Th.1.6

RF 5773, Unstratified.

3376 Copper alloy. Discoidal with loop.

Diam. 14.9 Loop L.6.7

RF 8290, Unstratified.

3377 Copper alloy. Discoidal with loop.

Diam. 13.1 Th.1.9

RF 11986, Unstratified.

3378 Copper alloy. Discoidal.

Diam. 14.5 Th.1.1

RF 12795, Unstratified.

3379 Copper alloy. Discoidal, central slot, decoration.

Diam. 23 Th.1.6

RF 13953, Unstratified.

LACE TAG

3380 Copper alloy. With inward folding seam, decorated with cross-hatching containing dots in relief, contains traces of

leather lace inside.

L.31.3 Section diam. 2.9

RF 7, Unstratified.

SEAL MATRICES (FIG. 14.14)

3381 Copper alloy. Originally discoidal, only part of one edge survives, with legend ? " ADEDE", fragment of beast's tail below. L.19.8 W.7.3. (FIG. 14.14)

RF 11924, Unstratified.

3382 Copper alloy. Faceted stem of hexagonal section, upper terminal pierced forming a looped handle; matrix cut into discoidal lower end, motif depicting a bird with a feather over it, legend includes letters: I C S R I C.

Diam. 19, Stem W.5.7 Th.5 Height 27

RF 14245, Unstratified.

BELL (FIG. 14.14)

3383 Copper alloy. Rumbler bell fragment, upper hemisphere with irregular hole for suspension loop now missing.

Diam.18.3 Th.0.4 Height 9. (FIG. 14.14)

RF 103, Context 1, Topsoil.

MISCELLANEOUS OBJECT

3384 Copper alloy. Quadrant-shaped plate, with incised foliate decoration, centrally perforated with second perforation at one edge, three rivets on reverse with projecting and stepped forward plate with ?lion face at upper end, mercury-gilded.

L.20.7, W.17.7, Th.1.1

RF 97, Unstratified.

14.3.3 Medieval and later objects of iron

by Patrick Ottaway

Dress and personal items

BUCKLES

Buckle frame no. 3385 (RF 8286) is unusual in being pierced, presumably to hold the head of the tongue; it is unstratified and may be medieval or later. There is a single example of a rectangular buckle frame (no. 3386; RF 2750) which is plated and has a tubular runner on the side on which the tongue tip rested. This object is probably medieval. There is also a single example of a circular frame (no. 3387; RF 9010) to which some leather adheres; this is either a belt or shoe buckle.

Nos 3388–9 (RFs 9144 and 13335; both unstratified) are the rotating arms from buckles of medieval date.

BELT HASP (FIG. 14.15)

No. 3390 (RF 10990; FIG. 14.15) is a belt hasp, a buckle-like object used to join two straps, but without the tongue of a buckle. No. 3390 (RF 10990) consists of a D-shaped frame with an elongated plate looped over one side and riveted. The object is tin-plated. No belt hasps are known from Anglo-Saxon contexts, and the type is probably late 11th–12th century to judge by examples from Winchester (Hinton 1990d, fig. 143, 1350) and 16–22 Coppergate, York (Ottaway 2002, 2889–90 and 3063, cat. no. 12719, sf5228).

Horse equipment

BRIDLE FITTING

No. 3392 (RF 12431) is a tin-plated bridle fitting consisting of two components linked together. One exists as a triangular plate pierced at the head, which at the base develops into a round, domed terminal; from the flat side a rivet projects. The other component is an oval disc which has a small loop at the head by which it was linked to the first. The object is unstratified and probably medieval.

HORSESHOES AND HORSESHOE NAILS

There are seven horseshoes, all of which are unstratified. Nos 3394 and 3399 (RFs 8321 and 12951) have the wavy outer edge characteristic of the 11th–early 13th centuries, the remainder are probably late medieval. Thirty horseshoe nails of various forms were found, of which nine were stratified. RFs 6540 and 8265, from Period 6 and unstratified contexts respectively, may be Anglo-Saxon, as the horseshoe was probably introduced in the late 10th century (Ottaway 1992, 707–9). The D-shaped heads of RFs 6540 and 8265 are those of the ‘fiddle key’ type of nail used at this time. RFs 2398, 2403, 7940, 8936 and 8955 have or had D-shaped heads, but come from 9th-century and earlier contexts and are likely to be intrusive, as are RFs 1194 and 7305 from Period 6 contexts which have the late medieval form of head with short ‘wings’ at the base.

Locks and keys

SHACKLE (FIG. 14.15)

No. 3404 (RF 4086; FIG. 14.15) is the shackle of a padlock which was hinged at one end of the case, and at the other fitted into a slot before the bolt was inserted. This may be an intrusive medieval object, as no examples of padlocks with this feature are known from the Anglo-Saxon period.

TWIST KEY

No. 3405 (RF 12418) is a small key with a solid stem, which projects beyond a bit, existing as two short projections. It is unstratified, but probably medieval.

Structural ironwork and fittings

WALL HOOKS

23 wall hooks were found on the site; 12 of these are unstratified or from topsoil, and five others may be medieval. As the remaining six were from Anglo-Saxon contexts, the main discussion of these objects is in Chapter 5, above. Hooks of the principal form have a long history, which, as no. 3408 (RF 25; made of cast iron) clearly shows, continues into modern times;

SWIVEL HOOK

No. 3409 (RF 13152) is a small, plated swivel hook which is unstratified, but probably medieval. Whilst the form is known from Romano-British contexts (cf. Manning 1985), it is rarely found before the medieval period (cf. an example from an early 12th-century deposit at Goltho (I. H. Goodall 1987).

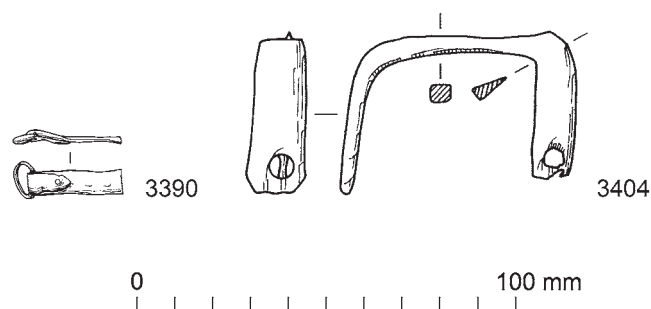


FIG. 14.15. Medieval iron belt hasp and lock shackle. Scale 1:2.

CARBINE HOOKS

Nos 3410–11 (RFs 8336 and 8588) are modern carbine hooks found unstratified.

WASHERS

There are four small washers (nos 3412–15; RFs 9187, 9697, 12943 and 13119) which are 27–44mm in diameter. Their function is unknown.

Cutlery

SCALE-TANG KNIVES

There are two scale-tang knives (nos 3416–17; RFs 3244 and 3308) which come from Phase 6iii and 4ii contexts respectively. They must be intrusive as this type of knife did not appear until the mid 13th century at the earliest (I. H. Goodall 1990b, 838–9).

FORKS

Two post-medieval table forks (nos 3418–19; RFs 24 and 127) were found in topsoil.

BELL CLAPPER

A substantial clapper with a spherical base (no. 3420; RF 1949, unstratified) is clearly post-medieval.

Catalogue (FIG. 14.15)*Dress and personal items*

BUCKLES

- 3385 Incomplete, pierced to hold the tongue.
L.35mm
RF 8286, Unstratified.
- 3386 Rectangular frame, flattened at the corners. Runner on one side, tongue linked to opposite side. Plated.
L.33, W.33mm
RF 2750, Unstratified.
- 3387 Incomplete circular frame and tongue; tiny spots of lead present. Heavily encrusted area of possible leather visible.
D.49mm
RF 9010, Context 3107, Phase 4ii.
- 3388 Rotating arm from buckle L.64mm. Medieval
RF 9144, Unstratified.

- 3389 Rotating arm of a buckle.
L.55mm
RF 13335, Unstratified.

BELT HASP (FIG. 14.15)

- 3390 Consists of an elongated plate which towards one end is folded over a D-shaped frame and riveted. Plated (tin-lead). Ian Panter comments that this piece exhibits keying marks below the plating.
L.56, W.20mm. (FIG. 14.15)
RF 10990, Context 6300, Phase 6iii.

Footwear

MODERN BOOT PLATE

- 3391 Half survives. L.65mm.
RF 9434, Unstratified.

Horse equipment

BRIDLE FITTING

- 3392 Consists of two items linked together. One exists as a triangular plate pierced at the head, which at the base develops into a round, domed terminal from the flat side of which a rivet projects. Other item is an oval disc which has a small loop at the head by which it was linked to the first item. Plated.
Item 1: L.43; Item 2: L.40mm
RF 12431, Unstratified.

HORSESHOES

- 3393 Smooth outer edge. Right branch incomplete, left branch has four rectangular holes.
L.100, W.110mm
RF 3763, Unstratified.
- 3394 Right branch only. Wavy edge, folded-over calkin, three countersunk holes.
L.106, W.27mm
RF 8321, Unstratified.
- 3395 Branch fragment. Smooth edge, part of a rectangular hole survives.
L.52, W.20mm
RF 9616, Unstratified.
- 3396 Left branch only. Smooth edge, three rectangular holes.
L.103, W.28mm
RF 12374, Unstratified.
- 3397 Branch fragment with smooth edge.
RF 12862, Unstratified.
- 3398 Incomplete branch with smooth edge and three rectangular holes.
L.90mm
RF 12941, Unstratified.
- 3399 End of right branch with wavy edge and turned-over calkin.
L.47mm
RF 12951, Unstratified.

HORSESHOE NAILS

- 3400 D-shaped head:
RF 2398, Context 2365, Phase 0; RF 2403, Context 1993, Phase 5a; RF 3787, Unstratified; RF 6540, Context 6471, Phase 6ii; RF 8265, Unstratified; RF 8955, Context 3107, Phase 4ii; RF 9471, Unstratified; RF 9528, Unstratified; RF 9596, Unstratified; RF 9664, Unstratified; RF

12549, Context Unstratified; RF 12850, Unstratified; RF 13114, Unstratified; RF 13311, Unstratified; RF 13694, Unstratified; RF 13944, Unstratified.

3401 Worn head:

RF 7940, Context 6344, Phase 5b-6i; RF 8936, Context 3107, Phase 4ii; RF 9401, Unstratified; RF 13314, Unstratified.

3402 Block head:

RF 13158, Unstratified.

3403 Winged head:

RF 1194, Context 1182, Phase 6iii; RF 7305, Context 6498, Phase 6ii-6iii; RF 8949, Context U/S; RF 9508, Unstratified; RF 9855, Unstratified; RF 11277, Unstratified; RF 12693, Unstratified; RF 12955, Unstratified; RF 13599, Unstratified.

Locks and keys

LOCK SHACKLE (FIG. 14.15)

- 3404 A pierced arm at each end of a short strip with faces at 90° to each other, one arm is wider than the other. L.60, W.40mm. (FIG. 14.15)
RF 4086, Context 3989, Phase 6iii.

TWIST KEY

- 3405 Oval bow, solid stem projects beyond bit which exists as two short projections.
L.38, W.16mm
RF 12418, Unstratified.

Structural ironwork and fittings

STRIPS

- 3406 Strip L.78mm. Probably modern from tinned iron vessel, box, can etc
RF 2593, Unstratified.
- 3407 Strip, looped at one end. L.55mm Possibly a binding.
RF 7916, Context 6343, Period 6.

WALL HOOKS

Wall hooks consist of tapering shank and slightly curved hook arm usually of rounded cross-section. There is a step at the base of the hook arm to allow the shank to be struck without damaging the hook arm. Length given is of shank.

- 3408 Rounded cross-section (cast iron; modern). L.59mm
RF 25, Context 1, Topsoil.

SWIVEL HOOK

- 3409 Dome head. Plated (tin). L.25mm
RF 13152, Unstratified.

CARBINE HOOKS (MODERN)

- 3410 RF 8336, Unstratified.
- 3411 RF 8588, Unstratified.

WASHERS

These are discs with a large central hole.

- 3412 D.27mm
RF 9187, Unstratified.
- 3413 Half. D.44mm
RF 9697, Context 3107, Phase 4ii.
- 3414 D.32mm
RF 12943, Unstratified.

- 3415 Incomplete. D.30mm
RF 13119, Unstratified.

Cutlery

SCALE-TANG KNIVES

- 3416 In two pieces. Tang largely missing, non-ferrous shoulder plate at junction with blade.
L.121mm
RF 3244, Context 3242, Phase 6iii.
- 3417 Fragment. Surviving pieces of tang have one non-ferrous rivet *in situ*. Remains of a horn handle, straight edge just on the blade. L.39mm
RF 3308, Context 3107, Phase 4ii.

TABLE FORKS

- 3418 Tapering tang and three tines. L.57mm
RF 24, Context 1, Topsoil.
- 3419 Stub of tang and three tines. L.35mm
RF 127, Context 1, Topsoil.

BELL CLAPPER

- 3420 Modern. Spherical expansion at the base, wedge-shaped at head. L.309, T. of ball 28mm.
RF 1949, Unstratified.

14.3.4 A medieval lead alloy spoon fragment

by Lisa M. Wastling

The late-medieval spoon knop (Fig. 14.16)

A knop (no. 3421) from a late-medieval lead/tin alloy spoon of likely 15th- to 16th-century date, was recovered from topsoil. The termination of the stem with an elaborate knop seems to have been a common feature of metal spoons of 14th to 16th century date, many examples of which can be seen in the collections of the Museum Boymans-van Beuningen, in Rotterdam (Ruempol and van Dongen 1991). This example is similar to one in a private collection (Moore 1987, 3) and of a type illustrated in the *Museum of London Medieval Catalogue* (Ward-Perkins 1954, fig. 41, 5).

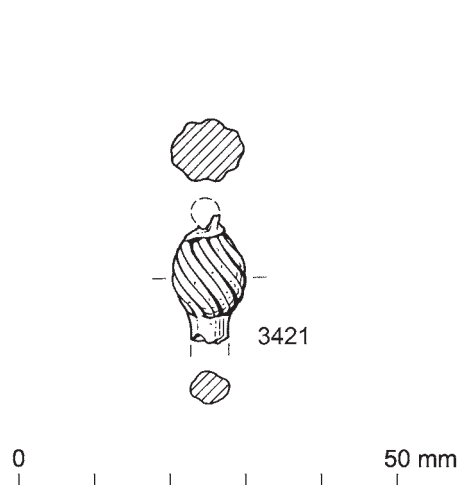


FIG. 14.16. Knop from a late medieval lead alloy spoon. Scale 1:1.

Catalogue (Fig. 14.16)

- 3421 Spoon knop
Form: Twisted (wrythen) ball knop. Casting seams are visible along the sides. (FIG. 14.16)
Size: D. 9mm W. of stem 5mm Th. of stem 4mm
RF 1028, Unstratified.

14.3.5 The medieval stone roof tile

by Lisa M. Wastling

A fragment of siltstone roof tile of likely medieval date (no. 3422; RF 14285) was re-used as a padstone in a Period 7 structure. It bears an hourglass-shaped perforation; this may have been intended to provide a countersunk housing for the head of a nail, as on examples from Northampton (Oakley 1979, 327), or it could have resulted from the hole being bored from both sides, as on examples from the Augustinian Friary, Hull (Wastling, forthcoming). The curved edge suggests that the original form of the tile may have been oval, or partially oval. Similar large stone shingles, of siltstone and oval form, were recovered during excavations at Castleford. These were also deemed to be medieval in date (Clarke 1998, 260).

Catalogue (Fig. 14.17)

(Lithological identification by Geoff Gaunt)

- 3422 Stone roof tile.
Material: Siltstone, either upper part of Scunthorpe Mudstones or basal part of Coleby Mudstones.
Form: Sub-triangular rough-worked slab, longest edge curved, with an off-centre circular tapered perforation (D.7–21mm). (FIG. 14.17).
Size: L.176mm, W.170mm, Th.35mm.
RF 14285, Context 1306, Period 7.

14.3.6. Medieval and later coins

by Marion M. Archibald

The medieval coins to the end of the active occupation of the site in the 14th/15th century are typical in range and

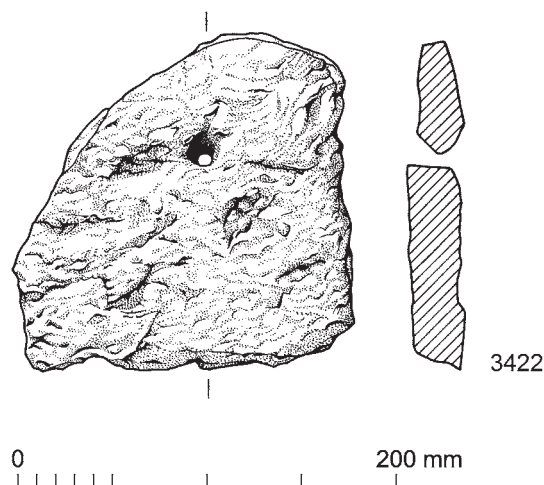


FIG. 14.17. Medieval stone roofing tile. Scale 1:4.

representation of finds on non-urban sites in the medieval period. Many were probably current long after their date of issue, and the brackets within which they are likely to have been deposited are noted in the catalogue. There are three coins from the plentiful Short Cross coinage, 1180–1247 (nos 3423–5), one from the shorter-lived Long Cross type, 1247–79 (no. 3426), and one from around 1300 (no. 3427). Most of the medieval coin finds with identifiable mints come from the most prolific mints of London and Canterbury, but one coin is from the local mint of Lincoln (no. 3426). By this time the coinage is largely homogeneous throughout the country, although a small element of local bias remains, underlining the importance of Lincoln to its surrounding area, as also strongly shown in the archaeological record here and on other Lincolnshire sites such as Goltho (Archibald 1987, 188). As usual low denominations predominate, all except one being sub-multiples of the penny. It may be noted that a penny of Henry III (no. 3423) was stratified intrusively in Phase 6iii, dating from the late 10th to 11th centuries. Later medieval pottery was also intrusive in this context, and its presence together with that of the coins reflects the fact that the deposit was the activity surface for 12th - to 14th-century use of the excavated area (Loveluck and Atkinson, Volume 1, Ch. 7). A jetton (no. 3428) rather than a coin representing the 14th century is paralleled elsewhere. Of the later coins from the site, the groat of Henry VIII (no. 3429) is more unusual, but the pair of common farthing tokens of Charles I (nos 3430–1) are again regulars in any coin-list. The latest coin is predictably a low-denomination modern loss, a worn three-penny bit of Queen Victoria (no. 3432) probably deposited in the early 20th century.

Catalogue

- 3423 Short Cross penny, class 7a(C), 1217/18–c.1222 (Henry III). Canterbury mint, moneyer Salemun. (Pl. 13.4)
Obv. hENRICVSR / EX
Rev. +SALEMVNONC
Wt 1.36g(21.0gr) Silver 95%
Ref. North 978(c)
RF 7237, Context 6300, Phase 6iii–7.
Short Cross coins of this group remained in circulation until the type was demonetised following the introduction of the

Long Cross type in 1247. This coin shows some, but not great, wear so the *terminus post quem* may be advanced a few years making the likely bracket for its deposition c.1230–c.1247.

- 3424 Short Cross cut-halfpenny. (Pl. 13.4)
Obv. hE[NRICVS]R / EX
Rev. +[WILLE]M·L·ON·L
Wt 0.58g (8.9gr) Silver 98%
Ref. North 970
FX 88, RF R8, unstratified.
As usual with currency halfpence as represented by site-finds this coin is underweight, weighing even less than half the weight of worn contemporary currency pence (cf. no. 3423). Short Cross coins of this group remained in circulation until the type was demonetised following the introduction of the Long Cross type in 1247. This coin shows some, but not great, wear so the *terminus post quem* may be advanced a few years making the likely bracket for its deposition c.1215–c.1247.
- 3425 Short Cross cut-halfpenny. No further details. (Pl. 13.3)
RF 14247. Detectorist find, unstratified.
This coin is identified from a drawing in HFA records.
- 3426 Long Cross cut-halfpenny, Class 2 or 3. Lincoln mint, moneyer uncertain. (no illustration of coin available)
RF 70094. Detectorist find, unstratified.
This coin is identified from information supplied by Scunthorpe Museum. The Lincoln mint struck Long Cross coins only between 1248 and 1250, but the issues could have survived until the end of the type in 1279.
- 3427 Edward 1, farthing, Class 10, London mint (no illustration of coin available)
Obv. +EDWAR[DVS]REX
Rev. CIVI TAS L[ON] DON
Wt n.r.
Ref. North 1058
RF 70109. Detectorist find, unstratified.
This coin was identified from information supplied by Scunthorpe Museum. The combination of inscriptions identify it certainly as class 10 in which the only mint beginning with L was London. As farthings are rare in hoards, there is little evidence of their duration in circulation, but this coin struck c.1302–10 was most probably deposited before the middle of the 14th century, although a later survival cannot be ruled out.

Concordance of medieval and later coins with their illustrations

Catalogue no.	RF no.	Shown on plate no.
3423	7237	Pl. 13.4
3424	FX 88 R8	Pl. 13.4
3425	14247	Pl. 13.3
3426	70094	[Scunthorpe Museum verbal record only]
3427	70109	[Scunthorpe Museum verbal record only]
3428	50027	[Scunthorpe Museum verbal record only]
3429	70037	[Scunthorpe Museum verbal record only]
3430	13877	Pl. 13.4
3431	14248	Detectorist find, no illustration
3432	327	Pl. 13.4

- 3428 French Jetton, 14th century (no illustration of jetton available)
 Obv. Illegible
 Rev. Floriate cross in a tressure of four arches
 Wt n.r. Diameter: 29mm
 RF 50027. Detectorist find, not stratified.
 This token is quoted from information supplied by Scunthorpe Museum. Too little detail was recorded for a reference in the standard works to be quoted.
- 3429 Henry VIII, groat, Third Coinage, 1544–7, mint not recorded. (no illustration of coin available)
 RF 70037. Detectorist find, unstratified.
 This coin is quoted from information supplied by Scunthorpe Museum, but not in sufficient detail for a North number to be cited. The base-silver groats in Henry's name of this period continued into the reign of his son Edward VI. Hoards of the base-coinage period of Edward VI are not plentiful, and the usual tendency to discriminate in favour of coins of better metal means that it is difficult to estimate the duration in everyday currency of the base groats in Henry's name. This coin is, however, most likely to have been deposited by c.1550, although there may have been a few survivors among the large quantities of base money of Edward VI still in circulation at Elizabeth's accession in 1558.
- 3430 Charles I, bronze royal farthing token, probably Richmond 'round', 1625–34, possibly counterfeit. (Pl. 13.4)
 Wt 0.16g (2.4gr) large fragment, heavily corroded
 Ref. See Peck 1964, 52–61
 RF 13877, unstratified.
 Hardly any detail is visible on this coin and parts of the edges are missing, so too little remains to establish its sub-type, initial marks, and thus a specific Peck number. The royal farthing tokens were extensively forged and the slight fabric of the present coin is an indication that it is a counterfeit, but its condition makes a decision on this impossible. As the lowest denomination in circulation, these tokens are common finds from early 17th-century sites. They had a comparatively short life and their issue ceased in 1644.
- 3431 Charles I, bronze royal farthing token, Richmond type either 'round', 1625–34 or 'oval' 1625–34. (No illustration of coin available)
 Obv. CAR[I.D.G.MAG:BRI
 Rev. FRA:ETHIB:REX
 Wt 1.00g (15.4gr)
 Ref. See Peck 1964, 52–61 and 69–72
 RF 14248. Detectorist find, unstratified.
 This coin is quoted from information taken from HFA field records. The description could fit either Richmond variety, and given the likely condition of the coin, it is perhaps better not to rely on the precise form of the punctuation as recorded. See discussion at no. 3430.
- 3432 Victoria, 1837–1901. Threepence, 1878. (Pl. 13.4)
 Wt 1.37g (21.1gr)
 RF 327, Context 1, Topsoil.
 This coin is worn, and was probably deposited in the early 20th century.

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- CH I** *Coin Hoards I* (1975), Royal Numismatic Society (London).
- CKN** Pirie 1996
- CR** Coin Register [in the *British Numismatic Journal*]
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 York 7, 17, 30, 33, 34, 35, 42, 44, 112, 118, 120, 127, 130, 167, 170, 175, 205, 218, 259, 283, 285, 296, 298, 300, 317, 354, 357, 358, 360, 363, 367, 370, 373, 393, 397, 403, 404, 405, 412, 417, 418, 445, 446
 Clifford Street 130
 Coppergate 16, 18, 19, 26, 27, 34, 35, 36, 39, 40, 42, 109, 112, 113, 115, 116, 117, 118, 119, 120, 130, 141, 144, 146, 169, 171, 188, 190, 191, 196, 203, 204, 205, 231, 233, 252, 254, 258, 261, 279, 287, 298, 300, 316, 318, 370, 373, 397, 447
 Fishergate 9, 23, 28, 33, 35, 36, 39, 42, 80, 109, 110, 113, 115, 116, 118, 190, 205, 232, 237, 246, 249, 252, 345, 347, 348, 349, 354, 364, 366, 373, 397
 Parliament Street 129, 130
 Pavement 169, 246
 Piccadilly 205, 298
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 St Mary's Abbey 18
 St Saviourgate 173, 258, 259, 269
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 Wellington Row 18
 York Minster 107, 130, 188, 258, 269, 273, 283, 285, 364
 Yorkshire 12, 43, 422
 East 9, 34, 159, 205, 434, 444
 North 8, 34
 South 237
 West 237
 zinc 4, 6, 80, 178, 191, 273, 332, 333, 334, 335, 420, 422
 zoomorphic decoration 5, 8, 13, 14, 16, 17, 18, 19, 42, 66, 72, 80



PL. 1.1. Sixth-century Great square-headed brooch (no. 23; FX 88, RF6. (Bill Marsden; Humber Field Archaeology).



PL. 1.2. Gilt-silver disc brooch with zoomorphic decoration (no. 25; RF 5467), manufactured during the late eighth – early ninth century (Bill Marsden; Humber Field Archaeology).



PL. 1.3. Gilt-silver disc brooch, and a selection of strap-ends and hooked tags (Humber Field Archaeology).



Pl. 1.4. Enamelled strap-end no. 84 (RF 1618). (British Museum).



Pl. 1.5 (above). Late eighth-century silver-gilt hooked tag (no. 90; RF 1816) with zoomorphic decoration (Bill Marsden; Humber Field Archaeology).



Pl. 1.6 (left). A selection of pins with zoomorphic heads. From left to right, nos 677, 565, and 678. (Humber Field Archaeology).



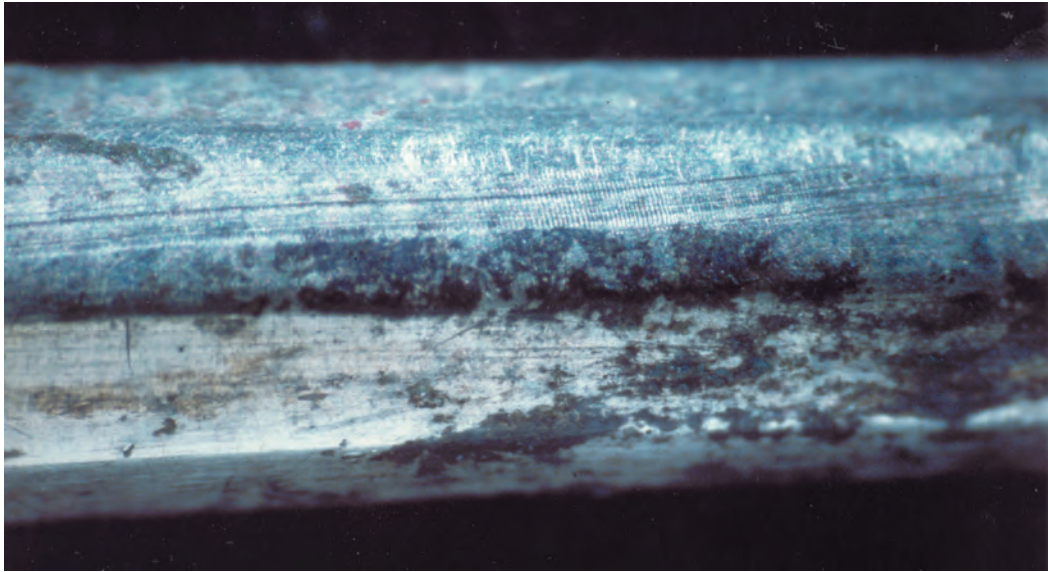
PL. 1.7. Pin with a terminal in the form of a dog's head (no. 566; RF 822). (Bill Marsden; Humber Field Archaeology).



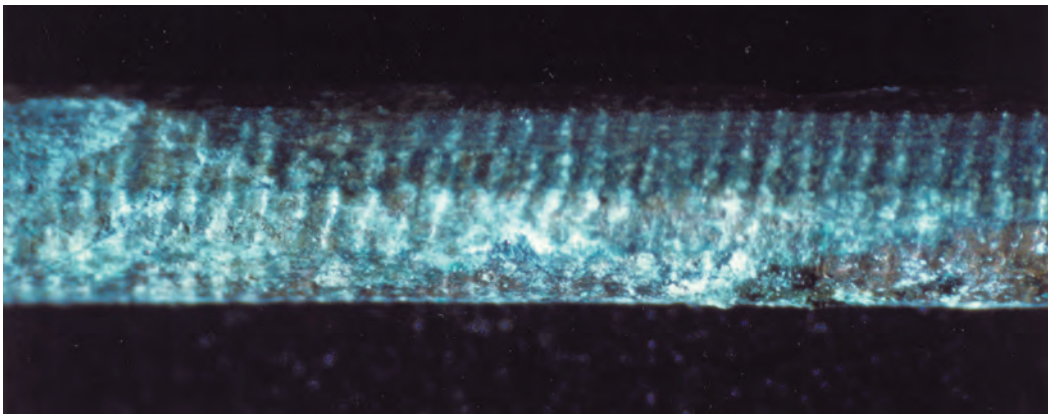
PL. 1.8. Gilt copper alloy disc-headed pin (no. 560; RF 7835), with eighth- to ninth-century interlace decoration. (Bill Marsden; Humber Field Archaeology).



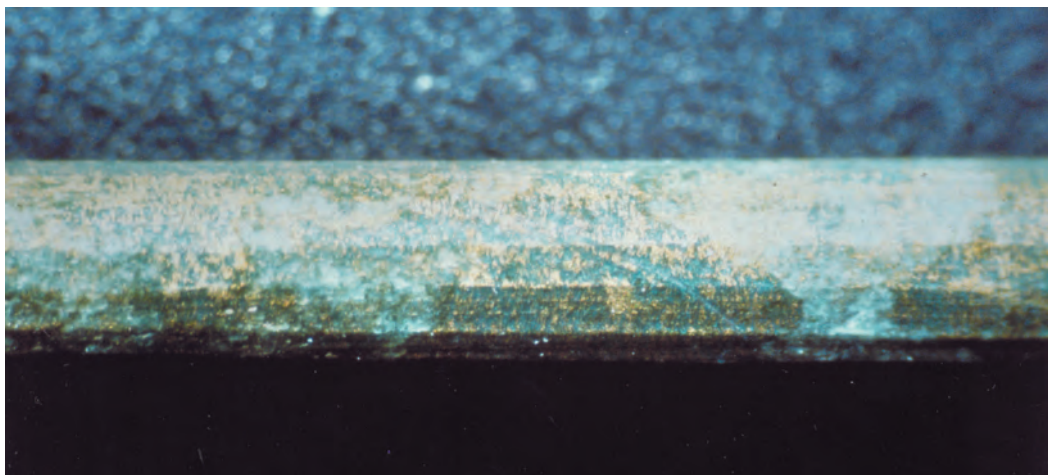
PL. 1.9. The spherical head of a pin, with six cylindrical settings; five of these contain red glass, the sixth holds the remains of the broken pin shaft (no. 679, RF 1241). (Bill Marsden; Humber Field Archaeology).



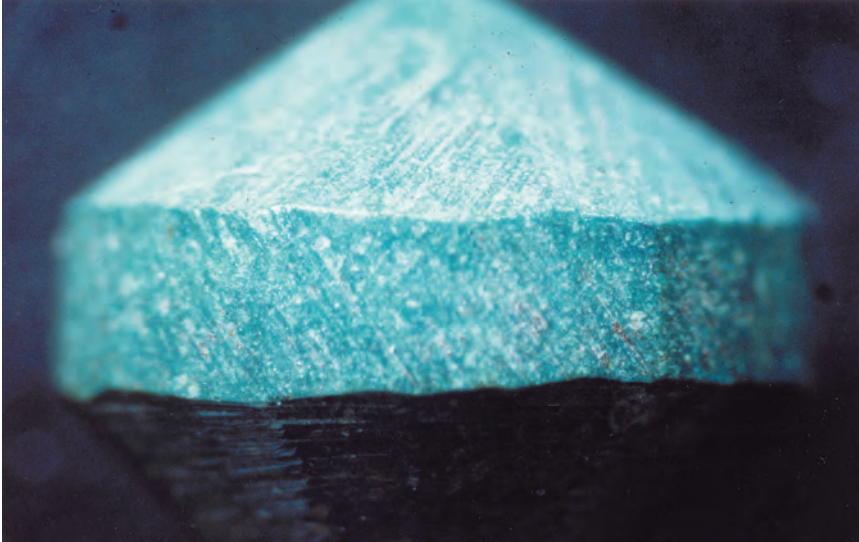
Pl. 1.10. Detail of “ladder”-like marks running along the shank of silver stylus no. 1006 (RF 6143).



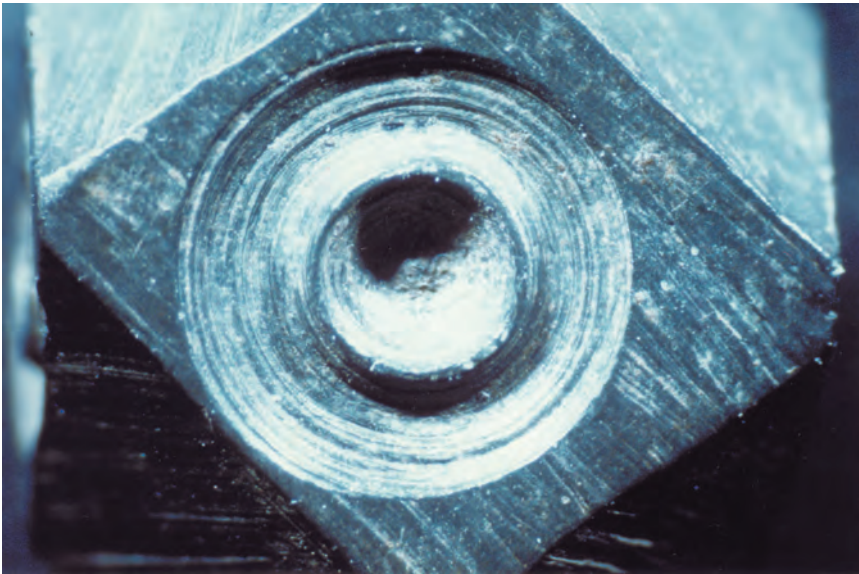
Pl. 1.11. Detail of deeper lines/grooves at right-angles to the shank of copper alloy pin of brooch no. 15 (RF 11043).



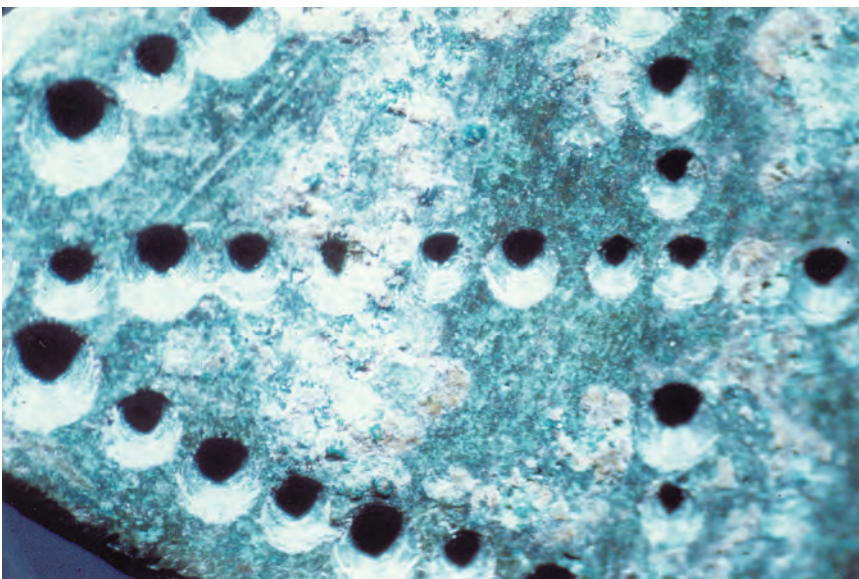
Pl. 1.12. Striations along the shank of copper alloy pin RF 632 (cat. no. 522), suggesting that it was pulled through a draw-plate.



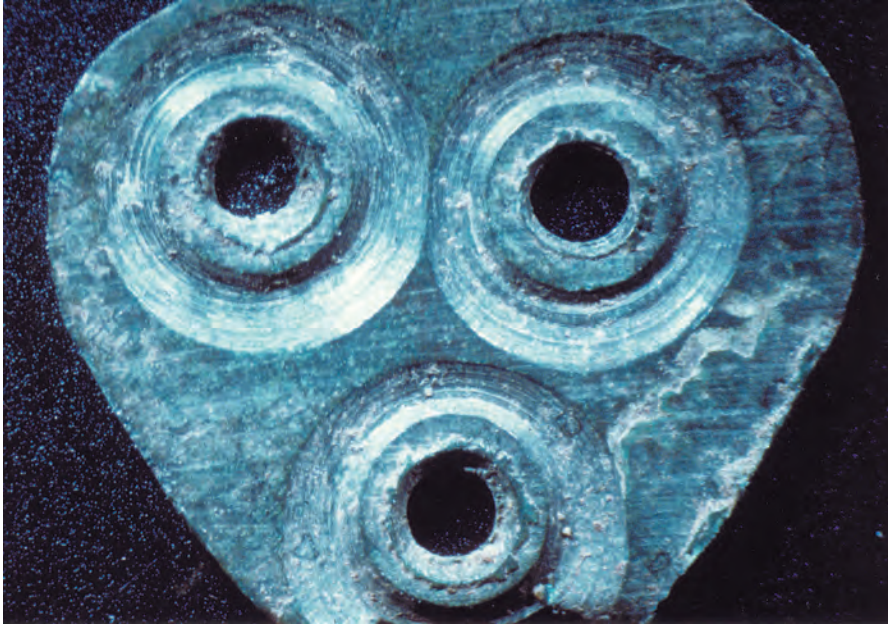
Pl. 1.13. Detail of the head of pin no.417 (RF 2643), showing how the file-marks have been used to create facets on the head.



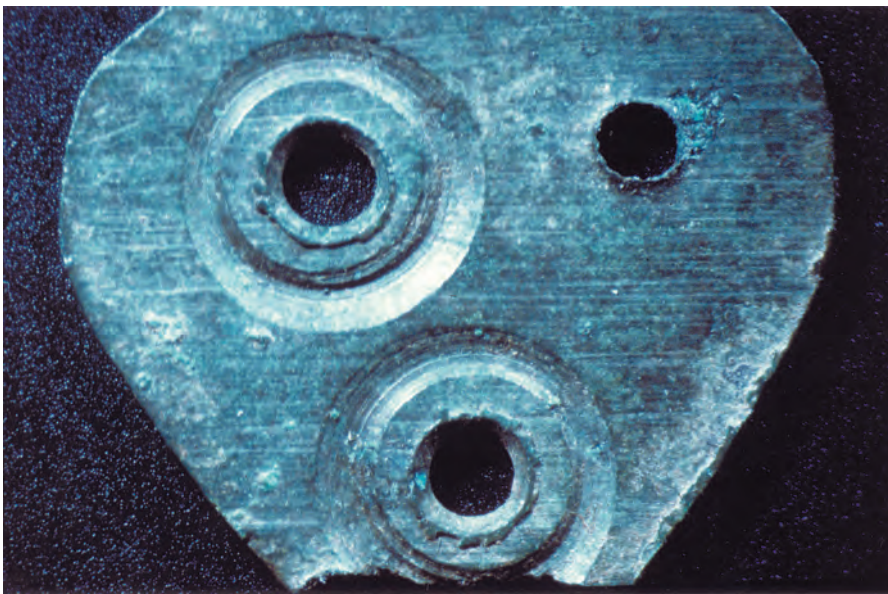
Pl. 1.14. Detail of the concentric cuts made by a scriber within the ring scribed onto the top of the cuboid pin head of pin no. 336 (RF 711).



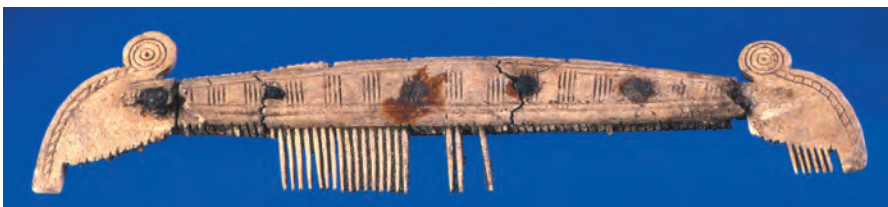
Pl. 1.15. Detail of the characteristic striations caused by the use of a drill or awl to make the decoration on pin head no. 535 (RF 7106).



Pl. 1.16. Detail of the decoration on the flattened head of unfinished pin no. 527 (RF 2838). This face has three inscribed rings and dots



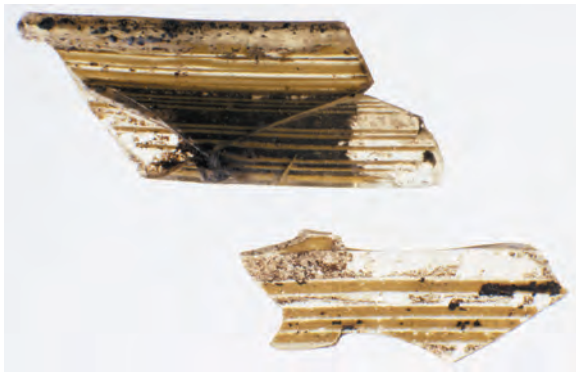
Pl. 1.17. Detail of the decoration on the flattened head of unfinished pin no. 527 (RF 2838). This face has only two inscribed rings and dots, suggesting that the head was not completed (compare fig. 1.29).



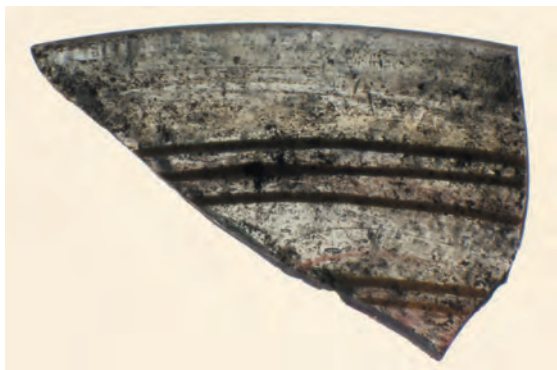
Pl. 1.18. Antler single-sided 'winged' composite comb (no. 851, RF 6139). (Bill Marsden; Humber Field Archaeology).



Pl. 2.1. A selection of glass fragments including the tessera.



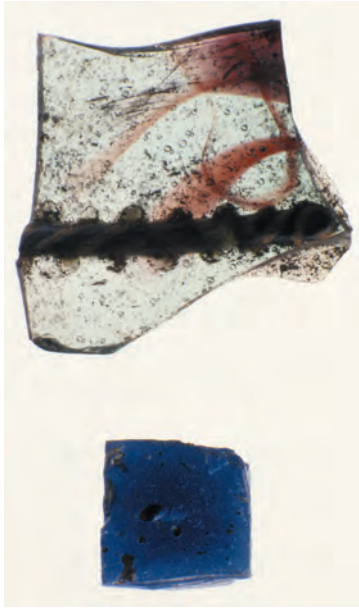
Pl. 2.2. Two fragments of an imported bowl in colourless glass, with fine horizontal yellow trails inside throughout (no. 883, RF 5000). (Bill Marsden; Humber Field Archaeology).



Pl. 2.3. Everted rim of a vessel in light blue-green glass, probably a globular beaker (no. 885, RF 7247), decorated with horizontal yellow trails. (Bill Marsden; Humber Field Archaeology).



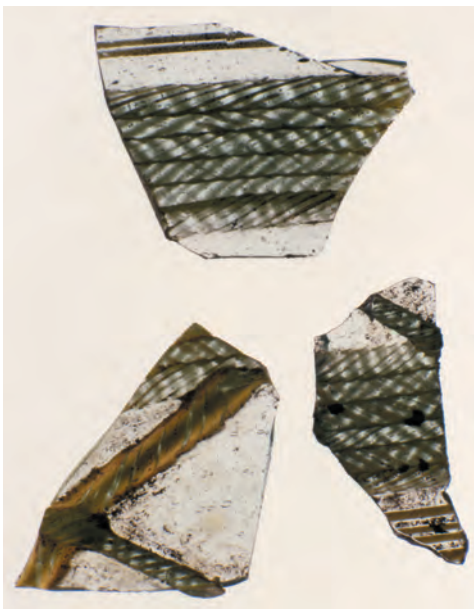
Pl. 2.4. Cobalt-blue glass vessel fragment of a blown applied foot, with a fine white marvered trail on exterior surface (no. 892; RF 8723); imported from the continent, from an eighth-century context (Bill Marsden; Humber Field Archaeology).



PL. 2.5. The upper part of the plate shows part of the kicked base of a globular beaker, in light green-blue glass with red 'feathered' patterning; and an unmarvered black and yellow reticella trail; the latter is one of a number which would have radiated from the centre of the base, to continue vertically up the vessel wall (no. 900; RF 6887). The lower part of the plate shows a tessera in streaky blue glass (no. 947, RF 14334). (Bill Marsden; Humber Field Archaeology).



PL. 2.7. Fragmentary copper-alloy mount (no. 979; RF 14087), which terminates in an animal-shaped head, with a long snout; each of the eyes contain yellow glass, and there is silver inlay close to the tip. The upper part of the object is decorated with asymmetrical interlace. (Bill Marsden; Humber Field Archaeology).



PL. 2.6. Fragments of imported, reticella-decorated glass vessel, probably a bowl (nos 897, 901 and 902), from Flixborough, eighth to ninth century (Bill Marsden; Humber Field Archaeology).



PL. 2.8. Front face of the hanging-bowl mount, no. 980, RF 5717. (British Museum).



From left to right:

PL. 3.1. Copper alloy Class II stylus (no. 1005, RF 4762), with a plain, straight-edged triangular eraser. (Bill Marsden; Humber Field Archaeology).

PL. 3.2. Silver Class II stylus (no. 1006, RF 6143), with a bold triangular eraser and a baluster-shaped shaft; note the collar flanked by bands, and the encircling grooves on the upper part of the shaft. (Bill Marsden; Humber Field Archaeology).

PL. 3.3. Iron Class VI stylus (no. 1013, RF 12268). The eraser is covered with a silver foil repoussé mount, with a style II interlace design set within a triangular border. (Bill Marsden; Humber Field Archaeology).

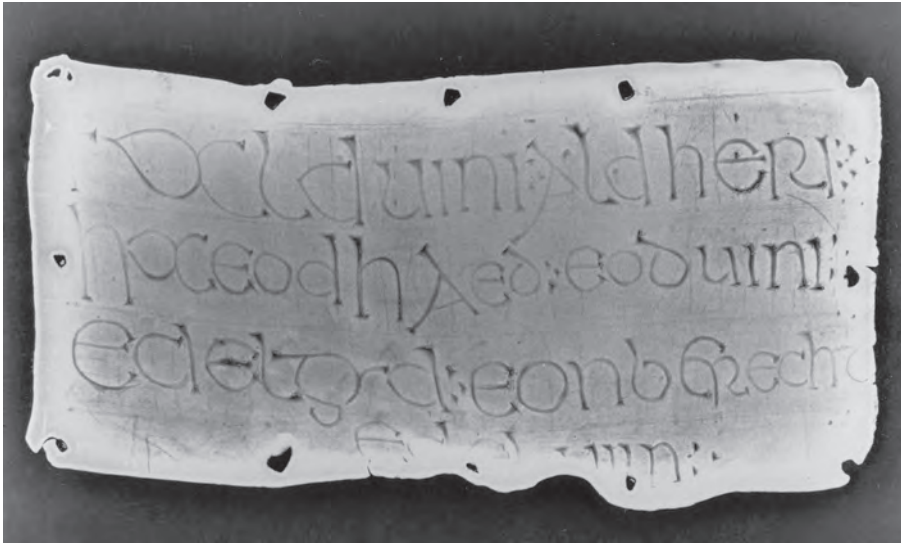
PL. 3.4. Copper alloy Class VII stylus (no. 1014, RF 3775). Bell-shaped eraser tapering to a bow-shaped end; shaft decorated with groups of encircling bands. Traces of gilding surviving around the collar suggest that the whole object was once gilded. (Bill Marsden; Humber Field Archaeology).



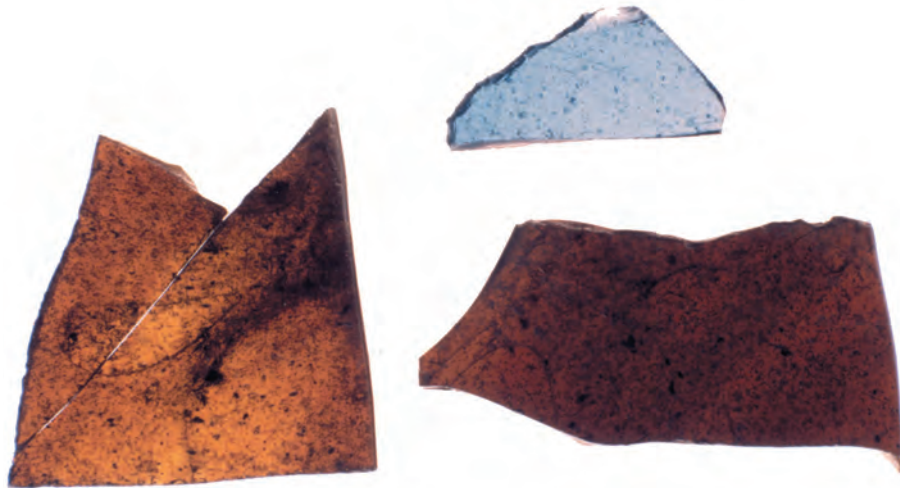
PL. 3.5. Decorated silver plaque (no. 1017, RF 6767), possibly from a book cover. Deep chip-carved interlace enmeshes a two-legged beast. (Bill Marsden; Humber Field Archaeology).



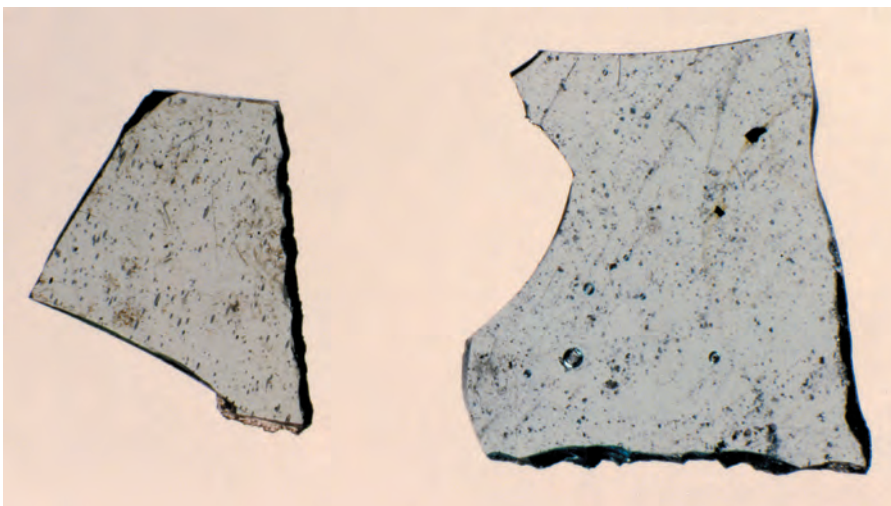
PL. 3.6. Inscribed silver finger-ring (no. 1018), dating to the eighth or ninth century, with traces of mercury gilding. It is inscribed with the letters of most of the first half of the alphabet (the letters A to L, with the obvious exception of a J) in half uncial script. (Bill Marsden; Humber Field Archaeology).



Pl. 3.7. X-radiograph of the inscribed lead plaque (no. 1019, RF 1781), bearing the names of seven individuals, both male and female. (British Museum).



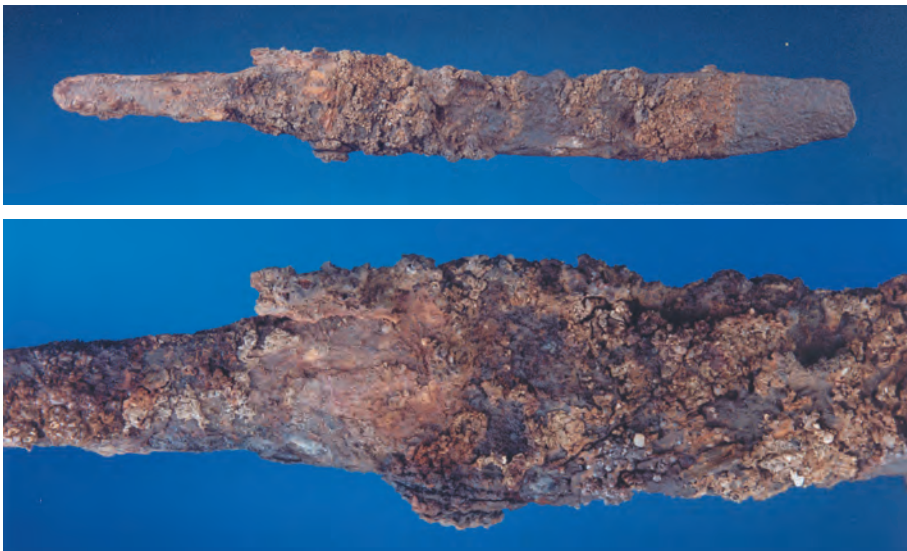
Pl. 4.1. Window glass fragments from Period 4 (ninth-century) contexts at Flixborough: (Bill Marsden; Humber Field Archaeology).



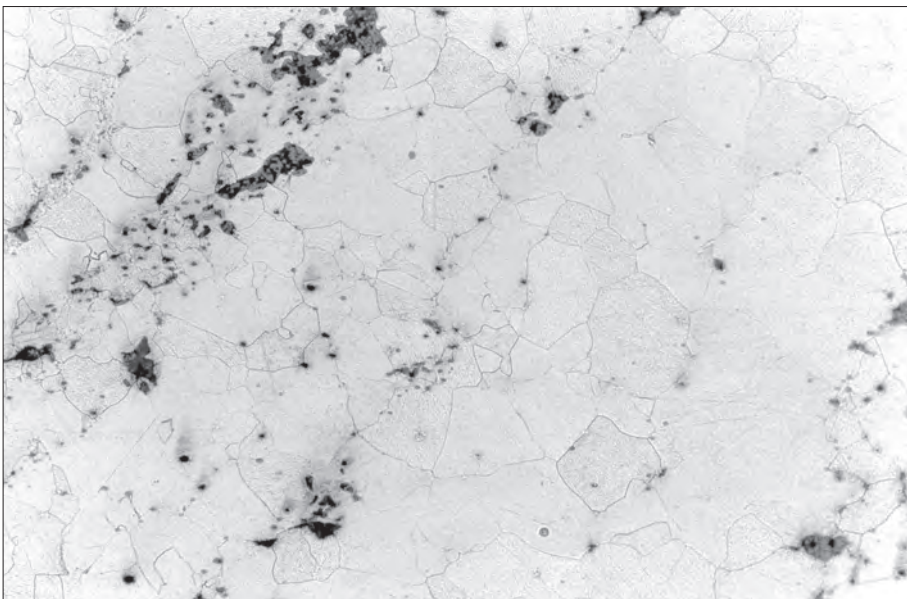
Pl. 4.2. Two clear (light blue) fragments of coloured glass. (Bill Marsden; Humber Field Archaeology).



Pl. 5.1. Cauldron suspension chain (no. 1777, RF 7107). (Humber Field Archaeology).



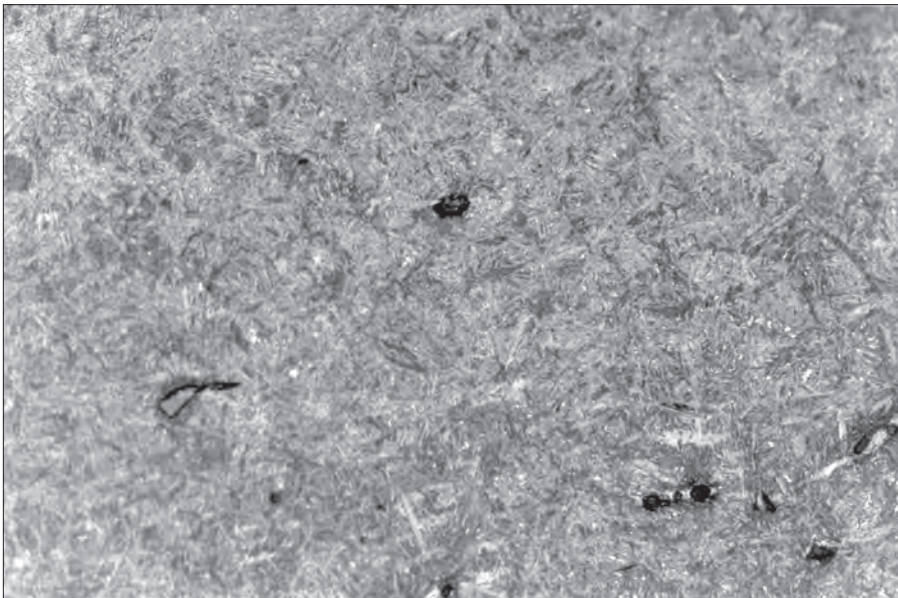
Pl. 5.2. Iron knife with blade back form C1 (no. 2173, RF 12167). The remains of a horn handle on the tang extend over the shoulder; remains of a leather sheath around the blade overlap the handle. (Bill Marsden; Humber Field Archaeology).



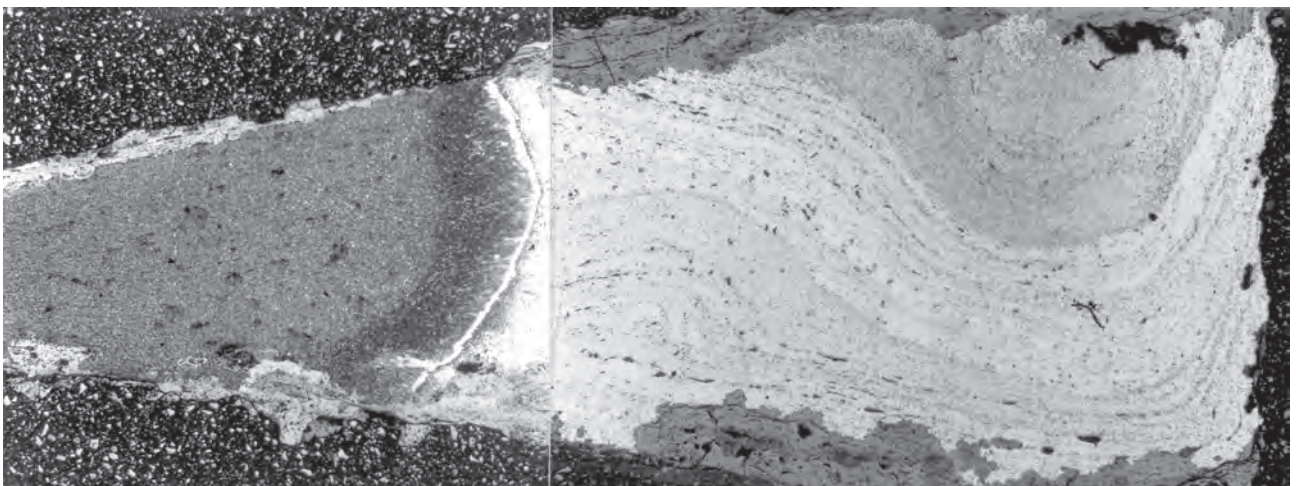
Pl. 5.3. Knife metallurgy. Ferritic iron comprising uniform light etching grains. Nital-etched, image width 1.5mm.



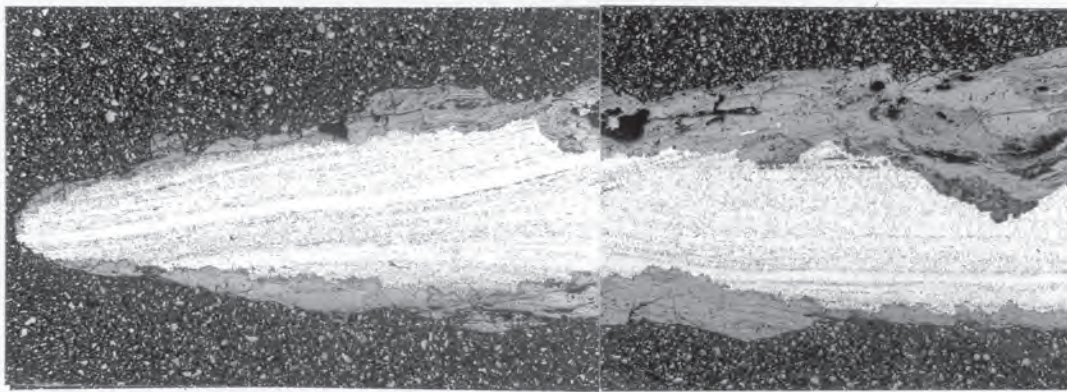
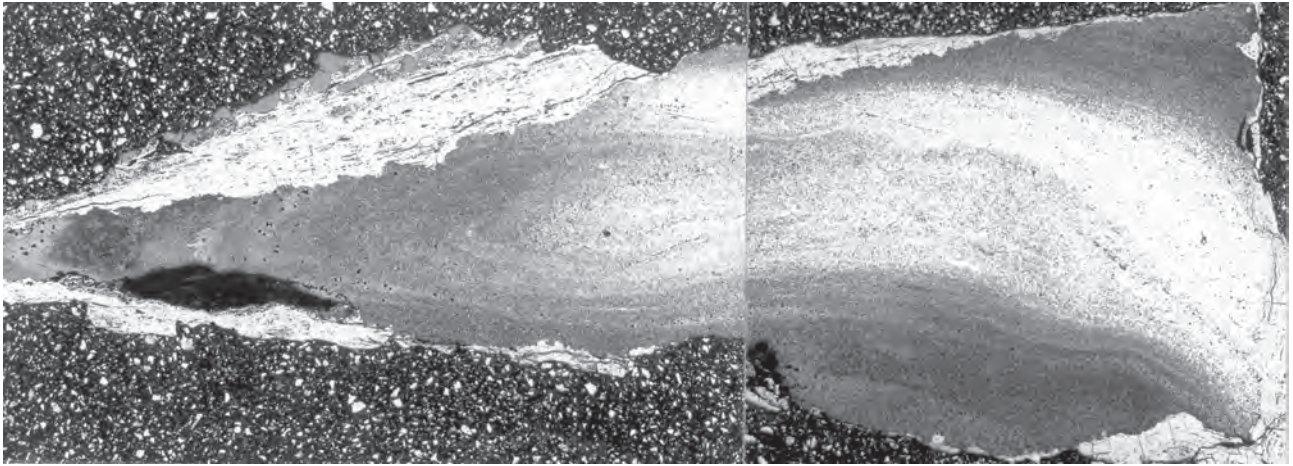
PL. 5.4. Knife metallurgy. Phosphoric iron. Light etching grains with irregular grain size and "ghosting". Nital-etched, image width 1.5mm.



PL. 5.5. Knife metallurgy. Martensite – the result of quenching steel. Nital-etched, image width 0.4mm.



PL. 5.6 (below). Flixborough knife blade section (RF 3569). Dark etching steel edge, butt-welded to mixed alloy back. Nital-etched, image width 10mm.



PL. 5.7 (top). Flixborough knife blade section (RF 4332). Ferritic iron core (light etching) wrapped in steel (dark etching). Nital-etched, image width 10mm.

PL. 5.8 (above). Flixborough knife blade section (RF 12170). Entirely ferritic / phosphoric iron, possibly because the steel edge has been worn away by use. Nital-etched, image width 10mm.

PL. 5.9 (left). Bone spoon (no. 2316, RF 4135) with leaf-shaped handle. (Bill Marsden; Humber Field Archaeology).



Pl. 7.1. Single-bladed iron woodworking axe (no. 2423, RF 12107). (Bill Marsden; Humber Field Archaeology).



Pl. 7.2. Iron adze (no. 2425, RF 11793); wedges in the socket held the handle in place. (Bill Marsden; Humber Field Archaeology).



Pl. 7.3. The two lead cylindrical vessels which housed the hoard; no. 2470 to the left, and 2469 to the right. (Humber Field Archaeology).



Pl. 7.4. Flixborough tool hoard. One of the ribs on the larger lead vessel no. 2469, showing the poor level of finish.



Pl. 7.5. Flixborough tool hoard. Detail of the rib where it joins the rim and the attached iron ring on the larger lead vessel no. 2469.



Pl. 7.6. Flixborough tool hoard. The inside of the larger lead vessel no. 2469; it also shows the different sizes of the two rings.



Pl. 7.7. Flixborough tool hoard. Detail of the rim and one iron ring on the larger lead vessel no. 2469.



Pl. 7.8. Flixborough tool hoard. Some of the lines decorating the side of the larger lead vessel no. 2469 (cf. also FIG. 7.14).



Pl. 7.9. Flixborough tool hoard. Detail of the staple and ring on the smaller lead vessel no. 2470.



Pl. 8.1. Lunette knife (no. 2475, RF 10841) used for cutting leather. (Bill Marsden; Humber Field Archaeology).



Pl. 9.1. Spindle whorls from 9th-century phases of the Anglo-Saxon settlement. (Bill Marsden; Humber Field Archaeology).



From left to right:

Pl. 9.2. A bone pin-beater (no. 2570, RF 3577) from a mid to late eighth century to early ninth century refuse dump. Decorated with a band of incised lines and lattice. (Bill Marsden; Humber Field Archaeology).

Pl. 9.3. Iron shears (no. 2859, RF 325); blades have horizontal shoulders. (Bill Marsden; Humber Field Archaeology).

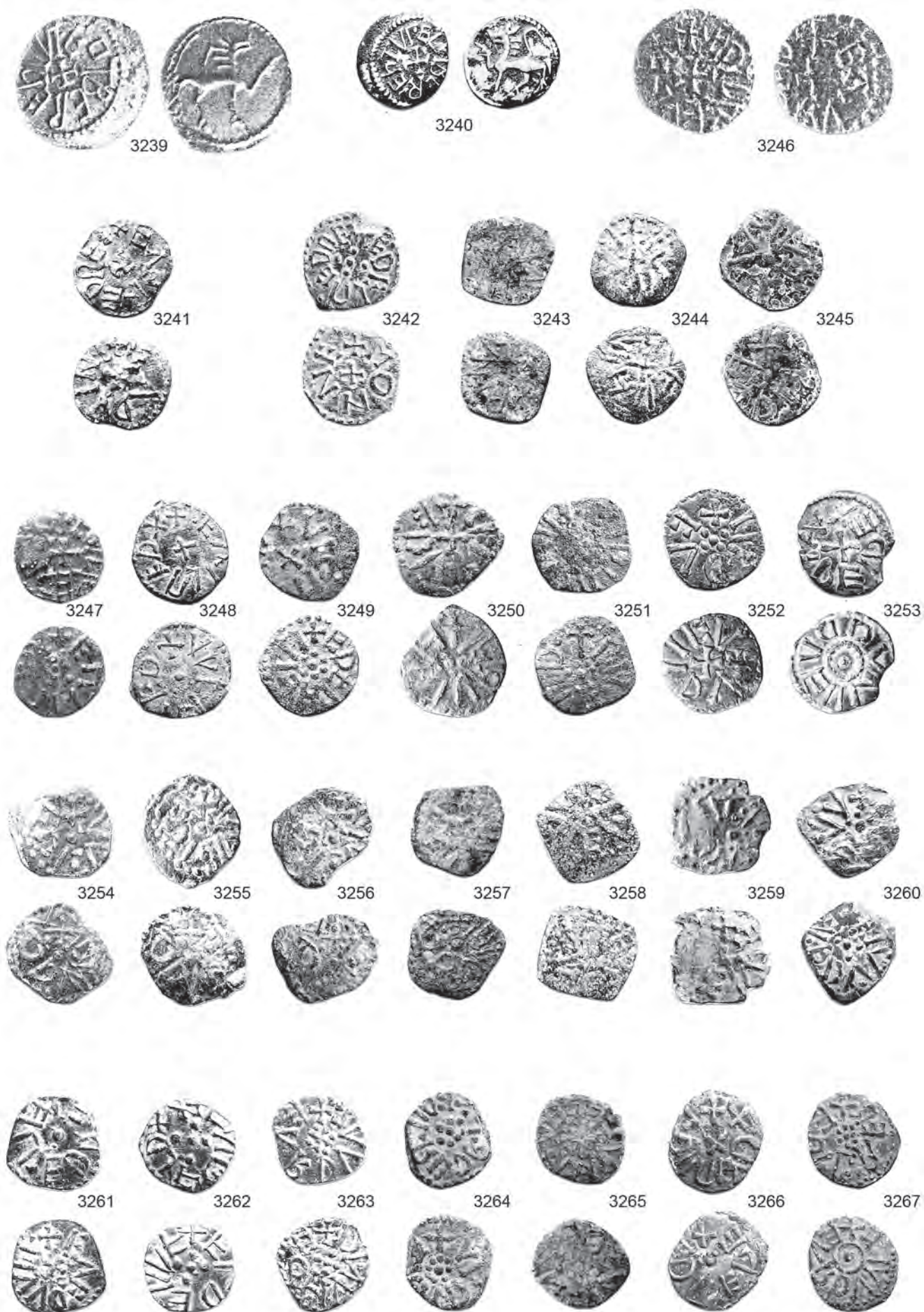
Pl. 9.4. Iron shears (no. 2879, RF 10428); blades have concave shoulders. (Bill Marsden; Humber Field Archaeology).



Pl. 10.1. Locking tongs (no. 3063, RF 12169) for holding partially fabricated metal artefacts; the keeper (the plate attached to the rebated end of one arm) has four holes, in which the other arm could be set, to keep it in tension. (Bill Marsden; Humber Field Archaeology).



Pl. 10.2. Metalworking file (no. 3092, RF 4877), with the tang missing; blade of rectangular cross-section. Traces of copper alloy were lodged in the teeth. (Bill Marsden; Humber Field Archaeology).



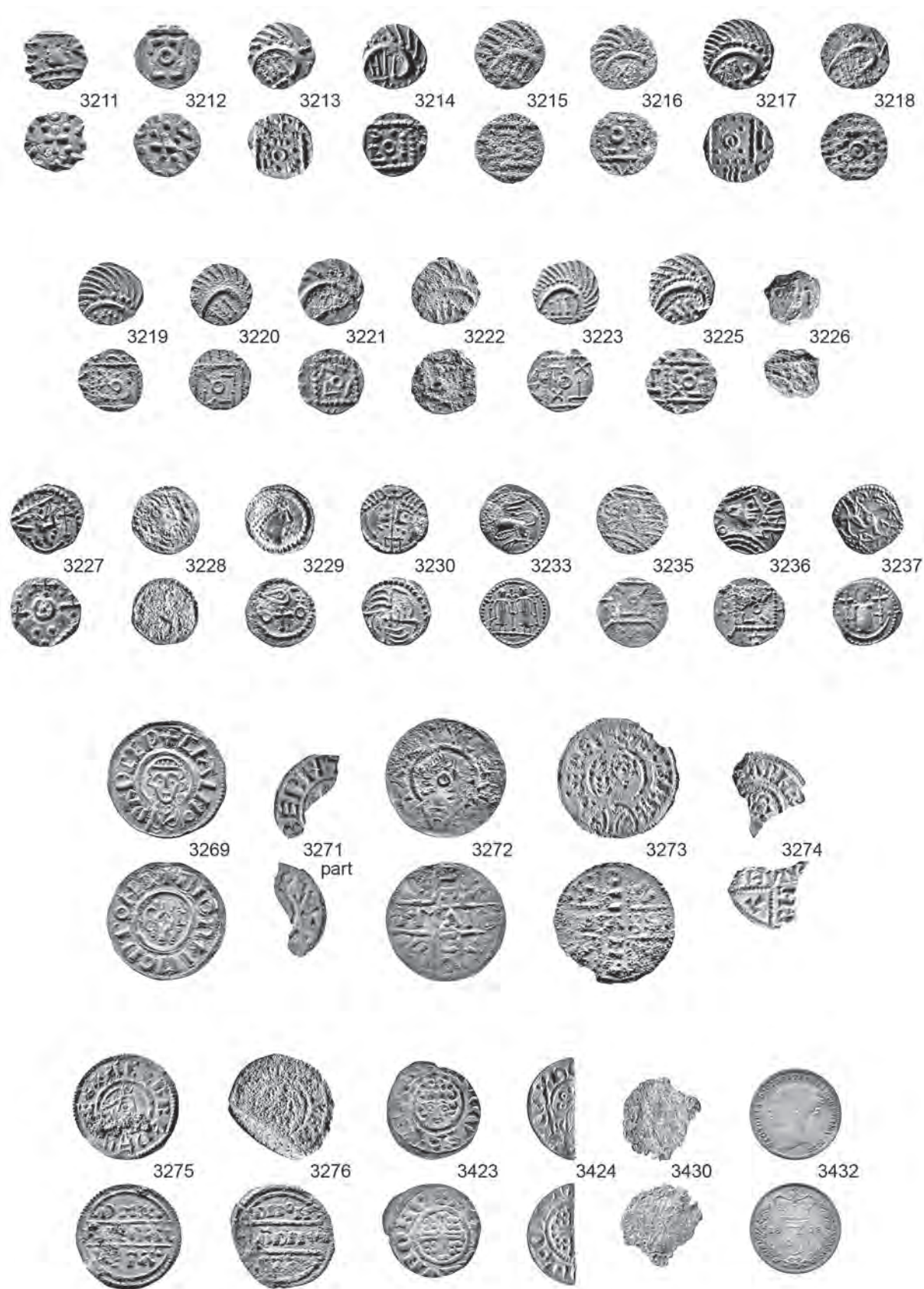
PL. 13.1. The Northumbrian coins. Scale 3:2, except nos 3239 and 3246 (scale 2:1). (Photos: E. J. E. Pirie).



Pl. 13.2. Sceattas and pennies; scale 1:1 (Photos Bill Marsden, apart from no. 3268, which was taken from a Polaroid print).



Pl. 13.3. Illustrations of sceattas and pennies which were retained by metal detectorists (no. 3425 is taken from the original Recorded Find sheet).



Pl. 13.4. Sceattas and pennies; scale 1:1 (photos by The Dept. of Coins & Medals, The British Museum).



Pl. 13.5. Conical lead weight, with iron suspension handle (no. 3279, RF 3884). (Bill Marsden; Humber Field Archaeology).



Pl. 13.6. Cylindrical lead weight (no. 3284, RF 3727), and a silver 'finger' ingot (no. 3289, RF 12198). (Bill Marsden; Humber Field Archaeology).



Pl. 14.1. Medieval annular gold brooch (no. 3367, RF 12237), formed from double-strand wire wrapped around a core; the pin is missing. Similar to a mid to late thirteenth-century example from York. (Bill Marsden; Humber Field Archaeology).

