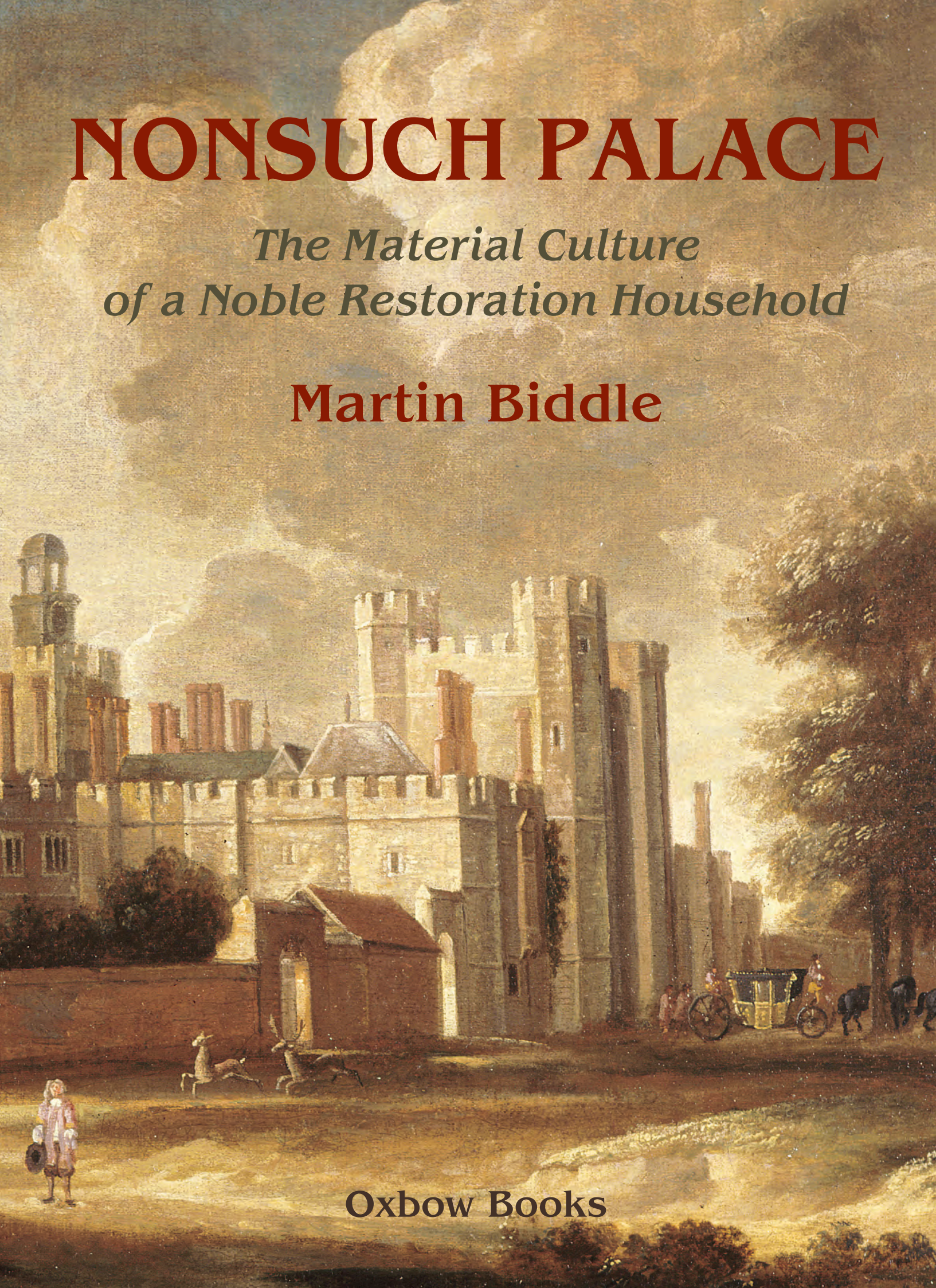
NONSUCH PALACE

The Material Culture of a Noble Restoration Household

Martin Biddle



Oxbow Books

Nonsuch Palace from the north-east, *probably by Hendrick Danckerts c. 1666–79.*

Nonsuch Palace

Martin Biddle

* *

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of a Noble Restoration Household

Frontispiece. Fine vessel glass: Venetian goblet ***1****: p.238, Fig. 110 (1:1).*
Painted reconstruction by Jenny Stringer

Nonsuch Palace

Martin Biddle

* *

The Material Culture
of a Noble Restoration Household

With contributions by

Michael Archer, D. R. Atkinson, C. Bradbury, R. Brownsword,
June Chatfield, the late R. J. Charleston, Geoff Egan, Blanche Ellis,
Alison R. Goodall, Ian H. Goodall, P. M. Gouk, Robin Hildyard,
Alison Locker, Arthur MacGregor, F. R. Maddison,
Catherine Mortimer, Hugh Pagan, the late J. H. Thornton,
Jane Webster and Rosemary Weinstein

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For

IVOR NOËL HUME

a founding father of
Early Modern Archaeology
on two continents

THE NONSUCH PALACE EXCAVATION COMMITTEE

† Sir John Summerson CBE, FBA (Chairman, 1959–1992)
Professor Martin Biddle FBA (Secretary and Director, 1959–)
† John Dent FLA (Treasurer, 1959–1972)
† Miss J M I Griffiths FLA (Treasurer, 1974–1989)
R.P. Brownjohn (1959–) (latterly Borough Engineer, Epsom and Ewell)
Miss S.E. Butcher (1974–1980) (Ancient Monuments Inspectorate)
† C.G. Cobbett (1959–1986) (Borough Engineer and Surveyor, Epsom and Ewell, Surveyor to the Nonsuch Park Joint Management Committee)
Sir Howard Colvin CBE FBA (1959–) (Editor, *The History of the Kings Works*)
Graham Hunter (1969–1974) (Curator, Bourne Hall Museum, Epsom and Ewell)
† John Hurst FBA (1959–2003) (Ancient Monuments Inspectorate)
P.H. Moore (1974–1985) Borough Engineer and Surveyor, Epsom and Ewell, Surveyor to the Nonsuch Park Joint Management Committee)
† Philip Shearman FSA (1959–1989) (Surrey Archaeological Society and the Nonsuch Society)
Arnold Taylor CBE, FBA (1959–1974) (Ancient Monuments Inspectorate)

STAFF AND VOLUNTEERS OF THE NONSUCH PROJECT

Assistant director (in charge of finds)
Alan Millard (1959)

Site supervisors
Peter Addyman (1959)
Lawrence Barfield (1959–60)
Joan Collins (1960)
Richard Fries (1959–60)
Colvin Greig (1959)
Ann Hamlin (1959–60)
† Frances James (1959)
Martin Morris (1960–1)
Fabian Radcliffe O.P. (1959)
Colin Renfrew (1959)
Derek Roe (1959)
John Saunders (1959)

Finds supervisor
† Cedric Yardley (1959–63)

Photographers
Martin Biddle (1959)
John Crook (1990–4)
David C Haselden (1959–60)
Stanislaus Witkowski (1960)

Surveyors
Anthony Baggs (1959)
Martin Biddle (1960)
R.P. Brownjohn (1959)
John Haslam (1959)

Draughtsmen
Terry Ball (1959)
Nicholas Griffiths (1973–8, 1982–94)
John Pearson (1982–5)
Jennifer Stringer (1990–3)
Jeffrey Wallis (1988–3)

Research Assistants
Fiona Gale (1976–8)
Josephine Turquet (1974–9)
Alison Tinniswood (1985–7)
Tim Claydon (1987–9)
Jane Webster (1989–94)

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PREFACE

The excavation of Nonsuch Palace took place over twelve weeks in the summer of 1959 under the aegis of the Nonsuch Palace Excavation Committee chaired by the late Sir John Summerson CBE. The excavation of the Banqueting House took place under the same auspices for five weeks the following summer. The work was undertaken as a contribution to *The History of the King's Works* then being prepared for the Ministry of Works under the editorship of Mr (now Sir) Howard Colvin CBE. An account of Nonsuch written in the light of the excavations appeared in Volume 4 (Biddle and Summerson 1982).

Work on the finds began during the 1959 season when preliminary drawings of much of the pottery and many of the small finds were made on site as part of the finds record. From 1959 to 1963 space was made available in the Staneway House branch of the Epsom and Ewell Public Library by the kindness of the Borough Librarian, Mr John Dent FLA, the Treasurer of the Excavation Committee. Here the finds were sorted, mended and packed and here in 1960–1 the earthenware was typed and described, the cards then written providing the bulk of the descriptions published here.

As there was then no prospect of a professionally-staffed local museum in the area, arrangements were made with Dr Donald Harden CBE for the finds to be deposited in the London Museum and in October 1963 they were sent to Lancaster House where the museum's stores were then located. In 1976, following the amalgamation of the London and Guildhall Museums, the finds passed to the Museum of London in whose care they now are.

Exhibitions of the Nonsuch finds were held at the London Museum in 1969, at Sutton Place in 1983, at the Sutton Central Library in 1985, and at the Bourne Hall Museum, Ewell, in 1988. A small selection of the material has been on permanent display at Bourne Hall, Ewell, since 1970 and at Whitehall, Cheam, since 1978, and a few items are shown in the Tudor Gallery of the Museum of London. A small but comprehensive display of Nonsuch opened in the Tudor Gallery of the Honeywood Heritage Centre, Carshalton, in 1993 and a major display of the architectural decorations of Nonsuch forms part of the new Renaissance Gallery at the British Museum, which opened in 1994.

Work on the Nonsuch finds did not proceed between 1961 and 1973 when the writer was heavily engaged on the Winchester excavations, but in 1973, with a decision to fund the preparation of reports on excavations carried out under their (or their predecessors') auspices, the Department of the Environment (from 1984, English Heritage) began the series of grants which have made possible the completion of this volume.

Between 1973 and 1978, with funds available for part-time work by a draughtsman and (in 1976–8) a research assistant, the finds (both architectural and domestic) were recovered from the various stores in which they then lay, re-ordered and prepared for specialist reports; drawing for publication also began. After a further pause while the writer was in the USA, work recommenced in 1982 and has since been continuous.

The two volumes, dealing respectively with the architecture and the domestic material were planned to have been published simultaneously, but by 1988 it became clear that the drawings

of the decorative elements would not be finished for some time, and that it would be better to proceed with the publication of the domestic finds, hence the appearance of this volume in advance of the volume on the architecture and excavation of the palace and Banqueting House.

Sufficient general information about the structures and their excavation has been given here to allow the present volume to stand on its own. The garderobe pits and demolition deposits in which the bulk of the domestic material was found are fully described and this material will not be repeated in the architectural volume.

MARTIN BIDDLE
Hertford College, Oxford
1 June 1993

POSTSCRIPT

The typescript and illustrations of this book were submitted to English Heritage in the summer of 1994. Following lengthy discussions and by mutual agreement the production of the book was eventually passed on to Oxbow Books. I am most grateful to David Brown for his help and enthusiasm at every stage, to Val Lamb at Oxbow for her help throughout, and especially to Liz King who set and subsequently paged a complex text, to Ruth Gwernan-Jones who set the tables, and to Rita Matos who prepared the colour plates and helped in the final stages.

The text was up to date when submitted in 1994 but the long delay meant that some revision was necessary in the light of recent work. With the generous collaboration of the contributors all the chapters were revised in first proof during 2002. I am especially grateful to Reino Liefkes of the Victoria and Albert Museum who checked the proofs and provided additional material for the late Robert Charleston's magisterial chapter on the Fine Vessel Glass, and to Robert Charleston's daughter, Jenny Stringer, who had drawn the glass, for her agreement to this procedure and for reading the proofs of her father's contribution. June Swann kindly checked the proof and brought up to date the late John Thornton's contribution on the leather.

MARTIN BIDDLE
September 2003

ACKNOWLEDGEMENTS

The outstanding debt of gratitude is due to the Ancient Monuments Inspectorate who first agreed in 1958 to my proposal for an excavation at Nonsuch Palace, and who subsequently supported the work in every possible way. Their commitment has been fully matched by their successors at English Heritage. It is wholly appropriate that a project first undertaken as a contribution to *The History of the King's Works*, the greatest single scholarly achievement of the old Inspectorate, should appear with the support of its successor, English Heritage. Over the years John Hurst, Sarnia Butcher, Stephen Johnson, and latterly Amanda Chadburn mediated with great generosity and patience the long association between Nonsuch and the Inspectorate and English Heritage.

I owe a great personal debt of gratitude to John Summerson, Howard Colvin, and Arnold Taylor, for their enthusiastic response to the original suggestion and for continued help and advice. The work which they and other members of the Nonsuch Palace Excavation Committee (listed on p. vi) put in hand with the support of the Inspectorate would not have been achieved, however, without the extraordinary contributions to every aspect of the project made by the late John Dent, Borough Librarian of Epsom and Ewell. His wit, knowledge, and companionship were a delight to us all, and his energy as Treasurer to the Committee succeeded in raising in 1959 and 1960 funds which more than doubled the original generous official contribution. These extra funds not only made possible the virtually complete excavation of the palace in 1959 but also allowed the excavation of the Banqueting House the following year without the need to call on any other official or public funds.

In addition to the grant made by the Ministry of Works in 1959, and the funds raised by Mr Dent and his team of voluntary guide lecturers in 1959–60 on behalf of the Committee from the contributions of some 75 000 visitors and from the sale of publications, the Marc Fitch Fund, Mr Robin Howard, the British Academy, the Royal Dental Hospital, and the Wellcome Trust, made generous contributions to the work of 1959–61. In later years, as described in the Preface, the Department of the Environment, latterly English Heritage, has provided the greater part of the funds required, but in 1974 Mr David Astor, and in 1975 the British Academy, made generous grants which helped to get the work restarted after a long pause.

Permission to excavate the palace was readily given by the Nonsuch Park Joint Management Committee, and permission to excavate the Banqueting House was given equally willingly by the Borough of Epsom and Ewell. Both bodies subsequently and with self-effacing generosity agreed to place the finds in the care of the London Museum, now the Museum of London.

The work on the site through the brilliant summer of 1959 (one day of rain) was in the hands of a group of supervisors (listed on p. vi), then mostly, like the Director, undergraduates at Cambridge or Oxford. To them, to R. P. Brownjohn who surveyed the Palace day after day in his lunch hour and after work, as the remains were gradually uncovered, and to all the others on the list, the warmest thanks are due. In the context of this volume, my special gratitude is due to Alan Millard who throughout the 1959 season saw to the handling and recording of a quite exceptionally large quantity of finds of the most varied character: the tribute paid in Alison Locker's animal bone report to the recovery rate of the material (p. 439) is an index of the

success of Alan Millard's team, among them my mother, the late Mrs G. F. Biddle. In 1960 Cedric Yardley was in charge of the finds from the Banqueting House, and from 1959 to 1963 he devotedly sorted, mended, packed, and listed all the finds from both sites prior to their despatch to the London Museum. His contribution was second to none. During this whole period my own work at Nonsuch was greatly helped by the generous and continued hospitality of Pat and Stan Witkowski, devoted helpers in all our work.

I am most grateful to all those who have contributed studies, drawings, and photographs to this volume, but their work and mine has only been made possible by the devoted help of the five successive research assistants: Fiona Gale got things in order after the long pause, Josephine Turquet worked on the iconography which will be dealt with in the companion volume, Alison Tinniswood organised the archive, Tim Claydon undertook the initial phasing of the Palace and Banqueting House, worked closely with much of the material and many of the contributors for both volumes, and word-processed the first texts, and Jane Webster not only received, checked and re-checked, and word-processed most of the texts, but has herself contributed, among much else, the analytical database which has been the foundation of the chronological discussion on pp. 37–51. Birthe Kjølbye-Biddle carried out the detailed phasing of Cuddington church and has written the account of it which will appear in the companion volume. To these devoted colleagues warmest thanks are due.

Robert Charleston, Hazel Forsyth, Richard Kennaugh, Clive Orton, F.J. Osmond-Smith, and June Swann have generously read and commented on parts of the text, but are not responsible for any errors which remain. Clive Orton also kindly allowed us to read his unpublished account of the pottery from Oatlands Palace, Surrey. Many others who have helped with individual problems and sections are thanked in the appropriate place. Hazel Forsyth and Rosemary Weinstein have helped tirelessly on innumerable occasions with the location, loan, and return of Nonsuch materials from the Museum of London, and Douglas Cluett, Sean Kahn, and Graham Hunter have rendered the same service for the materials now or formerly in their care at Whitehall, Cheam, and Bourne Hall, Ewell.

Illustrated Artefacts

The illustrated artefacts are identified by an asterisk * placed before the site reference number in the context information in each entry, eg

*G150; T7 III 3**=G26**; *Phase 4*

for Fine vessel glass **66** (p. 249).

The illustrations (colour plates, figures and tables) for each chapter are given in the chapter heading. In the case of finds illustrations, the artefacts on each figure are identified by the catalogue number used in the relevant contribution. Figure numbers are not therefore quoted in the individual catalogue entries.

Catalogue numbers are printed in **bold** throughout the text.

Context Information

Context information is given at the end of each catalogue entry, as in the example given above, where:

G150 (or similar) is the letter and number or numbers under which the material was originally recorded.
T7 III 3 gives the trench and layer, as described below, pp. 5–12, Fig. 6.
=G26 (or similar) indicates a find from a closed group (Table 1).
Phase 4 indicates the phase to which the context has been assigned (see below, p. 12–13).

PART 1

INTRODUCTORY

1

GENERAL INTRODUCTION

by Martin Biddle

Nonsuch Palace (*Endpapers* and Fig 1) was constructed by Henry VIII in 1538–46 on the site of the demolished church and manor house of the village of Cuddington, between Ewell and Cheam in Surrey (Fig 2).[1] The Banqueting House was also built and the gardens and parks first laid out during these years (Fig 3). The palace, still unfinished in some details at Henry's death in January 1547, was sold by Mary in 1556 to Henry Fitzalan, 12th Earl of Arundel, who with his son-in-law John, Lord Lumley, completed the buildings and grounds. In 1580 Fitzalan bequeathed Nonsuch to Lumley and in 1592 Lumley sold it back to the Crown.

Nonsuch remained in royal hands until 1670, with the exception of the period 1648–60 when it was first held and then sold by Parliament, before being returned to Henrietta Maria, the Queen Mother, at the Restoration.

After over a decade of neglect Nonsuch was in poor condition, but in the summer of 1665 it was repaired and fitted up as offices for the Receipt of the Exchequer and Tally Office 'by reason of the great and dangerous increase of the plague in and about the City of Westminster'.[2] The Exchequer remained at Nonsuch from 15 August until early January 1666, and may have returned there briefly to escape the Great Fire the following September. As will be seen, this short period in 1665–6 may be responsible for the deposit of the greater part of the material described in this volume.

In 1671, following his mother's death two years before, Charles II granted Nonsuch to Barbara Villiers, Countess of Castlemaine. In 1682 she sold the materials of the palace and the gardens to George Berkeley, 1st Earl of Berkeley, who had been keeper of Nonsuch under the crown since 1660. Berkeley had begun the demolition if the Inner Court by June 1683 but his family seems to have been living in parts of the Outer Court until at least 1686. Two years later in 1688 he recieved the last payment of his fee as keeper of the house and park.[3] As will be seen, the deposit of the greater part of the material described in this volume probably derives from the Berkeleys' occupation of Nonsuch in the 1670s and 1680s.[4]

1. For the building and later history of the palace, Banqueting House, gardens, and parks, see Biddle forthcoming. See also Dent 1981; Biddle and Summerson 1982; Biddle 1984; Oswald 1996; Biddle 1999
2. Dent 1981, 202–6
3. See below, p 62
4. The dating of the deposits is discussed below, p 64–9

Fig. 1 Nonsuch Palace: the 1959 excavations from the air, looking west.

A small part of the palace, perhaps the Outer Gatehouse and part of an adjacent range, remained standing until after 1702 when it appears in a distant view by John Talman.[5] As late as 1757 Richard Pococke was able to trace foundations over a considerable area.[6] Soon afterwards the site was levelled with imported soil and then ploughed. A field lane running from north to south approximately on the line of the former axis of the palace divided the site in two and in time the western half became covered with trees (Fig 1). The eastern half has been open ever since and in 1940 was disturbed by anti-glider trenches.[7] A sewer put in along the line of the lane, now The Avenue, in 1933, with a branch to Cherry Orchard Farm laid in 1945, cut through the foundations of the palace and served as a guide to placing the excavations of 1959 (Fig 4).[8]

The Banqueting House had been demolished as early as 1667.[9] Its site remained untouched until about 1777 when the raised area within was first planted with trees. The retaining wall of its bastioned platform was refaced in brick in the nineteenth century and the area within replanted and these trees were mature by the time of the excavations in 1960 (Fig 7). In 1930 Mr A.W.G. Lowther cut some trenches across the Banqueting House proper, at the centre of the platform, and its plan was subsequently marked out by a concrete kerb removed in 1960.[10]

The excavations of 1959–60 produced only a few finds from deposits associated with the

5. Oxford, Ashmolean Museum, Sutherland: Clarendon III, pt II, 136
6. Cartwright (ed) 1889, 262
7. Maitland Howard 1946; Oswald 1996, 33, Fig 9
8. Dent 1981, 236–8
9. Dent 1981, 206
10. Willis 1933; Willis 1948, 72

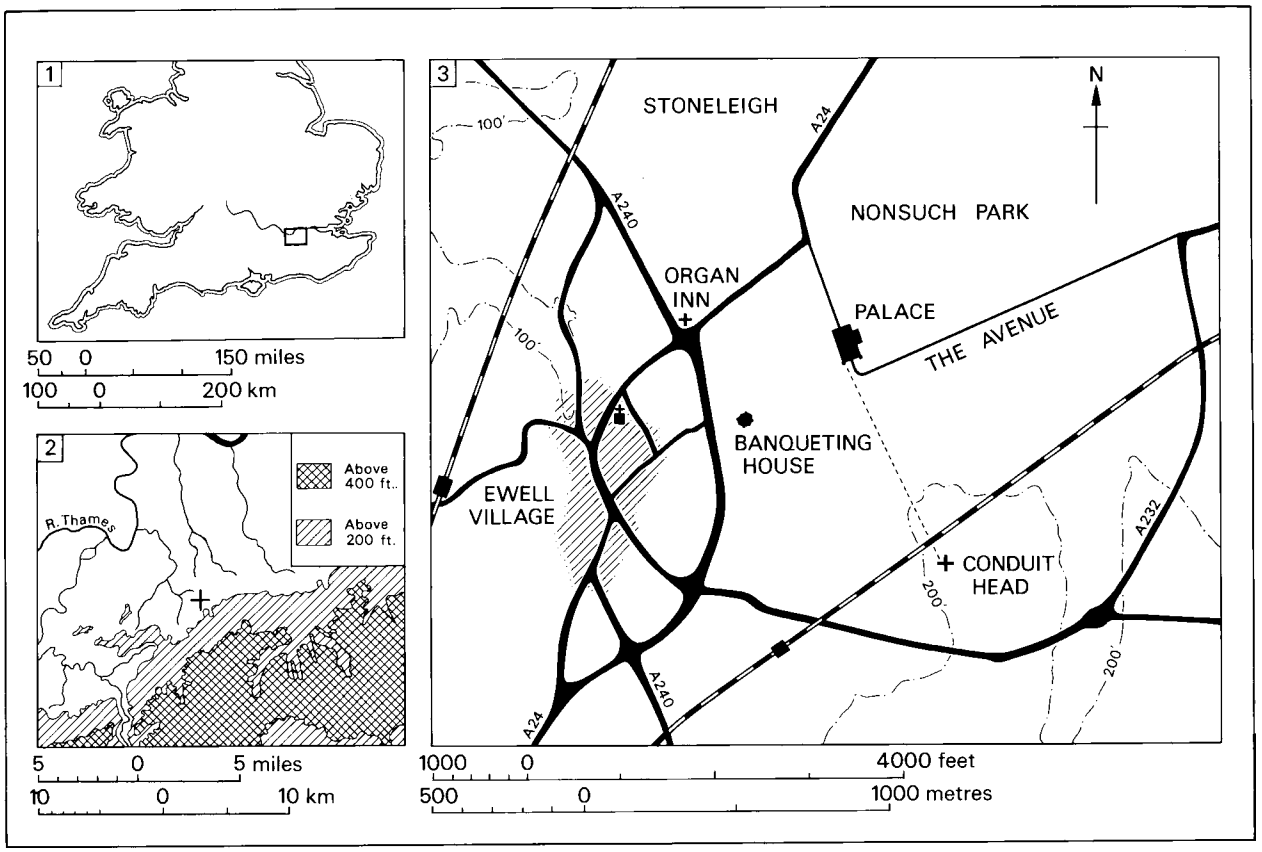


Fig. 2 The location of Nonsuch Palace.

village of Cuddington and thus dating from before 1538.[11] By far the greater bulk of the material published here came from the occupation and demolition of the palace and may thus be placed within the bracket 1538/46 to 1682/90. As already noted, much of it may derive from the occupation by the Berkeleys in the 1670s and 1680s.[12] A much smaller quantity of material came from the occupation and demolition of the Banqueting House and may thus be dated between 1538/46 and 1667. Here too the bulk of the material belongs to the later part of the period.[13]

The finds from the palace and Banqueting House form two distinct categories: architectural and domestic. The architectural material, which consists principally of fragments of the decoration of the external walls of the Inner Court in stucco and slate, with smaller quantities of moulded and carved stonework, terracotta, floor tiles and window glass, will be published with accounts of the archaeology and architecture of the palace and Banqueting House in the companion volume.[14] The present volume deals with the domestic finds of all types. In two categories, iron and lead, this volume also includes the structural and decorative items which could equally well have been placed in the architectural volume. Although many of the iron and lead objects are obviously either structural/decorative or domestic, there are many which might belong in either category and for this reason it seemed best to include everything from both categories in the present volume, with cross-references as required in due course from the architectural volume.

11. See below, p 18–24
12. See below, p 64–9
13. See below, p 8, 13
14. Biddle forthcoming

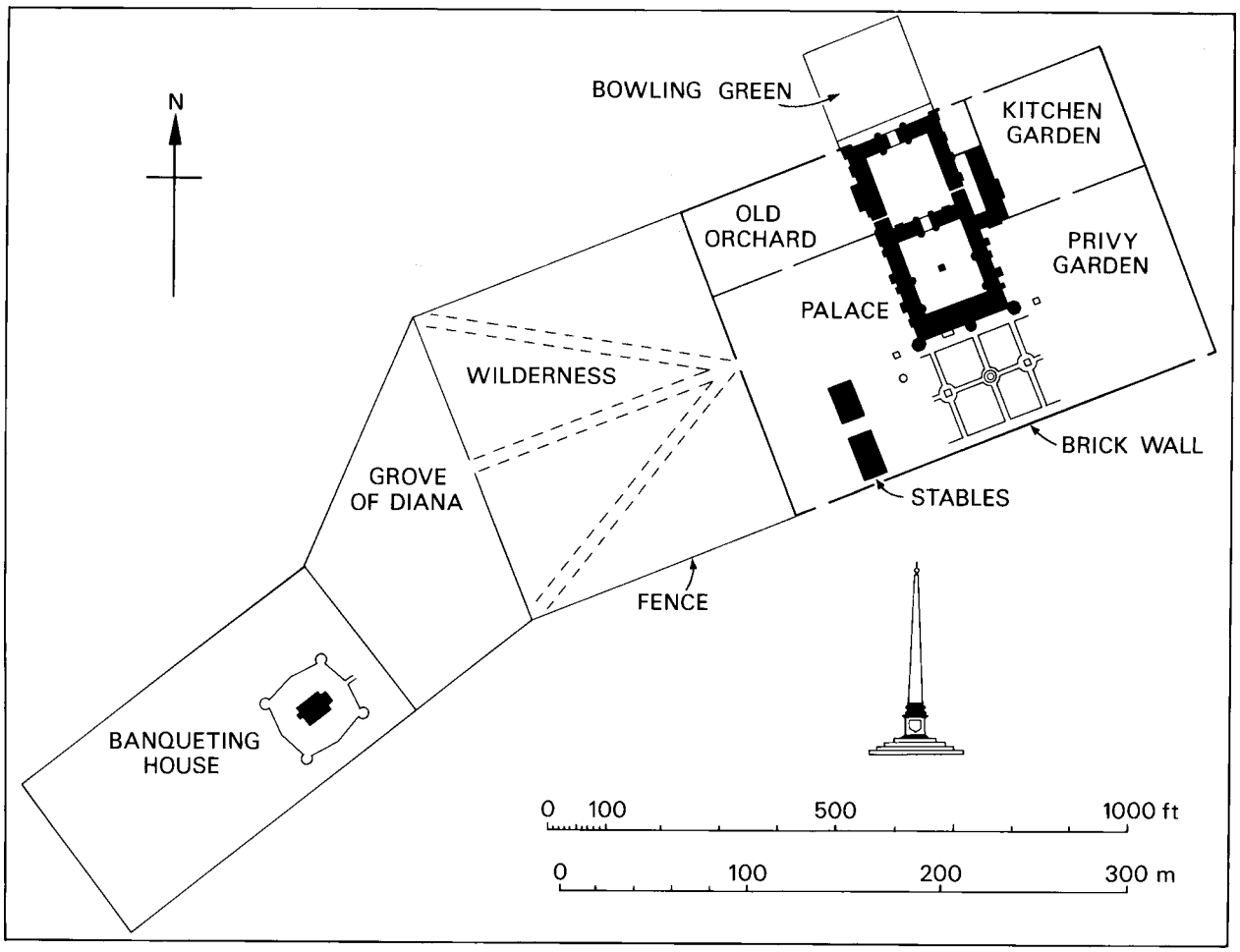


Fig. 3 Nonsuch Palace and the Banqueting House.

Almost all the finds of domestic character have been included. The omissions include most of the material from post-demolition, ie post-1682/90, deposits (except for those ceramic pieces which belong, whether fitting or not, to vessels otherwise occurring in demolition or pre-demolition deposits[15]), some bottle glass,[16] and featureless fragments of fine glass and of all types of pottery where these do not or could not be fitted to more complete pieces. The large amount of complete or reconstructible glass and pottery meant that the compilation of statistics including both complete or very nearly complete vessels and relatively small fragments, which might or might not belong to the same vessels, could be misleading and, in the case of the glass, meaningless. However, where the contributor concerned was able to assign a date to a fragment on fabric or other grounds, this information has been included in the lists in Concordance I.[17] In practice this was usually only even broadly possible with the stoneware, and with rim, neck, shoulder, and base fragments of bottle glass, featureless fragments of even fine vessel glass and plain white tin-glazed ware being essentially undatable.

The finds are now in the care of the Museum of London, with the exception of the pieces on display in the British Museum, or at Ewell and Cheam, as mentioned in the Preface.

15. See below, Concordance I, Phase 6
16. See below, p 291, n. 21
17. At end of volume

2

METHODS OF RECORDING AND STUDY

by Martin Biddle

The excavation of Nonsuch Palace in the summer of 1959 was undertaken to recover the plan and whatever remained of the decorations of a building without compare in the annals of architecture (Frontispiece). This was the first time that an archaeological excavation conducted on scientific principles had been directed to the investigation of a problem in the history of Renaissance art and architecture; it was, perhaps, the first large-scale excavation in the British Isles in what has come to be called Post-medieval, but might better be described as Early Modern archaeology.

Any such excavation, properly undertaken, would inevitably produce as a by-product of its main objective a great deal of other material, in this case a wealth of seventeenth-century domestic finds. This volume is devoted to that material.

The excavation of Cuddington Church and its cemetery, together with other elements of the village complex, was a stated secondary aim of the work of 1959 (see below, p 14–17). The excavation of the Banqueting House in 1960 was a natural continuation of the recovery of the palace in 1959. The work of 1959–60 did not continue with the archaeological investigation of the gardens of Nonsuch, notably the Privy Garden and the Grove of Diana, and these remain an objective for the future.[1]

Since the depth of deposits was believed to be in general shallow and the main objective was to recover the plan of the palace and such fragments of its decorations as might have survived, what was, in effect, an 'open-area' excavation was proposed (Fig 4). In 1959 this term was not yet in use and area excavations, when attempted, were normally conducted on the Wheelerian grid system.[2] In its classic form of 10ft squares, this system had the disadvantage of concealing almost as much as it revealed. For Nonsuch a much more open system was required.

Guided by records made when the sewer trench was cut through the site of the palace in 1933 (see above, p 2), and by a reconstructed plan of the palace drawn in 1958,[3] the site of the 1959 excavation was divided into a grid of 25ft squares lettered P-Z from west to east and numbered 1–16 from north to south (Fig 5).[4] This grid was designed to produce a series of excavation squares measuring 22ft 6in a side, with pegs at each corner, and separated by baulks 2ft 6in wide. The squares were subdivided internally into four sub–units numbered I–IV (Fig 6). A trench could thus be described as Q12, for example, with further division into Q12 I, II, III, or IV,

1. Biddle 1999; cf. oswald 1996
2. Wheeler 1954, 64–8
3. Dent 1981, 236–8, 246 (Fig)
4. The layout of the excavation and the start of work in July 1959 is vividly described in Dent 1981, 245–8

Fig. 4 Nonsuch Palace: the excavation of the east range, looking south, with the Outer and Inner Courts to the right (separated by the Central Range), the Kitchen Court to the left and Garderobe 3 in the left foreground.

or Q12 I/II, II/IV, III/IV, as required. These trench designations are used in the 'context' descriptions of the finds published here.

Although the 25ft squares were the basic unit of excavation and record, and each might, and often did, have its own sequence of layer numbers ('contexts'), in practice in many cases only a part or parts of a square were excavated. In these cases each sub-division has its own sequence of layers beginning with 'one', for each sub-division was, in effect, a substantive trench. The contexts in this volume may thus be described, for example, as 'W15 10' (ie Square W15, Layer 10), or as W10 I 5, or with other sub-divisions of the trench.

This system was not satisfactory, resulting in number combinations which could easily be confused, but it was a product of its time in the development from deep trench to open area approaches to excavation. As far as possible, recording confusions have been solved in presenting the context evidence in this volume, and all cases of doubt have been indicated.

There remain a number of cases where a find is clearly (by reason of its date) intrusive in a layer and where the problem cannot be resolved by detecting an obvious confusion in the record. These cases of 'contamination' have as far as possible all been noted. The reason for

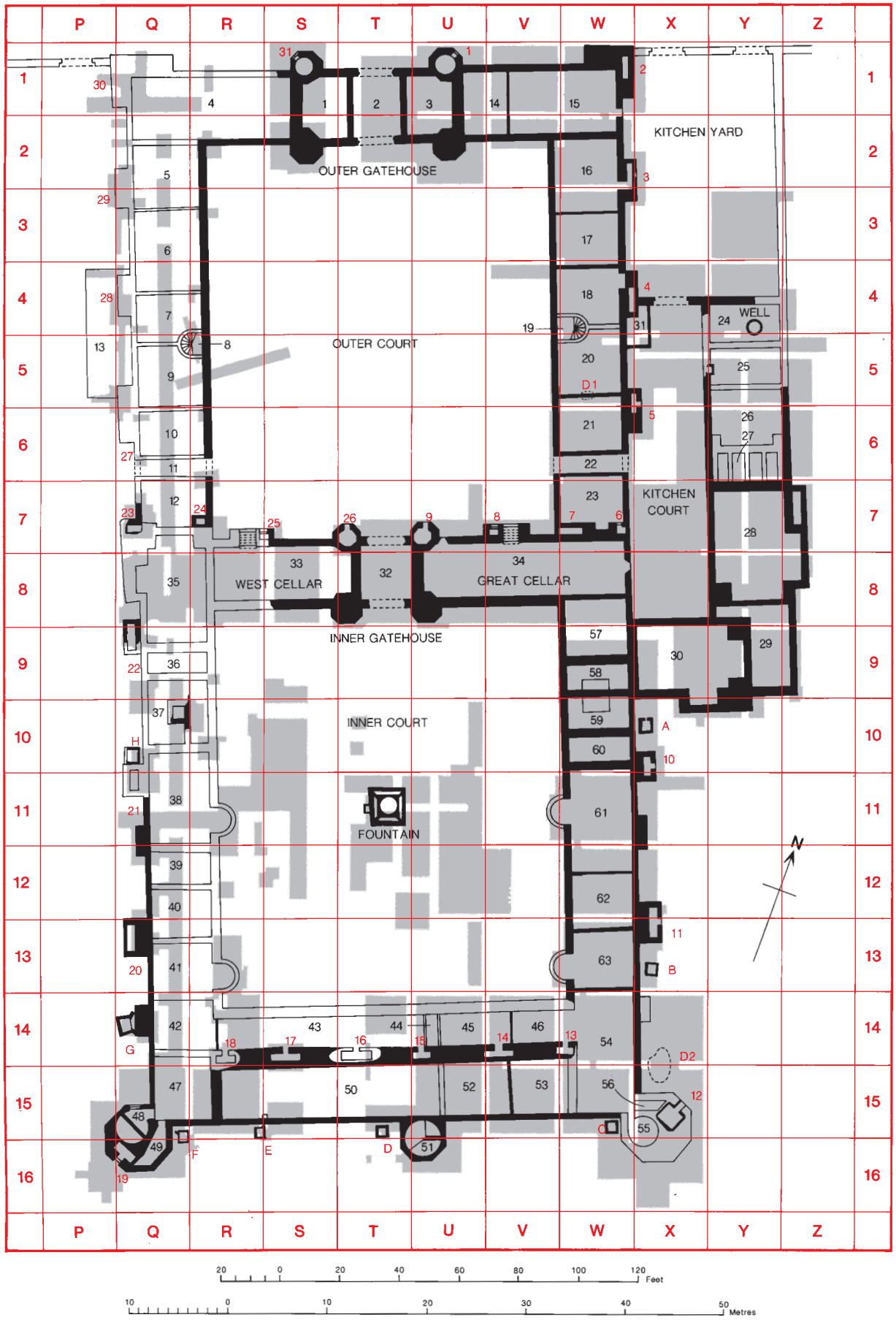


Fig. 5 Nonsuch Palace: reconstructed ground plan with structure names and room numbers (1–63) in black. The areas excavated are shown in grey. The excavation grid, garderobe numbers (1–31), dump numbers (D1, D2), and soak-away numbers (A-H) are superimposed in red (48ft to 1 in).

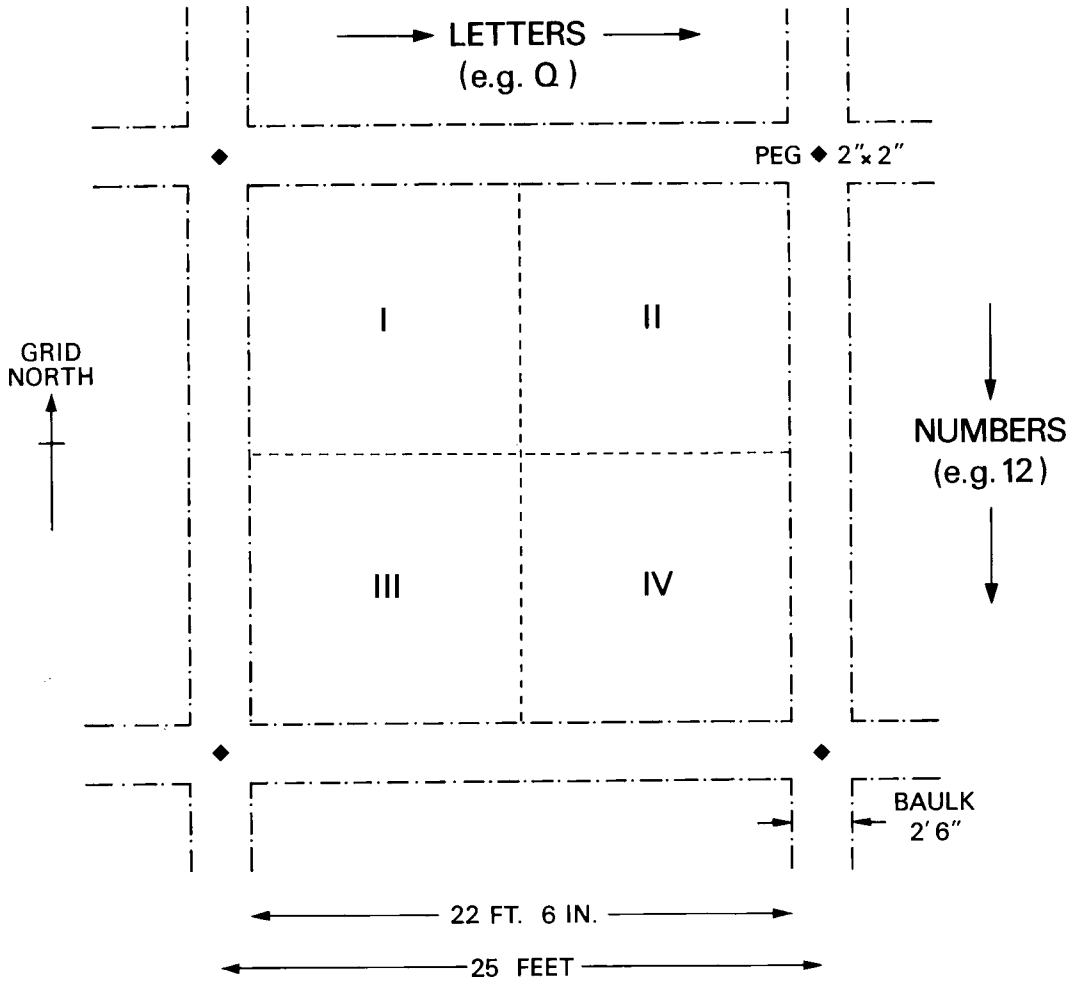


Fig. 6 Nonsuch Palace: diagram of the layout of a square on the excavation grid.

some is clear enough – eg Tin-glazed ware **37** of mid seventeenth-century date 'in' the cobbles of the Kitchen Court laid in 1538–46 can only be the result either of an unobserved repair of the cobbling or of a failure to clean sufficiently deep between the cobbles during excavation. Most such problems must be put down to mistakes in excavation or recording.

Cuddington Church and graveyard, lying below the Inner Court, were excavated in a series of trenches distinct from the 25ft grid system and lettered Church I to Church XXII, each with its own layer sequence (Fig 10; see below, p 14–17). Other elements of the Cuddington complex were investigated either by deeper excavation within parts of the grid system, or (in 1960) by two substantive trenches cut out of alignment with the grid (Cuddington ('CUD') I and II) (Fig 10).

The excavation of the Banqueting House in 1960 (Fig 7) was laid out on a similar 25ft grid system, but here too variations were adopted to deal with outbuildings and other features away from the Banqueting House proper, Site BQ to the south and Site BV to the north (Fig 8).

In those cases here and in the companion volume where it is necessary to locate an individual point or points (eg the ends of sections, as in Figs 15 and 22–4), the 'co-ordinate' system, applied post-excavation within a square, is as follows. The NW peg of a 25ft square is assumed to be the point of origin (0/0). East-west positions are given by the letter for the square followed by the

Fig. 7 Nonsuch Palace, the Banqueting House: looking west across Rooms 2 (foreground) and 1, with Room 3 to the left.

distance eastwards from the west side of the square, eg Y–0′6″, Y–12′, etc. North-south positions are given by the number for the square followed by the distance southwards from the north side of the square, eg 12–0′6″, 12–12′, etc. A point (eg the end of a section) is defined by using both references, eg Y–1′3″/12–1′3″ would indicate the north-west corner of Sub-square I in Y12.

For purposes of supervision, the palace excavation was divided into four sites: Site A, the Outer Court, including the range between the Outer and Inner Courts together with the Inner Court Gatehouse; Site B, the Kitchen Court; Site C, the Inner Court; and the excavation of Cuddington Church (Church I to Church XXII) which formed a fourth site, but within Site C. The 25ft grid system operated over the whole area, independent of the four sites, but in labelling the layers and finds on site the alpha-numeric grid reference was always preceded by a site letter (eg A W2 I/II 5 or C Ch XVIII 4) which served to indicate at a glance the approximate area concerned and later to indicate the supervisor responsible for the record, and the set of notebooks within which the excavation notes would be found. These site codes have been omitted from the context descriptions given in this volume.

The actual excavation of the palace presented no great problems other than the control and record of a large project. The walls and floors were rarely more than a foot below the surface; the building was essentially of one period of construction; and there was little deep stratification except in the garderobe pits and in the church. Most of the levels removed consisted of rubble from the demolition of 1682/90. The greatest difficulties were caused by the extensive robbing

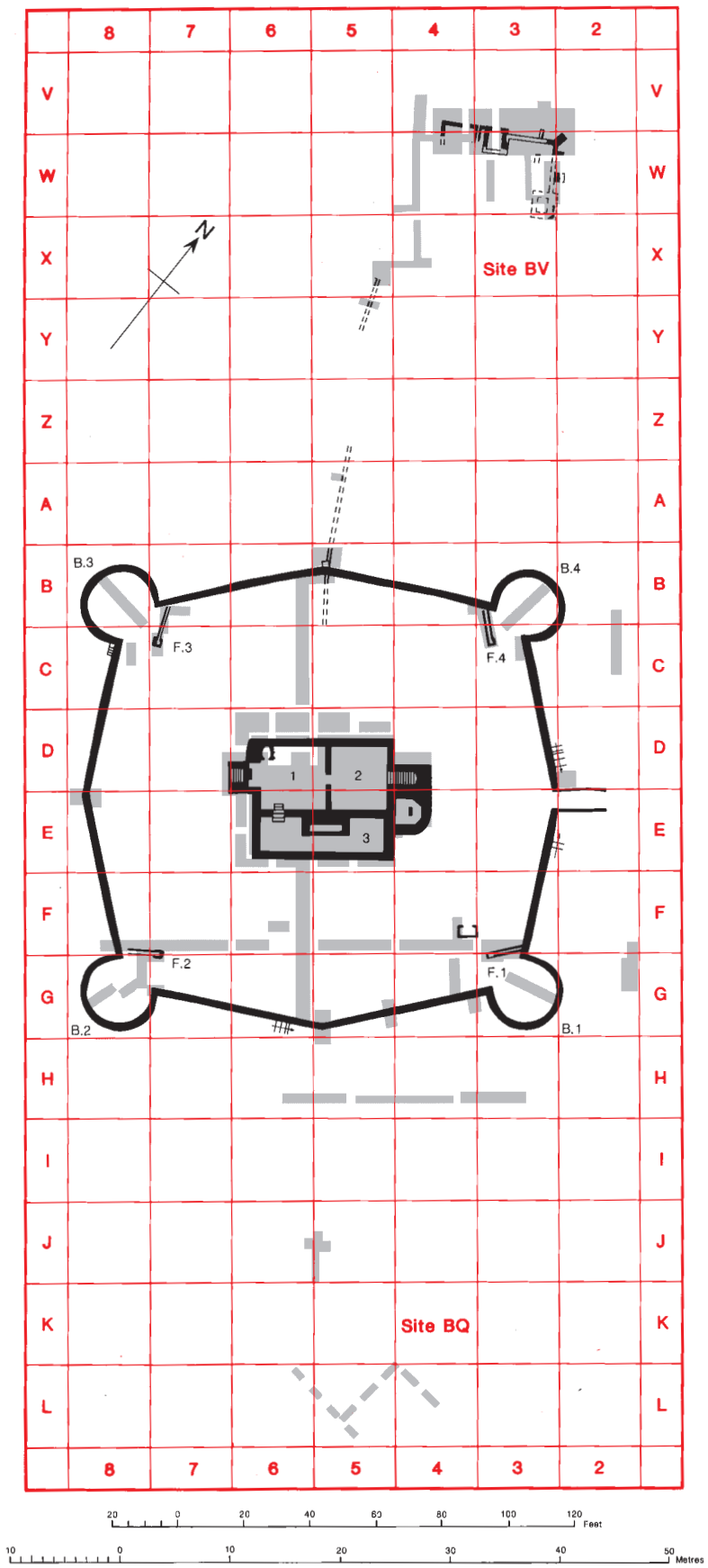


Fig. 8 Nonsuch Palace, the Banqueting House: reconstructed ground plan with room, bastion and feature numbers (1–3, B1–4, F1–4) in black. The areas excavated are shown in grey. The excavation grid and site letters are superimposed in red (48 ft to 1 in).

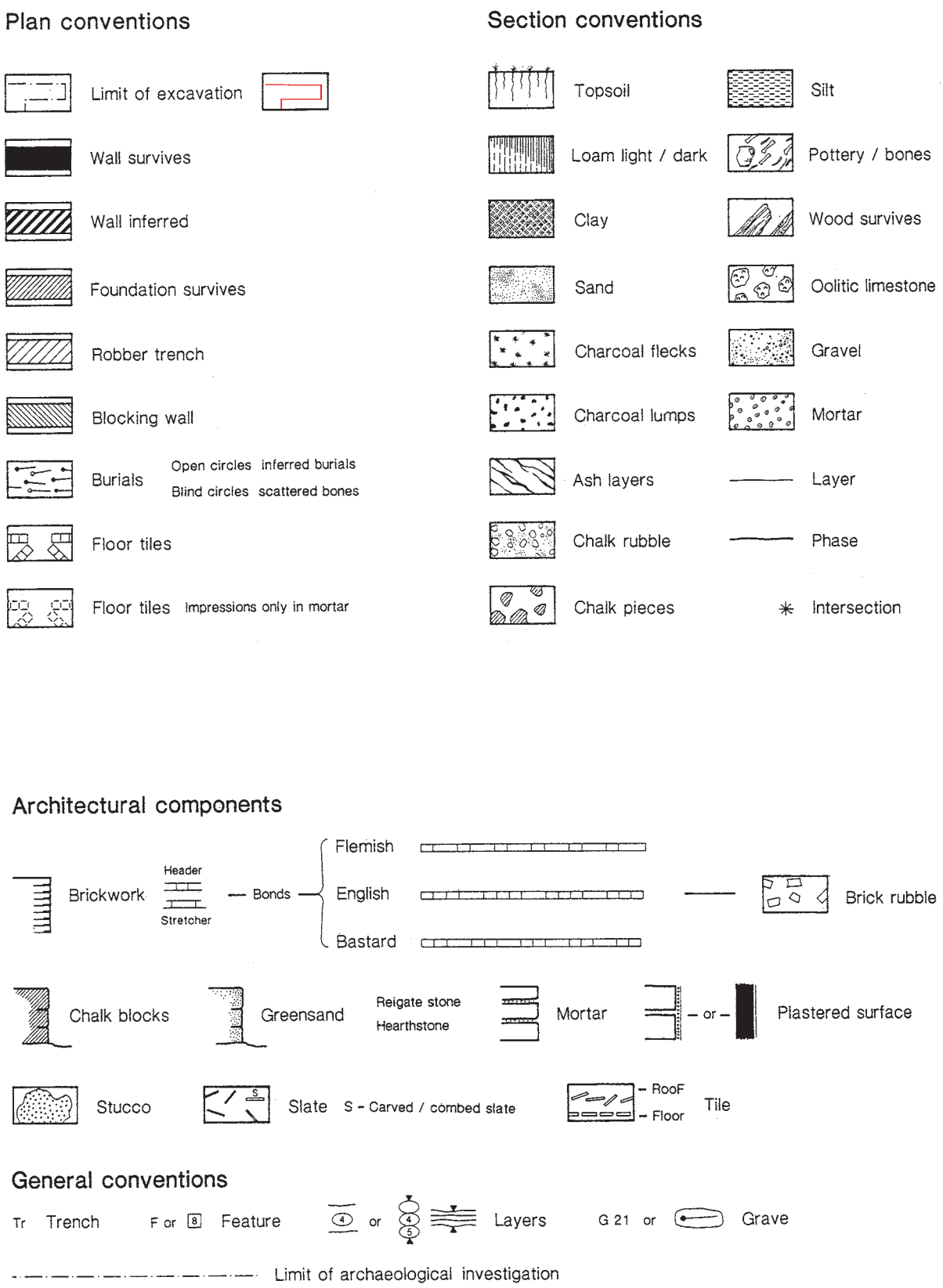


Fig. 9 Key to conventions used in plans and sections.

of the foundations, and in some cases their complete removal, as in the northwest part of the Outer Court. It was possible nevertheless to recover the entire ground plan, although the coppice covering the western half of the site (Fig 1) prevented the complete stripping which was possible over the eastern half of the palace (Fig 4).

The plan recovered was represented on the ground by robber trenches from which the walls had been entirely removed, by foundations alone, by footing walls standing on foundations, and in some cases by the lower courses of the walls themselves, the latter only occuring in relatively well preserved areas and providing the most reliable evidence for the accurate reconstruction of the original plan (Fig 5; for the conventions used on plans and sections, see Fig 9). In some places the walls themselves had disappeared, but the 'hard lines' chiselled into the surface of the footing walls or foundations along the setting-out cords could still be seen. In other cases it was the marks left in the mortar by the lowest course of the facing stones which preserved the precise position of the walls. The detailed evidence for the plan of Nonsuch is set out in the companion volume dealing with the architecture of the palace. Here it is only necessary to provide the plan reconstructed from this evidence and its relationship to the excavation layout (Fig 5). The same is the case for the Banqueting House (Fig 8).

In general the excavation proceeded down only to the surviving floors, or, where these had been ploughed away (see above, p 2), or otherwise removed, to the top of the construction deposits. One deep section was cut through each range of each court (Fig 10 shows their positions) to investigate the construction deposits and in particular the levelling up of the Outer Court and the cutting down of the Inner Court to provide a flat site. These deeper trenches were only secondarily intended to investigate the Cuddington deposits sealed by the construction material, other trenches (as described above, p 8; see also below, p 16) being designed specifically for this purpose (Fig 10).

As a result of these limited objectives, it is only rarely that more than fifteen layers ('contexts') were recorded in any one excavation unit ('trench'). If the excavation had been done today, with our greater interest in and understanding of site-formation processes, more individual contexts would probably have been defined in the deep demolition deposits and especially in the post-demolition contexts. Whether the increased size and complexity of the record, and the time and cost involved in excavation, recording, and post-excavation analysis, would be reflected in a corresponding increase in useful knowledge, is unknowable.

The phasing of the excavated deposits of the palace resulted in a simple sequence:

Pre-palace: Cuddington		
Phase 1	Beneath Site A	pre-1538
Phase 2	Beneath Site C (church and graveyard)	pre-1538
Palace		
Phase 3	Construction	1538–46
Phase 4	Occupation – not sealed	1538–1682/90
	Occupation – sealed	1665/70–1682/90
Phase 5	Demolition	1682–8
Post-palace		
Phase 6	Post-demolition	1682/90–1933
Phase 7	Modern	1933–40
Phase 8	Topsoil	1940–59

The particular problems of dating the occupation deposits of Phase 4 within the broad bracket 1538–1682/90 are discussed below (p 25–69).

The phasing of Cuddington Church, described in the companion volume, is considerably more complex, with 174 provisional phases grouped into 14 final phases, spanning the period from pre-*c* 1100 to 1538, all compressed within the overall 'Phase 2' of the palace site sequence shown above.

The phasing of the Banqueting House, like that of the palace, provided a simple sequence:

Pre-Banqueting House		
Phase 1	Pre-construction soils	pre-1538
Banqueting House		
Phase 2	Construction	1538–46
Phase 3	Occupation	1538/46–1667
Phase 4	Demolition	1667
Post-Banqueting House		
Phase 5	Post-demolition activity	1667–1930
Phase 6	Lowther's trenches	1930
Phase 7	Topsoil	1930–60

The excavations of 1959 are recorded in 25 notebooks, many plans, 35 sections, and 408 black and white photographs. The work of 1960 added a further 7 notebooks, 6 plans, 32 sections, and 113 colour and 127 black and white photographs. The phasing of the excavated sites is contained in 5 ring-binders. The records are deposited with the finds in the Museum of London.

PART II

CUDDINGTON

1

THE EXCAVATION OF CUDDINGTON

by Martin Biddle

Henry VIII acquired the manor of Cuddington from Richard Codyngton and his wife in exchange for the dissolved priory, manor, rectory, and lands of Ixworth in Suffolk. The transaction was only completed in November 1538, eight months after commencement of work on the palace, and at least as long after a start had been made on paling Nonsuch Park, which began to be stocked with deer the same month.[1]

The Inner Court was laid out directly on top of Cuddington Church and its graveyard (Fig 10), possibly because of the need to place the palace on this exact site to secure a supply of water by gravity from a conduit head on higher ground within the park to the south (Fig 2). The church was demolished early in the works,[2] its materials re-used in the foundations of the Inner Court, and the west wall of the tower incorporated in the central bay of the west range. The burials were left undisturbed, except where the foundation and service trenches of the palace cut through them.

The buildings and barns, courts, and yards of the manor-house of Cuddington 'nyghe and adioynynge to the churche yarde all environede abowte with highe and gret tymber trees' were either demolished, pulled down, or, in the case of the manor-house, turned into offices.[3] A barn on the west side of the house was apparently retained and underpinned, while the great barn, 155 feet long and 36 feet wide, which lay east of the house, was removed and possibly re-erected on a new site.[4] The re-use of the manor-house and the repair of the barn to the west suggest that these lay clear of the palace proper, while the great barn lay below it: both were, in any case, 'nyghe and adioynynge to the churche yarde'.

These relationships make it possible to identify some of the structures and other features found below the palace (Fig 10, A-F). The church lay below the Inner Court (Fig 10, A) surrounded on all sides by burials, 113 of which were excavated in 1959. The extent of the graveyard is approximately shown by the occurence of graves and isolated bones under the west and east ranges of the Inner Court and by burials recorded in 1933 in the north-south sewer trench and in 1945 in the branch sewer laid north-westwards along the track to Cherry Orchard Farm.[5] The

1. Biddle and Summerson 1982, 179–80
2. Ibid. 189–90
3. Ibid.
4. Ibid.; Biddle 1961, 7; for a mattock discarded in the demolition of what seems to have been this barn (Fig 10, D), see Iron **129** and Figs 195–6
5. Dent 1981, 236–8

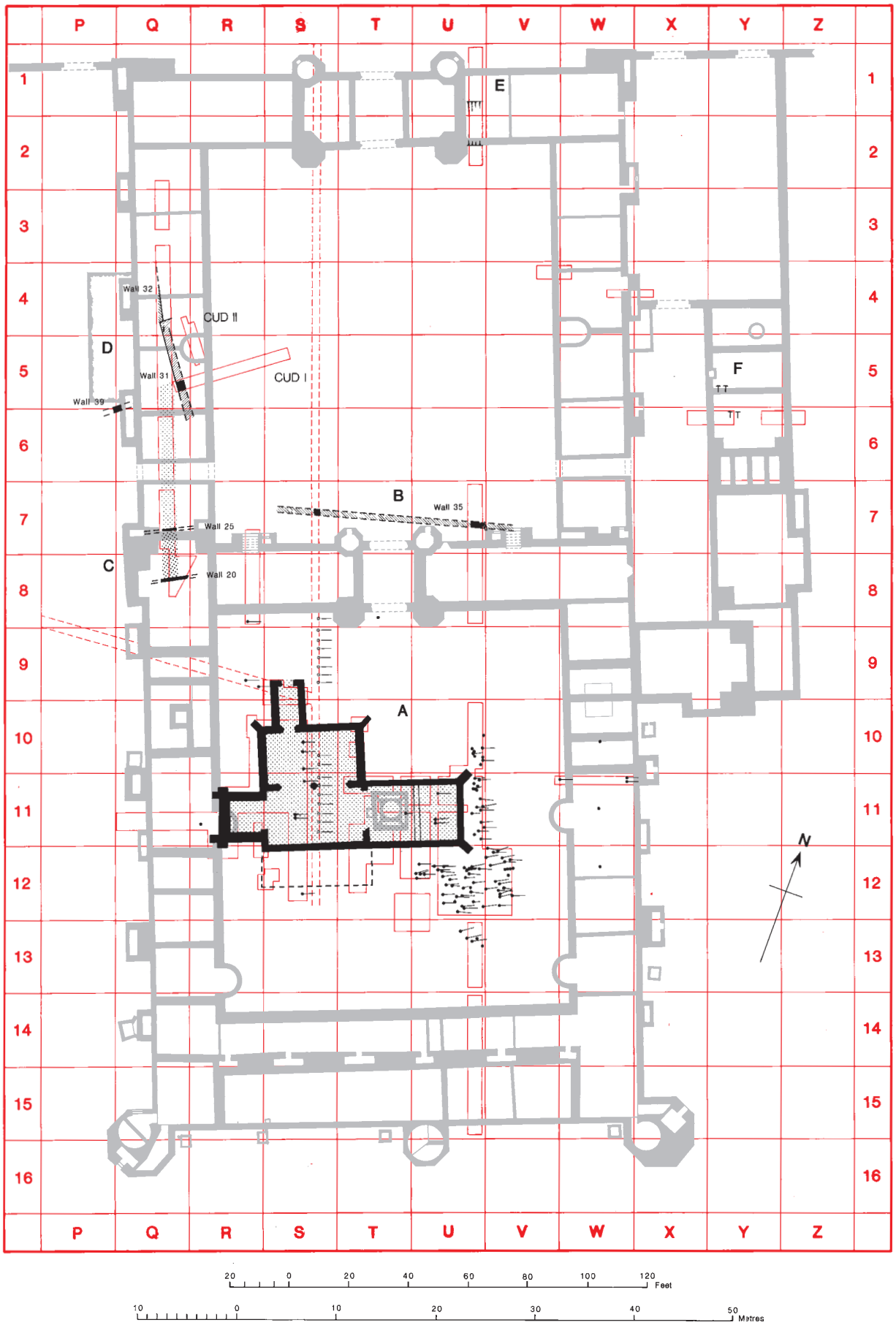


Fig. 10 Cuddington: the church, the cemetery, and other structures in black. The excavation grid, and the Cuddington and Church trenches are superimposed in red. The plan of the palace is shown in grey (48 ft to 1 in).

northern limit of the cemetery appears to be defined by Wall 35 running west to east just to the north of the Inner Gatehouse (Fig 10, B). This appears to be a boundary wall rather than a building (eg a barn), but whether it is the churchyard wall, or a wall enclosing the manor-house complex it is impossible to say. A complex of buildings stretching north from an east-west range (Fig 10, C; Walls 20 and 25), and terminating in a large north-south structure below the west range of the Outer Court (Fig 10, D; Walls 31–2), is probably to be identified with the buildings on the east side of the manor-house, including (Wall 31) the great barn demolished to make way for the palace in 1538, as described above.

Other deep trenches through the construction dumps levelling up the north and east ranges of the Outer Court revealed buried soils with slight traces of pre-palace activity. A shallow east-west ditch below the north range (Fig 10, E) might indicate the northern limit of the manor-house enclosure, approximately parallel to and about 125ft north of the probable southern limit marked by Wall 35 (Fig 10, B). Below the Kitchen Court of the palace, a layer of roof tiles and construction debris overlying what appeared to be natural soil may indicate the proximity of another pre-palace structure (Fig 10, F).

The archaeological and documentary evidence, limited though it is, suggests that the manor house and its ancillary structures lay to the west of the palace, only extending below the west range of the Outer Court, and with little further east except perhaps yards and possibly a few detached structures. Since 'the old hall and other lodgyng' of the manor-house were apparently used as offices during the building of the palace,[6] the masons' lodges, carpenters' workshops, lime-pits, saw-pits, and other structures connected with the construction of the palace in 1538–46 were probably also located in the same area. Following the completion (or at least cessation) of work in 1547 or before, the old manor-house and these temporary structures were presumably demolished and the area raised and levelled to form the orchard west of the Outer Court (Fig 3). This became in turn the site of Cherry Orchard Farm, finally demolished in the 1970s. The archaeological potential of this part of the Nonsuch complex needs careful consideration in long-term plans for the site.[7]

Only a little pottery (Fig 11) and very few other finds of any significance (Figs 12–14), together with a small quantity of animal bones (Tables 30–32), were recovered from Cuddington deposits during the work of 1959–60 (for the excavation trenches, see above, p 9, 12; for the phasing, p 12–13). Not surprisingly, the excavation of the church and graveyard produced very few finds of any kind other than floor tiles and human skeletons, reports on which will be found in the companion volume.

The church of Cuddington was not founded before the eleventh century, and no finds from the excavation suggest the presence of a Late Saxon settlement. A few finds suggest limited activity in the area at an earlier date. The very worn Roman sestertius from an occupation deposit in the Great Cellar (see below, Coin **24**, p 318) is probably a seventeenth-century introduction to the site, but there are a few other Roman coins from Nonsuch Park in the Surrey Sites and Monuments Record, and an Early Anglo-Saxon small-long brooch and a Late-Saxon mount have been discovered by metal-detection. None of these need suggest other than casual losses, or manuring of the fields, from long-established settlements in the vicinity. The most obvious focus of early settlement is at Ewell, with extensive traces of Romano-British activity and an Early Anglo-Saxon cemetery.

Although the archaeological evidence is slight, this picture agrees with the view that the parish of Cuddington emerged in the century before 1066 as part of a manorial fission which resulted in the appearance along the dip-slope of the North-Downs of a series of strip manors of

6. Biddle and Summerson 1982, 190, n.2

7. Biddle 1999, 167–8

which Cuddington is one.[8] During the eleventh century these manors were provided with churches, most of which seem to have been of Norman origin.[9] Cuddington church was in existence by *c* 1120 when it passed to the king's scribe Bernard.[10] It may have been built *c* 1100 by Ilbert de Lacy, the Domesday tenant of Odo de Bayeux, or his successor, Hugh Laval, although, as Blair has pointed out, its relatively thin walls 'suggest that the builders were working in the pre-Conquest tradition'.[11]

The Cuddington Phasing

In the catalogues which follow the phase in the palace phasing (Phase 1 or 2; see above, p 12) is followed in square brackets [ ] by a description of the Cuddington context, for structures below the Outer Court of the palace (Fig 10, B-F), or by the detailed Cuddington phasing of the church and graveyard (Fig 10, A).

8. Blair 1991, 33–4, cf Figs 11–13
9. Blair 1991, 124
10. Round 1899, 429–30
11. Blair 1991, 124 n.123

2

THE FINDS FROM CUDDINGTON

i. Pottery *by* Martin Biddle

Pottery associated with Period II of the church

1 Clubbed rim of a later eleventh- to twelfth-century cooking pot or bowl. Harsh, well-fired, grey ware, the exterior (but not the rim) fired to a black surface. Rounded and angular quartz grains (up to 0.3mm) evenly distributed throughout the matrix and appearing on the surface to give a pimply appearance.
**CH.II 11, Phase 2 [Church, Period II, construction spread; Final phase 7 (P.ph.143); early to mid 13th century]*

2 Sagging base of a later eleventh- to twelfth-century cooking pot or bowl. Fabric and inclusions comparable to 1, but the interior and exterior surfaces fired to a greyish brown, the core light to dark grey. Possibly from the same vessel as **1**.
**CH.II 9; Phase 2 [Church, Period II, construction spread; Final phase 7 (P.ph.145); early to mid 13th century]*

3 Sagging base of a later eleventh- to twelfth-century cooking pot or bowl. Coarser than **1** and 2, the inclusions up to 1mm, but the fabric and inclusions otherwise very similar. Light brown fabric, with grey interior and dark grey exterior surfaces, and a grey core.
**CH.XIV 6; Phase 2 [Church, burial earth north of the aisle, ?during Period II; Final phase 8–9 (P.ph.24); early to mid 14th century]*

4 Rim of a later eleventh- to twelfth-century cooking pot. Coarse, medium fired light brown ware with a grey core. Some rounded but mainly angular quartz and flint grains, mostly up to 0.3mm, some larger; some black, a few red, with a very few ?haematite inclusions. The grains show through on the surface giving a rough, pimply texture. Fabric comparable to **1** and **3**.
**No.322; CH.IV 9; Phase 2 [Church, Period IV, fill of cut for sanctuary step; Final phase 13 (P.ph.99); late 15th century; but probably derived from CH.IV 9a, Church, Period II, spread between floors; Final phase 8 (P.ph.95); mid 13th century]*

Pottery associated with the use of the graveyard

5 Rim of a later eleventh- to twelfth-century cooking pot, with finger-pressing on the inner angle. Soft, soapy, light grey ware, fired reddish brown on the exterior and on top of the rim. Large chalk inclusions, many of which have weathered out, leaving characteristically pitted surfaces both inside and out.
**No.379; U8 II/IV 8; Phase 2 [Church, graveyard; Final phase 4–13 (P.ph.163); early to mid 12th century to 1538]*

6 Reeded rim of a large cooking pot or bowl. Fabric as **5**.
CH.IV 8; Phase 2 [Church, graveyard; Final phase 5–13 (P.ph.102); mid 13th century to 1538]

7 Fragment of a glazed jug of 'London-type', decorated with vertical strips and bobbles of applied white clay, covered with a light yellow glaze, patchy in places, appearing greenish over the brown surface of the pot. Fine, well fired, orange ware with a grey core and a brown exterior surface. Very fine, rounded quartz sand grains, mostly <0.2mm. This vessel lacks the red slip normal on jugs of 'London-type', but the kilns have not yet been located and it is becoming clear that there is a range of variant decorative treatments.[1]
**No.397; U10 4; Phase 2 [Church, graveyard; Final phase 8–13 (P.ph.131); early 13th century to 1538]*

1. Pearce *et al* 1985; Cotter 1992

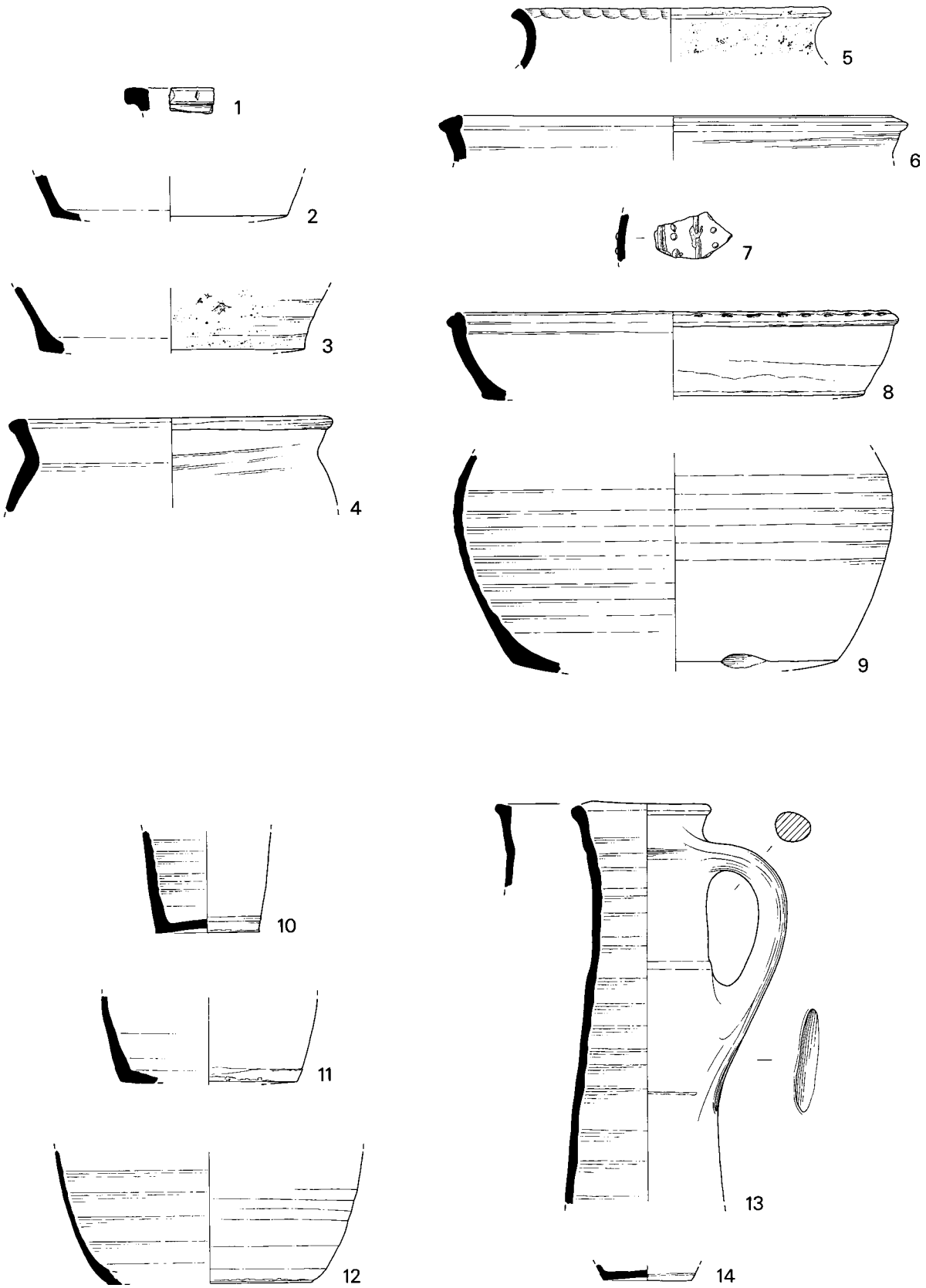


Fig. 11 Cuddington pottery, 1–14 (1:4).

8 Rim and side of a large dish with a sagging base. The rim has an external flange and stabbing along its upper surface. Thick, hard, harsh, light grey ware with a pinkish brown interior surface and brown patches on the exterior. The fabric is comparable to **1–4**, but the inclusions are generally finer and include occasional white, hard chalk, or limestone pieces up to *c* 1mm.
**No.325; CH.II 7; Phase 2 [Church, graveyard; Final phase 8–13 (P.ph.155); mid 13th century to 1538]*

9 Side and sagging base of a jug or cooking pot with isolated finger pressing on the base angle, and marked rilling on the body. Fine, medium fired reddish brown ware with a grey core and grey-brown surfaces. The inclusions consist of very fine rounded sand grains with a very few white flecks. The surfaces are smooth and the lower parts of the side and underside of the base are knife-trimmed or wiped, with some dragging of the surface particles.
**No.319; CH.X 4; Phase 2 [Church, ?graveyard; not phased in Cuddington sequence]*

Pottery from an occupation deposit immediately west of Wall 31 in the manor-house area (Fig 10, D)

10 Base and lower part of the body of a ?biconical jug. Cheam white ware, slightly pink throughout. Small splashes of green glaze at the base angle.
**Q5 8; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

11 Part of the base and part of the side of a barrel-shaped jug. Cheam white ware, creamy-grey. No glaze.
**Q5 8; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

12 Base angle and part of the side of a barrel-shaped jug. Cheam white ware, creamy-pink. Two spots of yellow glaze, one inside.
**No.354; Q5 8; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

13 Upper part of a conical jug of fine, hard, pinkish brown ware, the exterior surface tinging in places to orange-brown or grey-brown, the interior uniformly pink. Fine, well fired fabric with occasional tiny red and black inclusions. One or two spots of yellow glaze on the exterior and inside the mouth. Seven piercings from the exterior form an inverted V behind the base of the handle to improve adhesion and allow for gas escape in firing.
**No.105; Q5 8 and 16; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

14 Part of the base of a small jug of Cheam white ware. Large patch and spots of thick dark green glaze on the interior; small patch on the base angle externally.
Q5 10; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]

GENERAL COMMENT ON THE POTTERY *by* JACQUI PEARCE

Sherds **1** to **4** and **8** all resemble early Surrey ware, found in London between *c* 1050 and 1150.[2] These are handmade, unglazed vessels of white-firing clay, characterised by abundant iron-stained, rounded quartz, and vary in coarseness (as between **3** and **4** at the coarser end of the spectrum and **8** at the finer end). Handmade coarsewares of this kind are still present in the City in assemblages of the mid to late 12th century, but are being replaced by wheelthrown, reduced (south Hertfordshire-type greyware) and shell-tempered (shelly-sandyware) coarsewares at this date. They do not appear to have been traded with central London after the beginning of the 13th century and were probably replaced by wheelthrown pottery in the source area as well (this includes Limpsfield-type ware, from east Surrey).

Sherds **5** and **6** have affinities with early medieval shell-tempered ware, also found in London between *c* 1050 and 1150.[3] They have afine, silty matrix, with shell and possibly chalk inclusions that have leached out. Vince compares the fabric to shell-tempered wares found in north-west Kent, although the actual source is unknown. Again, this ware is not found in the City or central London after the end of the 12th century (by which time the wheel-thrown shelly-sandy ware predominates in London), and was going out of use soon after 1150.

Sherd **9** looks like coarse London-type ware, datable in the City to *c* 1080–1200.[4]

Sherd **7** is London-type ware, probably decorated in the Rouen style, common between *c* 1170 and 1250 or shortly afterwards. This particular style usually incorporates areas painted in red slip with the white slip stripes and dots on the Cuddington sherd, although the use of red slip is not

2. Vince and Jenner 1991, 73–5
3. Ibid. 63–8
4. Pearce *et al.* 1985, 2–3

necessarily a feature of other London-type styles of decoration (some styles never employ it) The Rouen style is very distinctive, and this sherd is most likely to come from a jug of this type, perhaps simply missing any areas of red slip used on the body.

Sherds **10–14** are all Cheam whiteware, which is used in the City and central London between *c* 1350 and 1500. Sherd **11** could equally be the base of a rounded jug, but it is difficult to tell with this much remaining. The conical jug **13** is most definately Cheam, on the evidence of the fabric and distinctive method of handle attachment used at the lower join (an inverted V-formation of stab marks to key the handle end into the clay of the body).

ii. JETTON *by* HUGH PAGAN

One jetton of a French-derived type was recovered from a Cuddington context, and dates most probably from the end of the fourteenth century or the early years of the fifteenth.

Jetton, French type (reign of Charles V ?).

O. + MARIA GRACIA PLENA. Shield with arms of France (three fleurs-de-lis), surmounted by small coronet between cinquefoils (?). Rosettes of six pellets after each word in inscription.

R. + AVE. Triple cross, with fleur-de-lis ends and quatrefoil at centre, within double tressure. Rosettes in inscription.

2.41g. Die-axis: 360°. Diameter 28mm.

SF311; Q5 8; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]

This is the most interesting of the coins and jettons from Nonsuch (for others, see below, p 317–318). Its unusual feature is that the word AVE, which normally appears both at the beginning of the obverse inscription and as the reverse inscription on jettons of this type, here appears on the reverse only. This is paralleled on only two of the 116 jettons of this general nature in the British Museum, and those examples are of very different style and fabric to the present one. The dating of the French jetton series of the later fourteenth and early fifteenth century is as yet conjectural, but the fact that this specimen diverges from the normal inscription convention might suggest that it belongs to a relatively early date in the series, before it was firmly established where the word AVE should appear.

iii. SILVER-GILT BUCKLE PIN *by* MARTIN BIDDLE

Buckle pin, silver gilt. Extant L:17mm.

**SF330; CH.IV 12; Phase 2 [Church, Period 1a; Final Phase 4–5 (P.ph.84); early 12th – early 13th century]*

For other buckles from Cuddington contexts, see Iron **13**, **14** (below, p 22). For buckles from palace contexts, see Lead **113–14** (p 346), Copper-alloy **1–3** and **102** (p 359–60, 370), Iron **189–207** (p 405), and Spurs **1–2** (p 412–15).

*Fig. 12 Cuddington: silver-gilt buckle pin, **1** (1:1).*

iv. WINDOW LEAD *by* GEOFF EGAN

The main report on the window lead from Nonsuch (below p 351–8) highlights milled leads of forms A and B in pre-palace contexts. The reliability of these contexts and their phasing has been carefully checked, since these leads represent the earliest British evidence for milled forms. In both cases the leads presumably derive from activity in the earliest phase of building the palace, before the Cuddington structures were sealed below the new works.

1 Lead form A

L463 (Window lead **1**, below, p 353); *CH.V 5; Phase 2 [Church, graveyard; Final phase 4–13 (P.ph.174); 12th century to 1538]*

2 Lead form B
L38 (Windlow lead 3, below, p 354); Q5 7; *Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); Wall 31, probably in 1538 demolition material on top of wall]*

v. COPPER-ALLOY *by* ALISON H. GOODALL

1–2 Lace ends
1 *SF426; CH.X1 38; Phase 2 [Church, Period IV; Final phase 13 (P.ph.59); early 15th century to 1538];* **2** (no SF number); *CH.X1 23; Phase 2 [Church, Period IV; Final phase 13 (P.ph.50); 15th century]*

3 Pin
SF32; CH.XI 19; Phase 2 [Church, Period IV; Final phase 13 (P.ph.50); 15th century]

4 Round object with down-turned edges. A strip has been attached to the top by two dome-headed rivets, which also pass through a cruder strip on the underside of the disc. It may have been a lid. Diam. 93mm. Analysis, p. 372.
SF416; CH.X1 46; Phase 2 [Church, Period Ia; Final phase 6 (P.ph.44); early to mid 13th century]

vi. IRON *by* IAN H. GOODALL

1 Shears. Arm and blade broken. L.75mm.
**R260; U10 II/IV 4; Phase 2 [Church, graveyard; Final phase 8–13 (P.ph.131); early 12th century to 1538]*

2 Shaped rear terminal from nailed U-shaped eye of hinge. L.58mm.
**R161; CH.I 10; Phase 2 [Church, Period II; Final phase 7 (P.ph.119); early to mid 13th century]*

3 Shaped perforated leaf from pinned hinge. Non-ferrous coating. L.35mm.
**R26a; Q5 12; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

4 Curved strap fragment with two nail holes, one retaining nail. L.134mm.
**R98; CH.I 6: Phase 2 [Church, Period II; Final phase 8 (P.ph.121); mid 13th century]*

5 Timber nails. Thirty one nails were found, their heads equivalent in form to several of those from palace and post-palace contexts (see p 378–9). *Their occurrence was: Type A: 16 from Phase 1 (manor complex), 7 from Phase 2 (church); Type D: 1 from Phase 1 (manor complex), 5 from Phase 2 (church); Types H and I: 1 each from Phase 2 (church).*

6 Stud with damaged sub-rectangular head and broken shank. L.54mm.
**R?? CUD I 18; Phase 1; pre-1538 [Cuddington, Structure D, occupation east of Wall 31]*

7 Stud with flat, rectangular head. Shank broken. L.50mm
R42; CH.XI 23; Phase 2 [Church, Period IV; Final phase 13 (P.ph.50); 15th century]

8 Lock. Incomplete, flat, sheet-iron lockplate retains part of lock mechanism, namely a rectangular mount and a lock bolt held by two staples. The mount has a pin over which a hollow key tip passed. W.??
SF374; CH.II 7; Phase 2 [Church, graveyard; Final phase 8–13 (P.ph.155); mid 13th century to 1538]

9 Ward plate with damaged keyhole. L.114mm.
**R23; Q5 8; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

10 Key with internally kidney-shaped bow, now distorted, solid stem with knobbled tip, and broken bit. L.134mm.
**SF352; CH.VII 5 [probably an error for CH.IX 5]; Phase 2 [if CH.IX 5, then Church, graveyard; Final phase 4–13 (P.ph.35); early 12th century to 1538]*

11 Sheet-iron rim fragment, circular in shape, triangular in section, with rectangular edge mount. max W.26mm
**R183; CH.XI 12; Phase 2 [Church, Period III; Final phase 11 (P.ph.55); mid to late 14th century]*

12 Pair of end-looped straps joined by a ring, perhaps from a flail. L.218mm.
**R26; Q5 12; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

13 T-shaped buckle frame with pin. Sheet-iron cylinder on short arm. W.82mm.
**SF301; CH.VI 5; Phase 2 [Church, graveyard; Final phase 8–13 (P.ph.174); mid 13th century to 1538]*

14 Rectangular buckle frame with revolving pin bar and pin. W.65mm.
**SF408; Q5 8; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

15 Horseshoe, complete. Four nailholes in each arm, both with thickened calkins. W.108mm, L.115mm.
**SF409; Q5 8; Phase 1; pre-1538 [Cuddington, Structure D (Fig 10); occupation west of Wall 31]*

16 Horseshoe arm with four nailholes set in fullered groove. L.107mm.

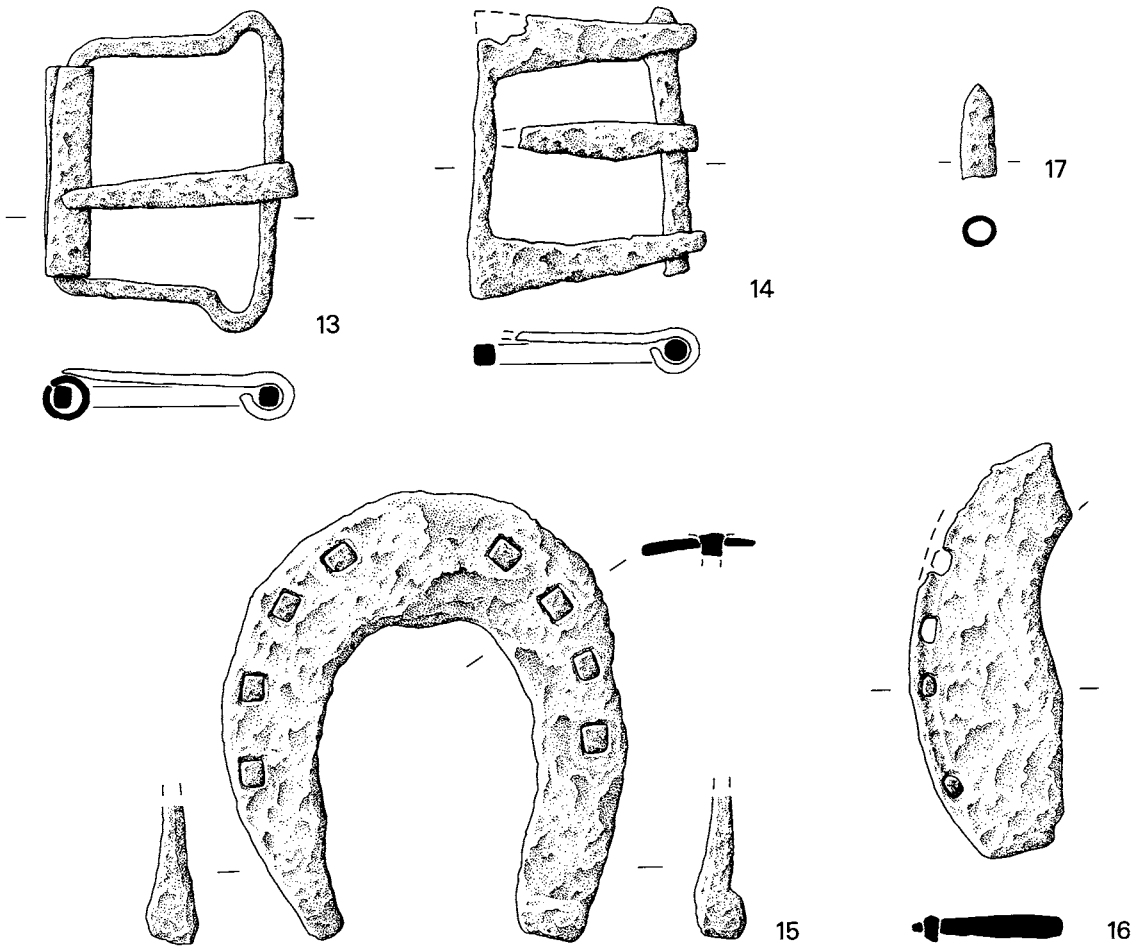


Fig. 13 Cuddington: iron, ***1–4, 6, 9–12*** *(1:2).*

**SF?; CH.VII 5; Phase 2 [probably an error for CH.IX 5]; Phase 2 [if CH.IX 5, then Church, graveyard; Final phase 4–13 (P.ph.35); early 12th century to 1538]*

17 Hollow, conical arrowhead. L.25mm.
**R218; U12 II/IV 8; Phase 2 [Church, graveyard; Final phase 4–13 (P.ph.163); early to mid 12th century to 1538]*

See also, catalogued below (p 404):

218 Horseshoe arm fragment with three nailholes. L.89mm, arm W.22mm.
**SF240; Q8 13; Phase 1 [Cuddington, Structure C (Fig 10); occupation south of Wall 20]*

vii. ANIMAL BONE *by* ALISON LOCKER

See below, p 441, Tables 30–2.

viii. DISCUSSION *by* MARTIN BIDDLE

Layers Q5 8, 10, and 16 appear to be external courtyard deposits belonging to a phase pre-dating the construction of Wall 31. They are probably therefore to be associated with the earlier structure on approximately the same site represented by Wall 32. The layers, especially Q5 8, contain roof-tiles and may indicate a period of reconstruction. They were the only Cuddington deposits encountered which contained any significant quantity of pottery and other finds. These include

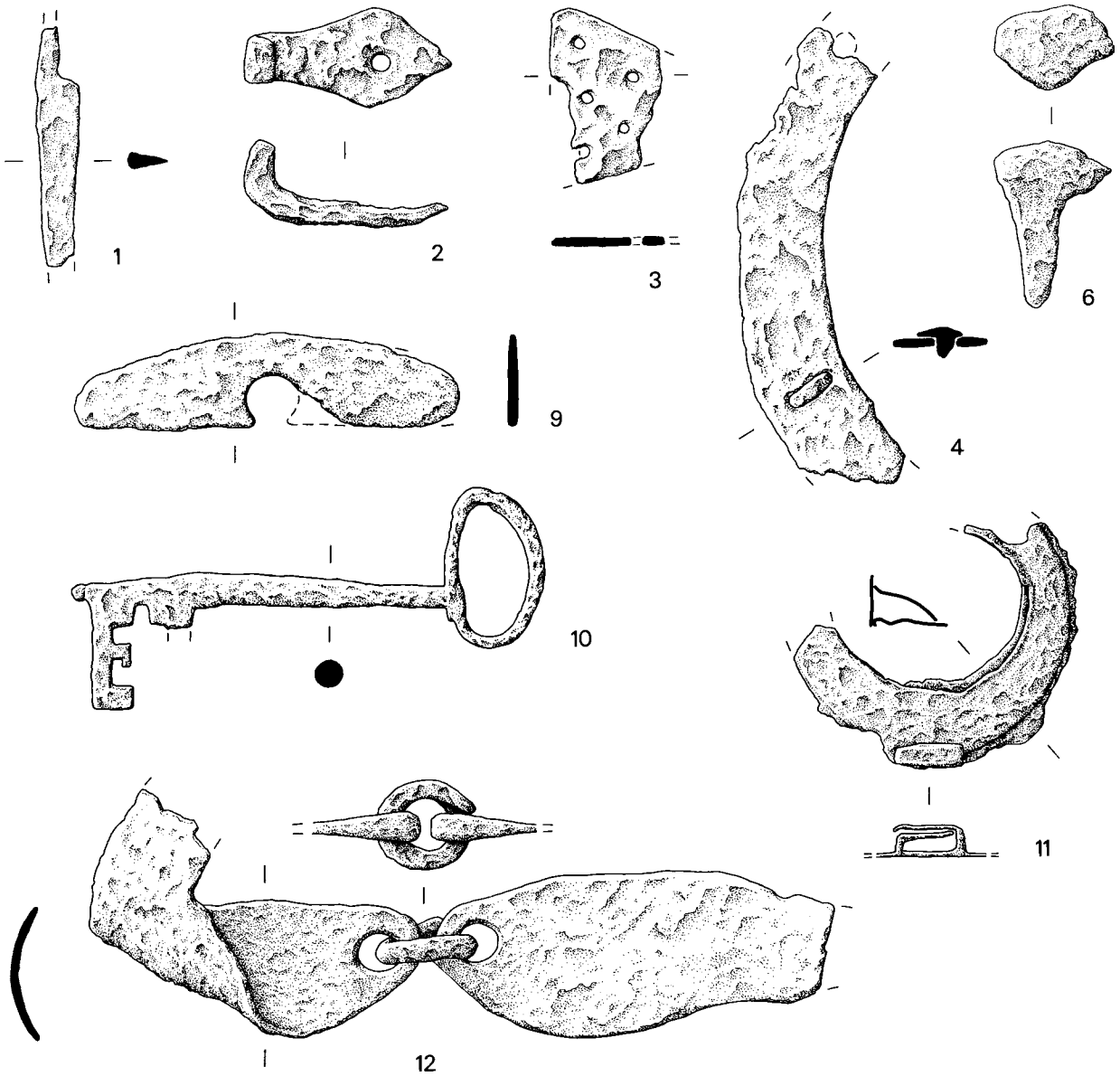


Fig. 14 Cuddington: iron, ***13–17*** *(1:2).*

a jetton of late fourteenth- or early fifteenth-century date (see below, p 21), and iron objects **3**, **6**, **9**, **12**, **14**, **15** (see below, p 22).

The structural sequence and the jetton suggest that these deposits may belong to the later fourteenth or first half of the fifteenth century rather than later. On current views, the pottery from these deposits fits well with this dating. Vessels **10–12** and **14** are Cheam white ware (CHEA: see below, p 136), closely similar in form and fabric to pottery from a kiln at Cheam itself, assigned to the late fourteenth to mid fifteenth century,[5] and **13** is of a closely related fabric. These same deposits also included a vessel of Cistercian ware (CSTN, Type 130: see below p 136), which should have been entered here rather than among the palace-period earthenware.

5. Orton 1982, 76–7, Fig 24 (Groups 1 and 2)

PART III

THE DOMESTIC MATERIAL FROM THE OCCUPATION OF THE PALACE AND BANQUETING HOUSE IN THE LATER SEVENTEENTH CENTURY

1

THE GROUPS OF FINDS AND THEIR DATING

by MARTIN BIDDLE

The majority of the finds from the excavation of Nonsuch came either from the demolition deposits or from the garderobe (latrine) pits lining the walls of the palace (Fig 5; Table 1). The Interim Report published in 1961 suggested that these finds 'were deposited during the period 1650/65–1688', and that 'the demolition of the major part of the palace had been completed by *c* 1688.'[1] The present chapter sets out, separately, first the archaeological and second the written evidence for the occupation and demolition of Nonsuch. These distinct lines of evidence are then brought together in an attempt to explain the patterns of the archaeological evidence in terms of the social history of the house, and the social history in terms of the archaeology.

i. The cleanliness of the palace

Nonsuch was a clean site. Although there were a number of deposits rich in finds, the surviving floors were clean and the demolition deposits covering the robbed building contained only relatively small quantities of pottery and other domestic material: little rubbish was lying around at the time of the demolition. This seems to be as true of the courtyards as of the interior. The cobbled surfaces of the Outer and Kitchen Courts and of the passage between them (Room 22) were clean before the fall of the demolition rubble and, to judge by the small amount of rubbish in the overlying deposits, the flagged surface of the Inner Court, almost entirely removed in the demolition, seems to have been kept equally clean. The yard north of the Kitchen Court may have been an exception to this general cleanliness, but too little of this was excavated to tell. The cultivated soils of the gardens on all sides of the palace may have gathered some domestic debris, but the soakaways around the outside walls of the Inner Court were in general clean before becoming clogged with demolition rubble (Table 1): thus the gardens, too, seem to have

1. Biddle 1961, 14

Table 1. The garderobes, other closed groups, and soakaways.

Number	Greek letter	Site	Trench	Layers Fill	Layers demolition	Location	Ground-Floor Rooms Served	Type	State[1]	Finds group	Drawn	Site notebook and pages (Feature no)
1	α	A	U1	–	6	Outer gatehouse NE	3	Round (arched)	'Clean'	Small	Fig 15	B,6a–9 (F-)
2	ε	A	W1	5a,5d–5i	5,5b,5c	Northeast Tower	14, 15	Oblong	Full	Medium	Fig 22	L,2a–6 (F3)
3	ζ	A	W2	5b–5f	5,5a	East Range	16, 17	Oblong	Full	Medium	Fig 22	L,10a–14 (F4)
4	γ	B	W4 II/IV	3a,4,4a–4c, 6,7	2,3	East Range	18	Oblong	Full	Large	Fig 22	C,11a–13, 17a–18 (F-)
5	λ	A	W5ext	2c,2d,3–8, 10	2b	East Range	21	Oblong	Full	Large	Fig 23	L,34a–36a (F8)
6	μ	A	W8 μ	2–12	1	East Range	23?	Square (small)	Full	Medium	Fig 23	L,57–9 (F9)
7	ν	A	W8 ν	2–6	1	East Range	23?	Oblong	Half full	Small	Fig 23	L,59a–62 (F10)
8	η	A	V7	6a,6b	6	Central Range	Over 34	Square (small)	'Clean'	Small	–	L,26a–28 (F5)
9	β	A	U7	8,8a,9	2	Inner gatehouse NE	Over 34?	Octagonal	Half full	Medium	Fig 22	B,13a–15 (F-)
10	–	C	X11 I/II	–	5	East Range	60, 61	Oblong	Clean	None	–	D,13a–14 (F1)
11	ξ	C	W12/13	8,9	7	East Range	62, 63	Oblong	Half full	Small	Fig 23	Q,46a–49 (F17)
12	–	C	X15	–	3,8	Southeast Tower	54 via 56	Square (large)	Clean	None	–	Q,4a–6 (F6)
13	–	C	W14	–	5,6	South Range	46, 53	Oblong	Clean	None	–	D,19a–22 (F2)
14	–	C	V14	–	11	South Range	45, 52	Oblong	Clean	None	–	Q,11a–14 (F13)
15	ι	C	U14	–	9,10	South Range	43, 50	Oblong	'Clean'	Small	–	D,3–4 (F11)
16	–	C	–	–	–	South Range	43, 50	Oblong?	–	–	–	Not excavated
17	–	C	S14 III	–	4	South Range	43, 50	Oblong	Clean	None	–	S,11a–13 (F39)
18	–	C	R14 II/IV	–	4?	South Range	43, 50	Oblong?	–	–	–	S,15–16 robbed out
19	τ	C	P/Q 15/16	16,16a	11,15	Southwest Tower	47 via 49	Oblong	Hall full	Medium	Fig 23	S,3a–4a (F36)
20	–	C	Q13 I	–	4	West Range	40, 41	Oblong	Clean	None	–	S,29a–31 (F38)
21	–	C	Q10 III	–	4	West Range	38	Oblong	Clean	None	–	S,47a–50 (F40)
22	υ	C	Q9 I	–	4,5	West Range	35	Oblong	Clean	None	–	U,70a–71, 72a–74 recorded in Site A (F-)
23	–	A	Q7 I/III	–	5	West Range	12?	Square	Clean	None	–	X,24a–26 (F-)
24	σ	A	R7 III	–	5	West Range	12?	Square	Clean	None	–	P,7a, 12a; U,67a–68 (F-)
25	–	A	S8	–	–	Central Range	Over 33	Square	–	–	–	P,23a robbed out
26	ρ	A	T7 III	3–5	2	Inner gatehouse	Over 33?	Octagonal	Full	Medium	Fig 15	X, 1a–5 (F-)

Table 1. continued.

Number	Greek letter	Site	Trench	Layers Fill	Layers demolition	Location	Ground-Floor Rooms Served	Type	State[1]	Finds group	Drawn	Site notebook and pages (Feature no)
27	–	A	Q5 III	–	–	West Range	9, 10	Oblong?	–	–	–	U,75 robbed out
28	–	A	Q4 III	–	–	West Range	6, 7	Oblong?	–	–	–	U,63 robbed out
29	–	A	P/Q 2/3	–	–	West Range	5	Oblong?	–	–	–	U,48 robbed out
30	–	A	Q1	–	–	Northwest Tower	4	Oblong?	–	–	–	U,30–1 robbed out
31	π	A	S1	12–14	10,11	Outer gatehouse NW	1	Round (arched)	Full	Large	Fig 15	P,28a–32 (F-)
Well	o	B	Y4	32–7	20–31	Kitchen, Room 24	–	–	Full	Medium	Fig 24	C,35–6; N,30; V (F1)
Great cellar	χ	A	W8 V8 U8 II/IV	7,8,9 4,6 2b,3	3 3,4a,5, 5a, 5b, 7–11, 14,15 2,2a	Central Range E	–	–	–	Small	–	L,54–6 L,15–18a B,6, 23–5 (F-)
Dump 1	θ	A	W5	–	4,4a	East Range, Rooms 20–21	–	–	Full	Large	–	L,31a, 32a–33 (F7)
Dump 2	ψ	C	X14 X15	– –	4,4a 9–10b	E Range, outside Rooms 54/56	–	–	Full	Medium	–	Q,1a–4 ('PIT') Q,4a–7
Soakaway A	–	C	W10	–	10,11	East Range, by Room 59	–	Square	Clean	None	–	Q,40a–43 (F20)
Soakaway B	–	C	W13	–	8,9	East Range, by Room 63	–	Square	Clean	Small	–	Q,31a–34 (F16)
Soakaway C	δ	C	W15	–	5–7	South Range, by Rooms 54/53	–	Square	Clean	None	–	D,28a–30 (F4)
Soakaway D	κ	C	T15 IVext	–	2b–d	South Range, by Rooms 50/51	–	Square	'Clean'	None	–	Q,28–9 (F15)
Soakaway E	–	C	S15 III S15 S ext	–	6	South Range, by Room 50	–	Square	'Clean'	None	–	S,8a–10 (F32)
Soakaway F	–	C	P/Q 15/16	–	17,18	South Range, by Rooms 47/49	–	Square	'Clean'	None	–	S,5 (F42)
Soakaway G	ϕ	C	Q14 III	–	5,5a,5b,6	West Range, by Room 42	–	Square	Half full	Medium	–	S,23a–25 (F34)
Soakaway H	–	C	Q10 III	–	6	West Range, by Room 38	–	Square	Clean	Small	–	S,47a–49a (F41)

[1] For the definition of the terms in this column, see p 36

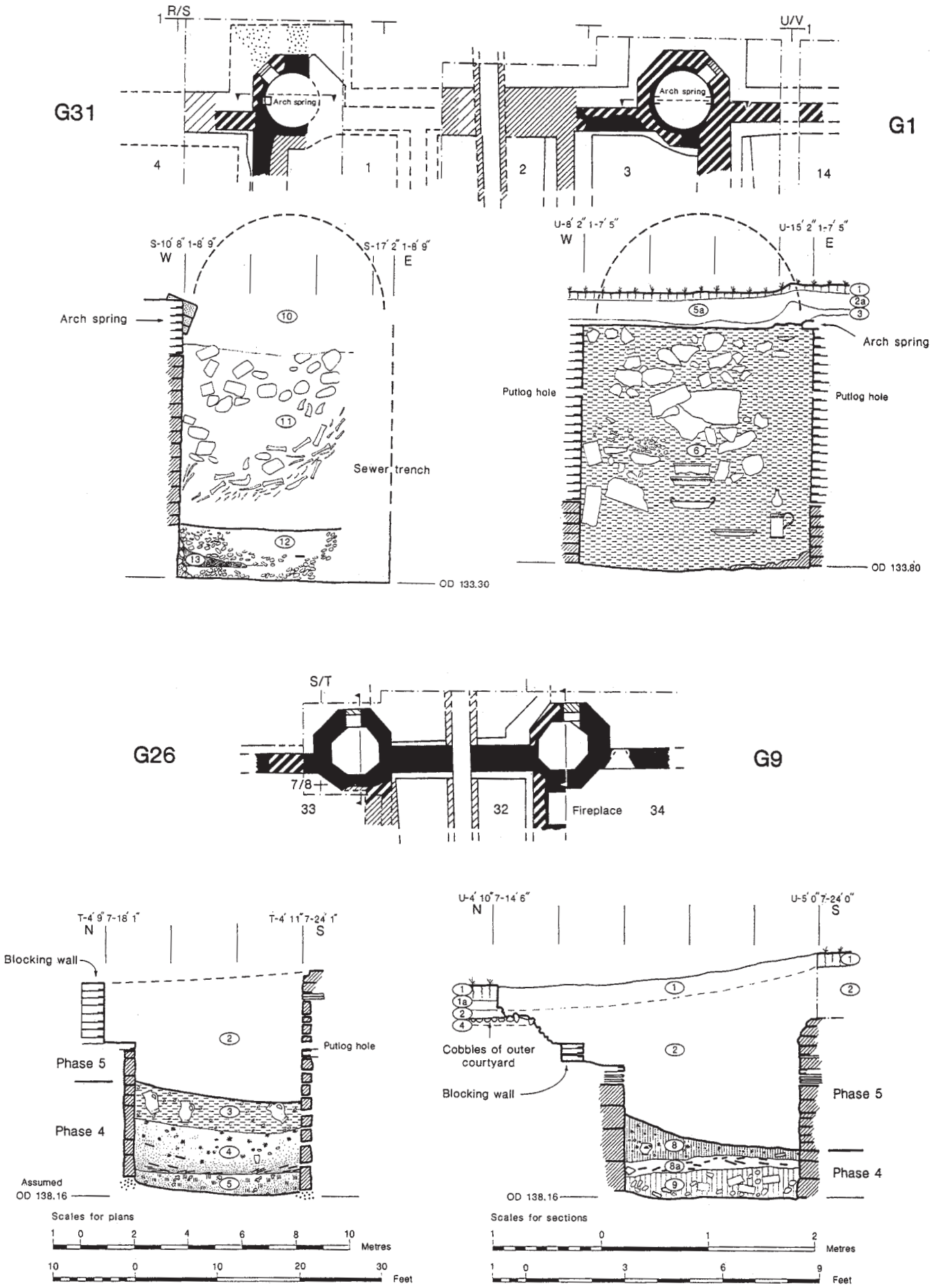


Fig. 15. Nonsuch Palace: Garderobes 1 and 31, 9 and 26, plans (16 ft to 1 in) and sections (4 ft to 1 in) (for key, see Fig 22).

Fig. 16 Nonsuch Palace: Garderobe 1, looking west. Opposed pairs of canted bricks (above and 'below' the ranging rod) indicate the springing of an arch across the garderobe (cf Fig 15).

Fig. 17 Nonsuch Palace: Garderobe 9, looking south (cf Fig 15).

Fig. 18 Nonsuch Palace: Garderobe 4, looking north (cf Fig 22).

Fig. 19 Nonsuch Palace: Garderobes 6 (in the foreground) and 7 in the thickness of the wall between Room 23 (to the right) and the Great Cellar, looking north-west, showing the blocking walls of the garderobes and the fireplace between them (cf Fig 23).

Fig. 20 Nonsuch Palace: Garderobe 4 with Earthenware tripod pipkins ***22a.1*** *(No 2) and* ***22b*** *(to right), looking south as found.*

Fig. 21 Nonsuch Palace: Garderobe 4 with Stoneware ***62*** *(to left), Earthenware jug* ***97*** *and squat jar* ***31b.1*** *(No 4A), looking south as found immediately below the vessels shown in Fig 20.*

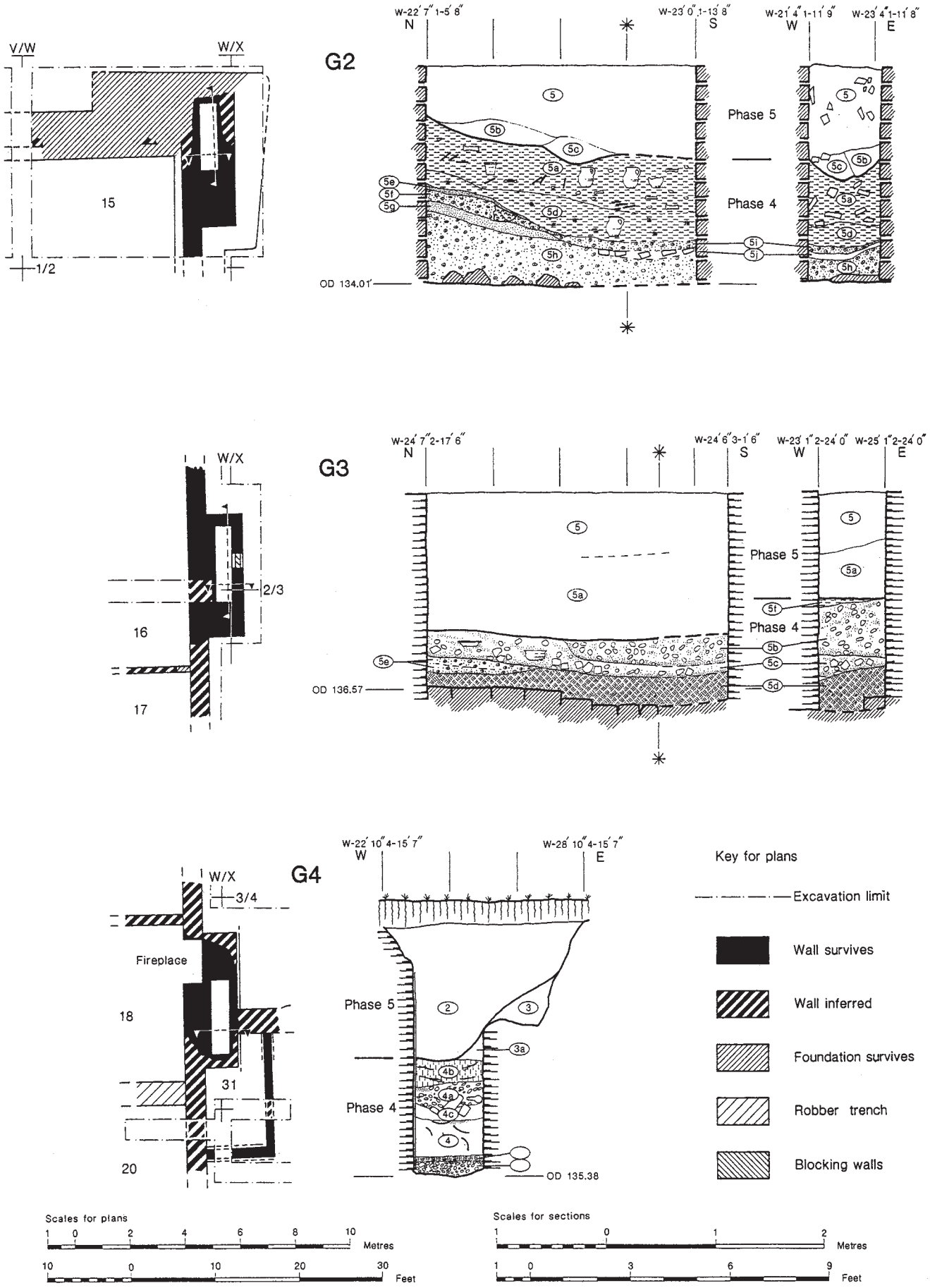


Fig. 22 Nonsuch Palace: Garderobes 2–4, plans (16 ft to 1 in) and sections (4 ft to 1 in).

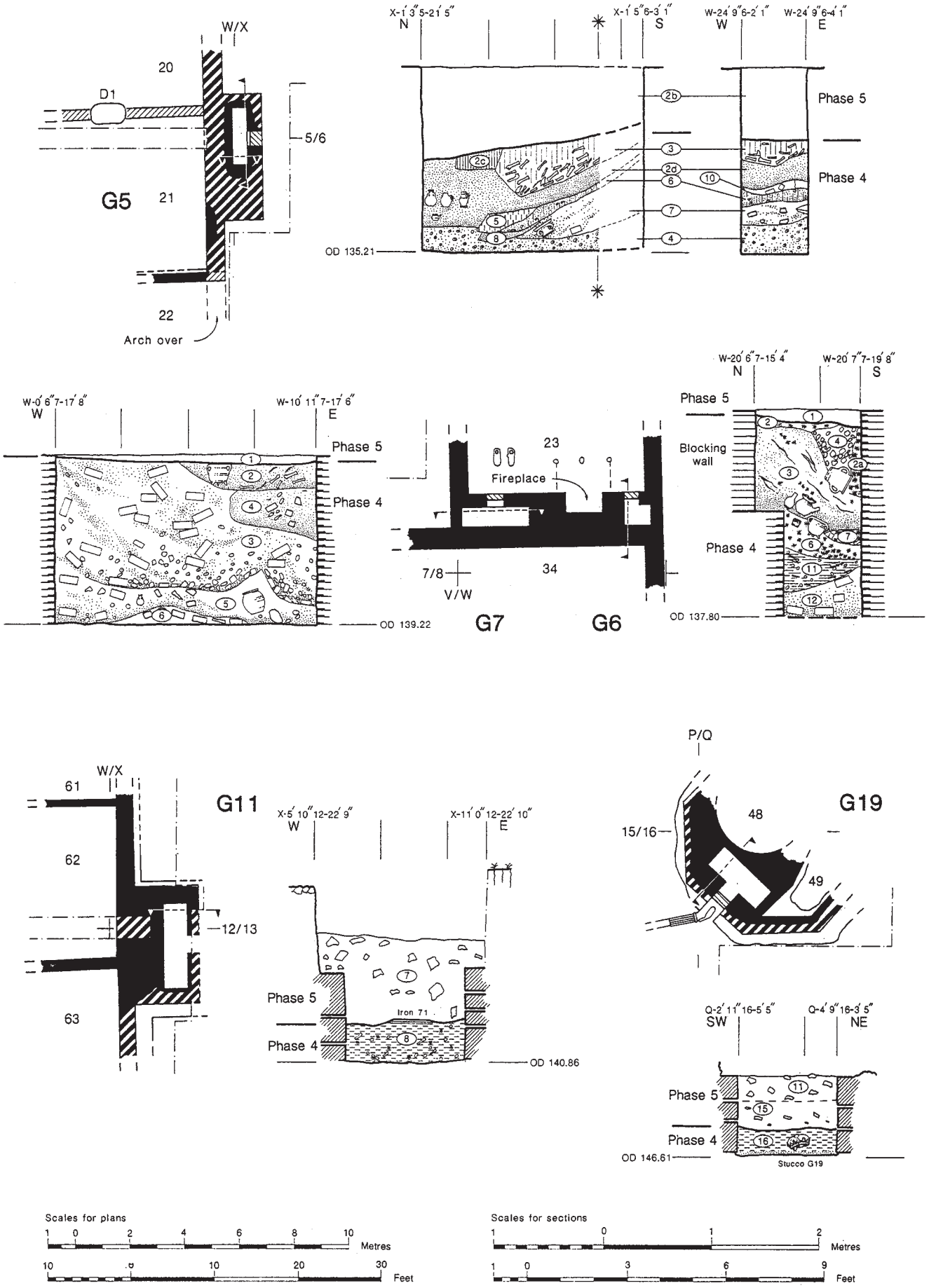


Fig. 23 Nonsuch Palace: Garderobes 5–7, 11, and 19, plans (16 ft to 1 in) and sections (4 ft to 1 in) (for key, see Fig. 22).

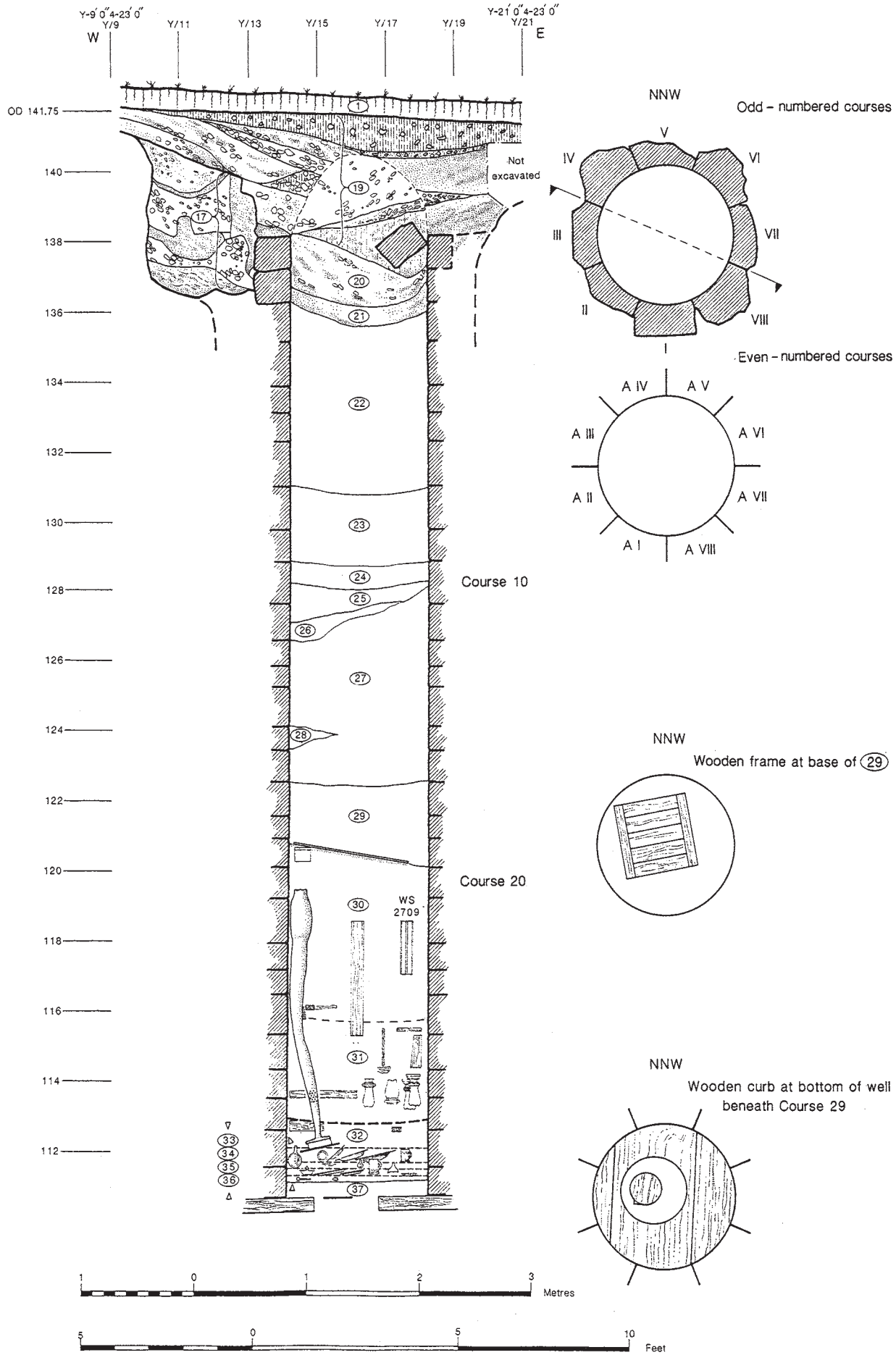


Fig. 24 Nonsuch Palace: Well in Room 24, plans and section (4 ft to 1 in) (for key, see Fig. 22).

Fig. 25 Nonsuch Palace: Well in Room 24 (cf Fig 24), looking west across the north end of the Kitchen Court towards the East Range.

Fig. 26 Nonsuch Palace: the Great Cellar, looking west, showing the cobbled floor on which the occupation deposit lay.

been kept free of rubbish, even in the process of manuring. Throughout the 140 years it was in use the palace was thus kept clean and the rubbish regularly removed to a dump or dumps elsewhere.

ii. GARDEROBES AND ARTEFACTS AS EVIDENCE FOR THE OCCUPATION OF NONSUCH

With four exceptions, the only large deposits of domestic refuse were found in the garderobe or latrine pits set around the outside walls of the palace and in its cross-ranges and gatehouses. The four exceptions are the kitchen well in Room 24 (Fig 24), the cobbled floor of the Great Cellar (Fig 26), and two dumps. Of the latter, Dump 1 (Fig 5, W5) consisted of a large deposit of domestic debris of garderobe type (ie, dark soil, animal bones, sherds of pottery and glass) derived, as the cross-fits of the pottery demonstrate,[2] from Garderobe 5 nearby, and presumably disturbed from higher up its shaft in the course of demolition, and thrown to one side. Dump 2, in the garden adjacent to the north side of the south-east tower (Fig 5, X14/15), looks like the filling of a tree-hole. Its contents were quite unlike the garderobe deposits, consisting mostly of building debris, especially roof and carved slates, in sandy brown earth. If the two dumps are, for different reasons, exceptions, the well and the floor of the Great Cellar are just the kind of places where rubbish could accumulate even in a decently run house.

Of the 31 garderobes, 11 were full or 'half-full' of domestic debris, while 20 were clean or 'clean', ie, virtually clean (Table 1). Full and clean are self-explanatory. 'Clean' denotes garderobes containing either no deposit of garderobe type (G.1, G.15), or very little (G.8), but with 'small' groups of finds from either the fill, where it exists, or from the immediately overlying rubble. 'Half-full' denotes garderobes containing a greater amount of deposit of garderobe type, with 'small' (G.7, G.11) or 'medium'-sized groups of finds (G.9, G.19). Of the 20 clean or virtually clean garderobes, six had been destroyed by the robbing out of the walls in which they were set (G.18, G.25, G.27–30) and one was not excavated (G.16). Since there was no sign of deposits of garderobe type (cf Dump 1) in the robber trenches of these robbed-out garderobes, it can reasonably be assumed that they were clean at the time of demolition. It may also be safe to assume that the unexcavated garderobe (G.16), which formed part of a line of clean garderobes down the spine wall of the south range (Fig 5), was also clean. The evidence for the cleanliness of the robbed-out garderobes has to be seen in the context of the areas excavated around them (Fig 5). This is particularly significant for Garderobes 27–30 which lay in the north-western part of the palace where only trenching was possible. As Fig 5 shows, an effort was made to define and empty a substantial part of the robber-trench of each garderobe, so that the lack of deposits of garderobe-type in the rubble filling of the robber-trenches is probably significant.

The distribution of the full and clean garderobe pits is complementary (Fig 27). Of the eleven full or half-full garderobes, nine served the Outer Court and only two (G.11 and G.19) the Inner Court. Of the twenty clean or near-clean garderobes, nine are around the Outer Court and eleven attached to the Inner Court. Of the nine clean garderobes belonging to the Outer Court, seven are in the west range. If this pattern is examined in more detail it emerges that all the garderobes in the west ranges of both the Outer and Inner Courts and all the garderobes in all three ranges of the Inner Court are clean, excepting only G.11 in the east range and G.19 in the south-west tower, and these were both only half full. Looked at another way, with the exception of G.11 and G.19, the garderobes which were found to be full or half-full had served the Outer and Inner gatehouses and the east range of the Outer Court.

2. See below, p 47–8

How might this pattern of use have arisen? There seem to be two possibilities.

1. The garderobes of the palace were full or mostly full until those down the whole length of the west range and throughout the Inner Court were cleansed for some intended use of those parts of the palace only. The other garderobes remained full or half-full. Since the cleaned garderobes remained clean, this use presumably never took place.
2. All the garderobes of the palace were emptied in some major episode of cleansing, and only those subsequently became filled which served those parts of the palace which continued in, or were brought back into, use.

In other words, the full or half-full garderobes represent either a use earlier by some unknown span of years than the demolition of the palace, or they represent its last use.

These alternatives can be tested by examining the distribution of the various categories of finds (Figs 28–33) where a distinction is made between finds from garderobes (shown by ▲) and finds from other kinds of deposit (shown by ●). If Possibility 1. were to be correct, the distribution of non-garderobe finds should be generally even over the whole area of the palace. If possibility ii. were to be correct, non-garderobe finds might be expected to match the distribution of the garderobes which reflected those areas of the palace which remained in, or came back into, use after a general cleansing. As Figs 28–33 show, every class of artefact, however sub-divided, and with very few exceptions, exhibits a distribution comparable to that of the full or half-full garderobes. Such a strong correlation between these distributions can scarcely be due to chance.

The animal bones display a similar pattern (Tables 80–1). Of all the bones from the occupation (Phase 4) and demolition (Phase 5) contexts, 63 per cent came from the Outer Court compared with 25 per cent from the Kitchen Court and 12 per cent from the Inner Court (Table 81). The bones from the occupation contexts alone (Phase 4) show an even sharper contrast: 76 per cent from the Outer Court against 15 per cent from the Kitchen Court and 9 per cent from the Inner Court. When the bones from occupation (Phase 4) are combined with the bones from immediately overlying demolition contexts, the Outer Court accounts for 81 per cent of the total.

One may thus conclude that the pattern displayed by the full and half-full garderobes reflects a stage in the history of the palace when, after a thorough cleaning of its latrines, courts, and rooms, a part only of the house continued in use. This part appears to have included the eastern half of the Outer Court and the adjacent Kitchen Court.

The next question is to establish from the contents of the garderobes the period or periods during which they may have been in use. When this has been achieved, the results can be compared with the documented history of Nonsuch in an attempt to see how the temporal and spatial patterns established from the archaeological evidence may be explained.

iii. DATED AND DATABLE ARTEFACTS

Some of the artefacts recovered from the palace are directly dated, either with calendar dates in years, or by maker's, heraldic, or other devices to which a definite *terminus ante quem* can be given (eg the Lumley arms which would not have been applied to any item at the palace after John Lord Lumley's death in 1609 (Tables 2 and 3). The time-distribution of these twenty-two items[3] over four arbitrary spans of 38 years covering the lifetime of the palace from 1538–1682/90 is as follows:

3. A further item, a stoneware medallion with the date '17??' is omitted because of the conflict between this apparent date and the typical early 17th-century style of the armorial, see below, p 118, **91**

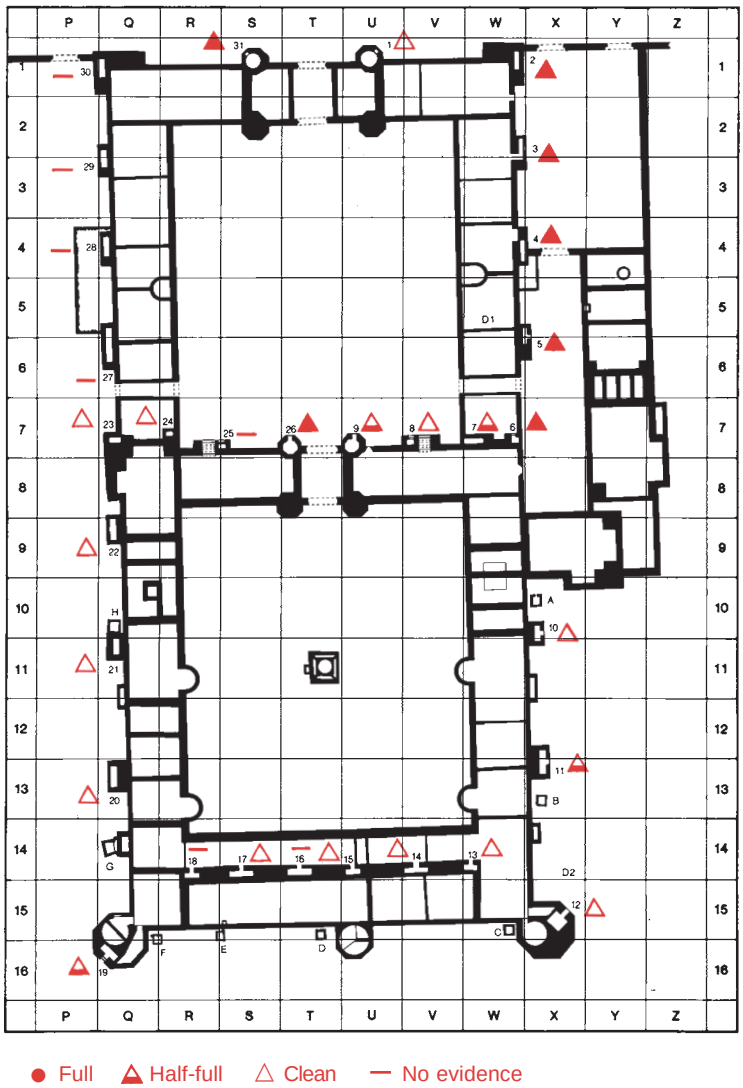


Fig. 27 Nonsuch Palace: distribution of the full, half-full, and clean garderobes (cf Table 1).

1538–75	1
1576–1613	7
1614–51	3
1652–90	11

Of the eleven items from the period up to 1651, five are pewter vessels from the Well in Room 24, and five are coins, all from deposits in which they are likely to be residual.[4]

If we turn from the dated items to those which are datable by their style, typology, or parallels, the evidence will be found in Concordance I,[5] where the items are listed either by phase, and within each phase by context (Phases 1–3, 5, 6), or by major groups (as in Table 1) and within

4. Coin (jetton) **17** (pre-1559) was found in Garderobe 7 with bottle glass and earthenware datable to the period after 1650; Coins **2** and **5** and Coin (jetton) **20** in demolition deposits of 1682–4, and Coin **3** in a post-demolition deposit

5. At end of volume

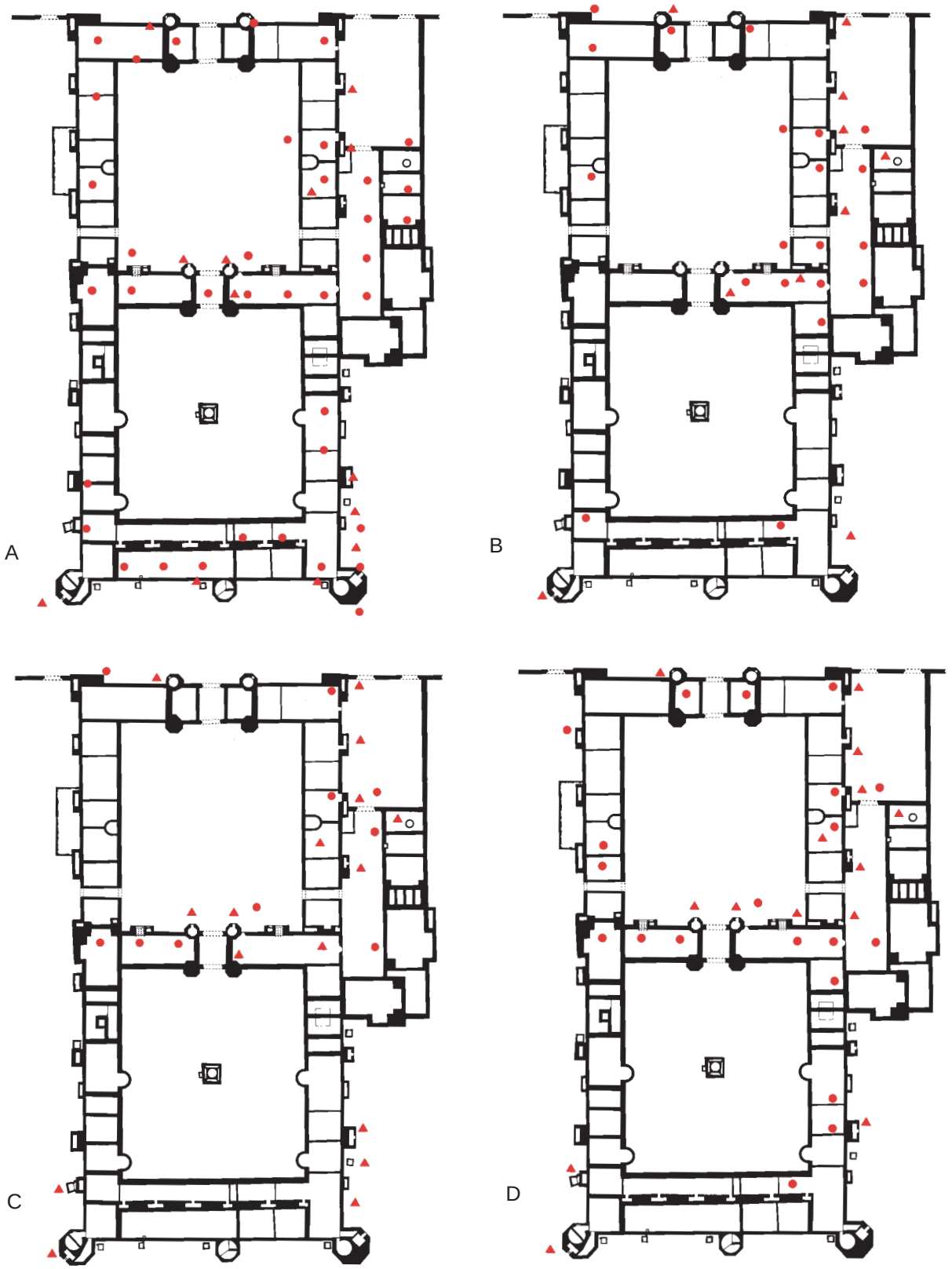


Fig. 28 Nonsuch Palace find distributions: A, catalogued tin-glazed ware; B, catalogued stoneware; C, catalogued fine vessels glass (Venetian, façon de Venise, *and Venetian style); D, catalogued fine green vessel glass. Finds from garderobes and other closed groups, triangles (▲); other contexts, circles (●).*

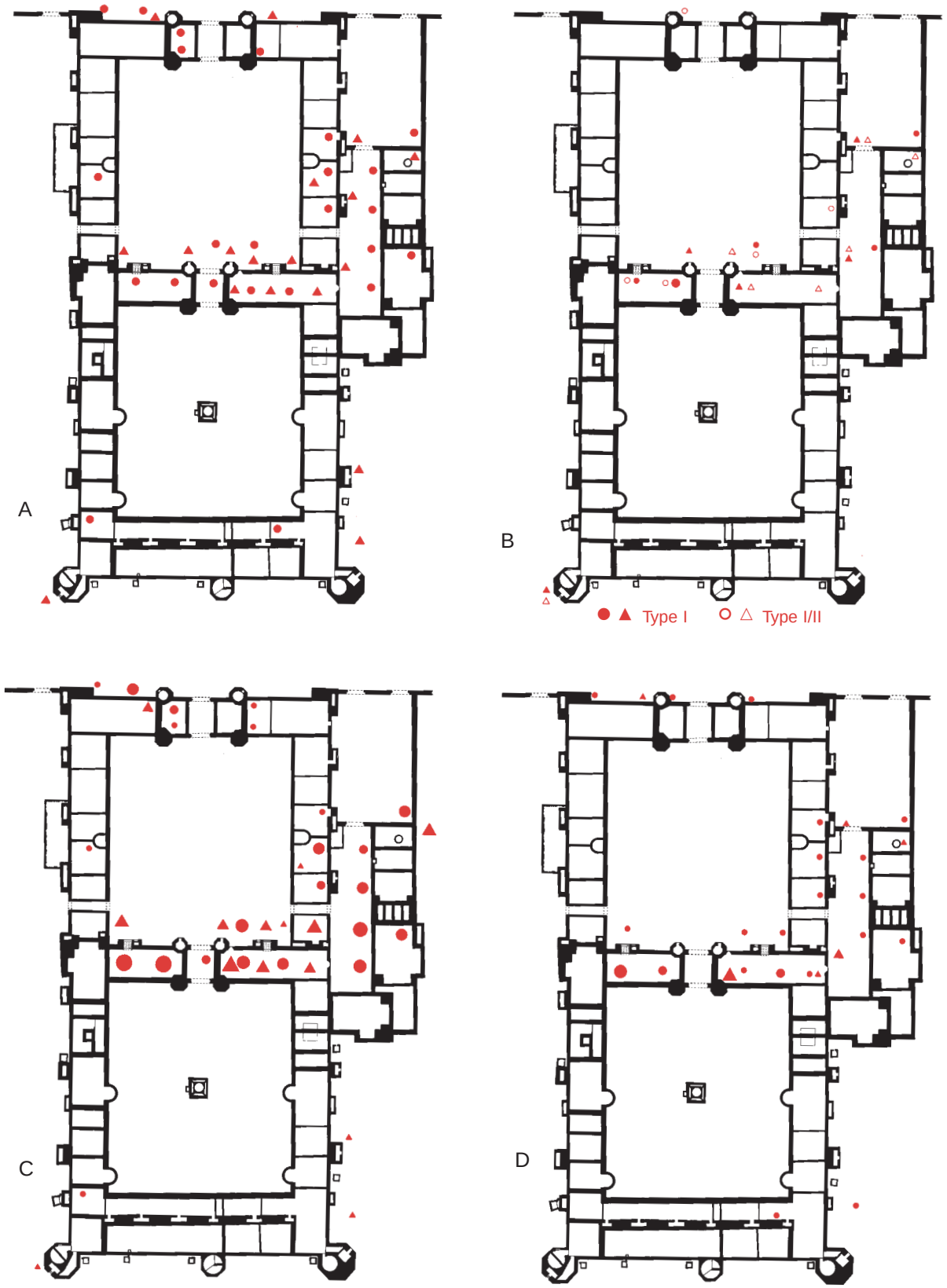


Fig. 29 Nonsuch Palace find distributions, glass bottles: A, all types; B, Type I and Type I/II; C, Types I or II; D, Type II. Finds from garderobes and other closed groups, triangles (▲); other contexts, circles (●).

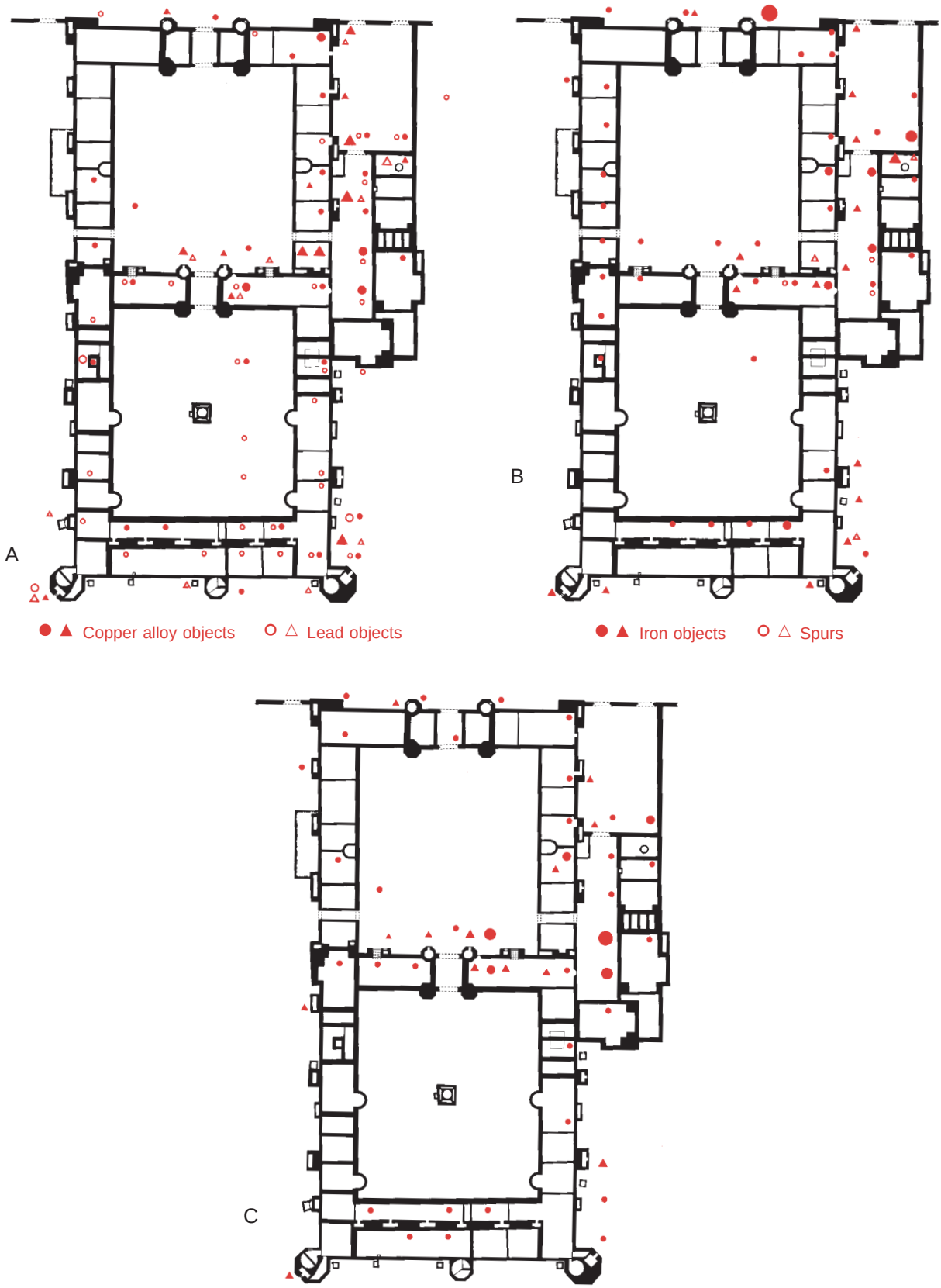


Fig. 30 Nonsuch Palace find distributions: A, non-ferrous metal objects; B, iron objects; C, clay pipes. Finds from garderobes and other closed groups, triangles (▲); other contexts, circles (●).

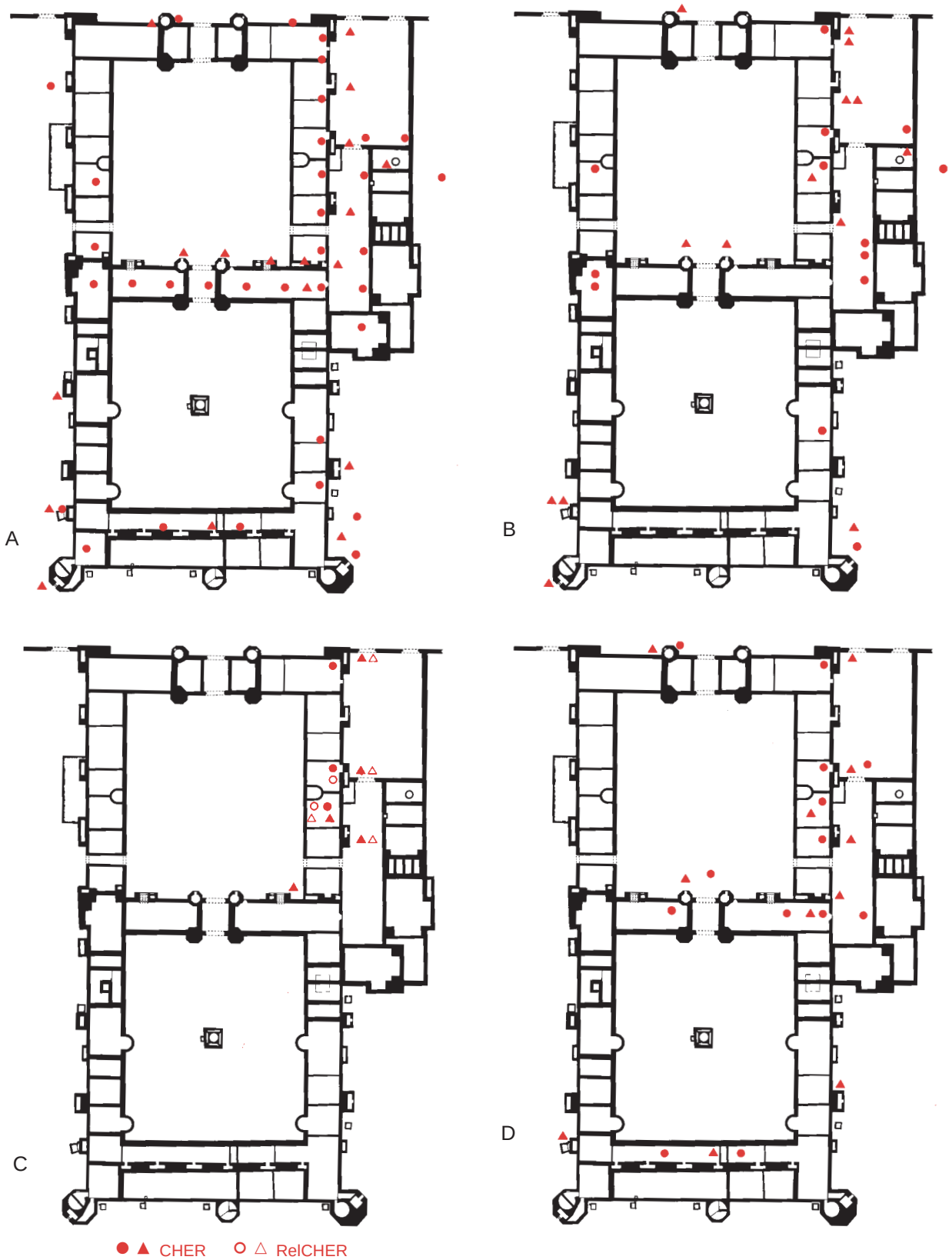


Fig. 31 Nonsuch Palace find distributions, earthenware fabrics: A, all types; B, imported and non-local wares; C, related to CHER and CHER; D, TUDB. Finds from garderobes and other closed groups, triangles (▲); other contexts, circles (●).

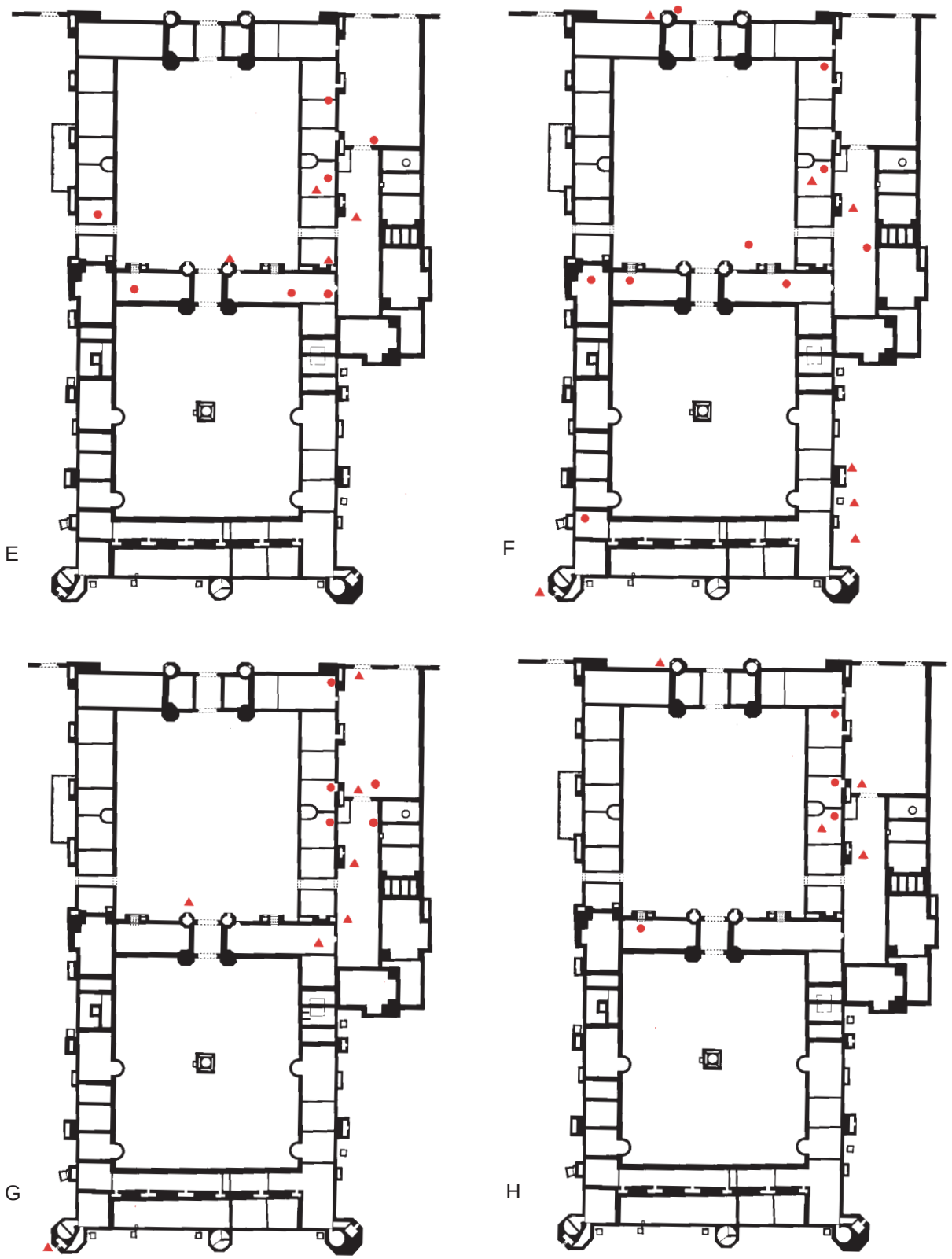


Fig. 32 Nonsuch Palace find distributions, earthenware fabrics: E, GUYS; F, PMCR; G, NONA; H, NONB. Finds from garderobes and other closed groups, triangles (▲); other contexts, circles (●).

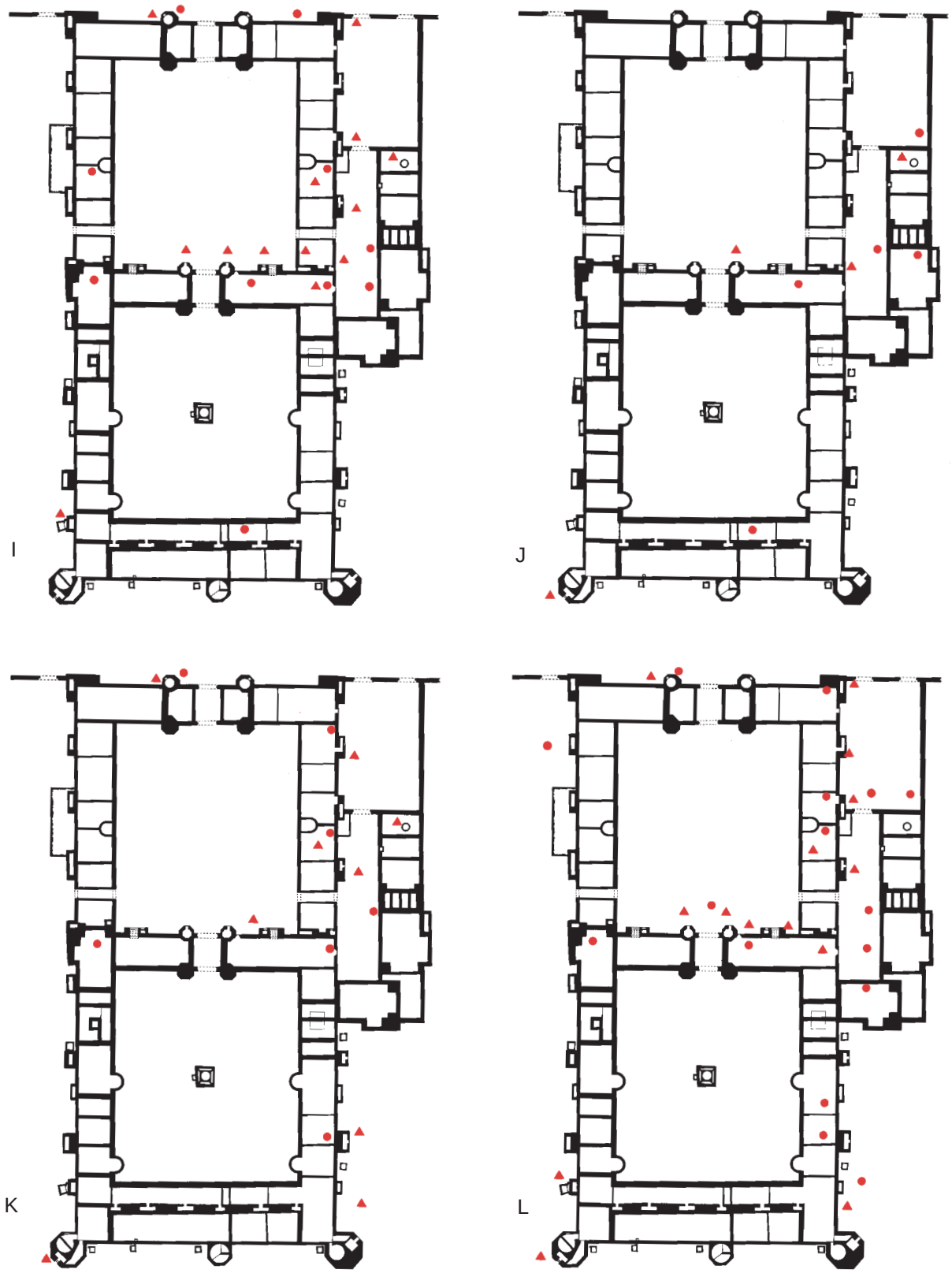


Fig. 33 Nonsuch Palace find distributions, earthenware fabrics: I, PMFR; J, PMBL; K, RBOR; L, BORD. Finds from garderobes and other closed groups, triangles (▲); other contexts, circles (●).

each major group by context (Phase 4, with immediately overlying Phase 5 deposits[6]). The date ranges given in Concordance I are derived (subject to the conventions necessary for reconciling different modes of expressing dates[7]) from indications provided by the specialists who contributed the individual studies. Material which is not at present independently datable is not included in Concordance I.

With some important exceptions, the lists in Concordance I show:

1. that the deposits of Phases 4 and 5 in the full and half-full garderobes, the Great Cellar, and Dump 1 (Table 1) all contain (whatever else may be present) material datable later than 1650, but very little that need (when the individual date ranges are considered) be later than 1685 and nothing that must be later than 1700.[8]
2. that the demolition deposits of Phase 5 contain material of a similar range in date with a similar *terminus* in the 1680s.[9]

Table 2. Dated artefacts from closed groups (Phase 4).

Date	Category	Type/catalogue Number	Closed group (cf Table 1)
pre-1559	Coin (jetton)	**17**	Garderobe 7
pre-1579	Pewter	**1**	Well in Room 24
pre-1609	Pewter	**2**	Well
pre-1609	Pewter	**8**	Well
pre-1609	Pewter	**9**	Well
pre-1610	Stoneware	**90**	Great Cellar
pre-c 1625	Pewter	**5**	Well
1650	Tin-glaze	**1**	Garderobe 26
?pre-c 1657	Bottle seal	**9**	Great Cellar
1665	Coin (token)	**34**	Great Cellar
1665	Coin (token)	**35**	Great Cellar
1671	Earthenware	**7**	Garderobe 31

Table 3. Dated artefacts from demolition deposits (Phase 5) and artefacts dated pre-1700 from later contexts (Phases 6–8).

Date	Category	Type/catalogue Number	Phase
1580s	Coin (jetton)	**20**	Phase 5
1583–1601	Coin	**2**	Phase 5
1613–15	Coin	**3**	Phase 6
1636-c 1644	Coin	**5**	Phase 5
1650	Coin (token)	**28**	Phase 5
1657	Coin (token)	**32**	Phase 8
?1654–8	Bottle seal	**8**	Phase 5
?1676–8	Fine glass	**77**	Phase 5
?pre-1681	Bottle seal	**4**	Phase 6
?pre-1688	Stoneware	**92**	Phase 5

6. For the reasons for this arrangement, see below, the introduction to Concordance I
7. See below, p 52–3
8. See below, p 48
9. See below, p 48

Four deposits seem at first sight to provide possible exceptions to these general propositions:

Well in Room 24 (Fig 24)

The occupation fills (Phase 4; layers 32 to 37) contain among much other material only four items (three fragments of green wine bottles of Types I or II, I/II, and II from Layer 32 and a clay pipe from Layer 34) whose earliest likely date falls after 1650.[10] These items might be intrusive from the immediately overlying demolition fills (Phase 5; Layers 31 and above), which do contain items datable after 1650, either because the lower layers became mixed under the impact of heavy stones from the demolition, or because of the difficulties experienced in excavation, where it was impossible to proceed strictly layer by layer (Fig 24 provides a diagrammatic reconstruction of the lower layers of the well), and where the water had to be pumped out each day before work could continue, with consequent risk of mixing between the layers. If these four items are omitted, the Phase 4 layers in the well could have been deposited before 1650. It is, however, important to note that over 30 items in these layers have broad date-ranges in which the later term falls after 1650.[11] These items could have been both made and deposited after 1650. The best that can therefore be said is that while only the four items mentioned above were certainly deposited after 1650, many more may have been.[12]

Garderobe 2 (Fig 22)

The Phase 4 fills of this garderobe contain nothing known to be datable after 1650 apart from two items, both green-glazed Border ware costrels of Type 99,[13] which are thought to be datable to the mid to late 17th century (Table 3), but whose dating can scarcely be regarded as strictly limited to these brackets. In addition there is a fragment of fine glass (**141b**) datable to the mid 17th century (1633–66). The Phase 5 demolition fills in Garderobe 2 contain nothing which need be later than 1650. It is difficult to know what to make of this evidence, but some guidance is provided by Tables 10 and 11 which compare the earthenware fabrics and forms across the garderobes and other closed groups, and by Table 12 which displays the occurrence of fabrics by phase. Table 10 shows that the earthenware fabrics in Garderobe 2 are common to Garderobes 4, 5, and Dump 1, and Table 11 shows that Garderobe 2 shares a range of forms similar but not quite identical to those in the same deposits. The same picture, differently expressed, emerges from Table 12. There is nothing therefore to suggest that the deposit in Garderobe 2 is distinctively different in date from the deposits in the other garderobes down the east range of the Outer Court. The patterning of full and clean garderobes across the palace, already discussed,[14] may even suggest that Garderobe 2 should be taken as part of a process which produced the other deposits in this group of garderobes. If so the lack of material in Garderobe 2 datable on present knowledge later than 1650 may be deceptive. The green-glazed costrels may therefore be a fair guide the date of this deposit.

Dump 2 (Fig 5, X14/15)

The fills in the shallow pit designated Dump 2 have been assigned to the demolition of the palace because they contain a large amount of roofing slate and, more significant, over 80

10. See below, Concordance I
11. See below, Concordance I
12. For the possibility that this well was cleaned out in 1634–5, see below, p 64. Whether the well, if it was this well, was cleaned out right to the bottom on this occasion, and whether it was ever re-cleaned, are unknown.
13. See below, p 188–9, Table 8
14. See above, p 36–7

fragments of carved slate from the external decorations of the Inner Court. The finds from these fills are in general datable before 1650, but later finds occur in Layers X14 (3 items), X15 10 (1 item), and X15 10a (1 item). The roofing slate might come from any period of repair, but carved slate in this quantity is likely only to be derived from the demolition of the palace in 1682/8. The five items datable after 1650 are therefore probably a guide to the date of Dump 2, which is therefore correctly assigned to Phase 5.

Garderobe 1 (Figs 15, 16)

There were no Phase 4 occupation deposits in Garderobe 1 which appears to have been clean when filled with Phase 5 demolition rubble. This rubble contained a group of 'tall' wine bottles of Type IV, datable from *c* 1760 onwards, showing that the filling did not take place until after the middle of the 18th century.[15] The composition of the animal bone sample from the demolition material was unlike that of any other sample from the palace, and may suggest that the shaft above Garderobe 1 was used as an owl roost. This part of the palace may therefore have remained standing, or the pit alone have remained open, after the rest of the house was demolished.

The problem of Garderobe 2 raises the question of the physical inter-relationship between the various closed groups. This is best explored through the fits between fragments of pottery or glass. Most of these are between fragments found in Garderobe 5 and Dump 1, demonstrating the close relationship between these groups, and the probability that Dump 1 is derived from Garderobe 5.[16] There are, however, also fits between fragments from Garderobe 4 and the Great Cellar,[17] between Garderobe 5 and Garderobes 6,[18] 7,[19] and 8,[20] and between Dump 2 and Soakaway G.[21] There are in addition 12 closed groups which contain fragments of vessels also found in non-garderobe (ie, mainly demolition) deposits.[22] These fits suggest a degree of inter-relationship between the closed deposits consistent with their being contemporary. Garderobes 2 and 3 do not share in this pattern of fits, although there is a glass vessel which may have fragments (not fitting) in both these garderobes.[23] Since, however, these two garderobes share a range of types and fabrics with Garderobes 4 and 5, it seems reasonable to suggest, as argued above, that they were in use at the same time as the other garderobes in the same area of the palace, which are themselves inter-related by the cross-fits described above.

This survey of the dated and datable artefacts suggests that all but two of the closed groups were deposited (whatever earlier material they may contain) between *c* 1650 and *c* 1680, and that the demolition deposits are datable to the 1680s. The two exceptions are the Well in Room 24, the lowest fills of which may be datable before 1650, and Garderobe 1 which only became filled with rubble after *c* 1760.

Two questions remain. Can the broad dating of *c* 1650 to *c* 1680 for the deposit of the closed groups of Phase 4 be more closely defined? Is it possible to refine a date in the 1680s for the demolition? The earliest date(s) for the *closure* of the Phase 4 groups and for the deposit of the demolition rubble cannot be earlier than the latest securely datable and securely provenanced finds from the deposits in question. What then are the latest dates 'from which' finds in Concordance I are datable? All the datable finds from the closed groups of Phase 4 (with their

15. See below, p 291 and n. 21
16. Tin-glazed ware **108**; Earthenware **37d**, **38b** (No 208), **79** (No 177), **108**
17. Stoneware **1**; Earthenware **16a** (with a possible fit also to a fragment from the Well)
18. Earthenware **37c**
19. Earthenware **37c**
20. Earthenware **25**
21. Earthenware **110**
22. Garderobes 2, 4, 5, 6, 7, 9, 26, 31, Great Cellar, Well, Dump 1, Dump 2
23. Fine vessel glass **48**

immediately overlying demolition fills of Phase 5) and from the demolition deposits of Phase 5 given in Concordance I whose assigned dates begin *c* 1670 or later are listed in Tables 4 and 5, where all those items datable from c 1685 or later are marked with asterisks. Obvious contaminations listed in Concordance I are ignored. The 138 entries in Tables 4 and 5 are ordered by category of material in Table 6.

These tables show that artefacts dated or datable after *c* 1670 were reaching Nonsuch. They are, however, few in number by comparison with the bulk of the datable material from Phases 4 and 5 listed in Concordance I, as Figs 34–6 demonstrate.[24] In these histograms the date ranges assigned to the individual pieces (or the dates, where greater certainty has seemed appropriate) have been analysed by taking the decades into which the earliest and latest term of the date range applied to each piece falls and graphing the counts in blocks of one-third centuries. In Fig 34.1A, for example, two pieces have been assigned dates whose *earlier* term falls in the third of a century ending in 1500; while in Fig 34.1B, ten pieces have their *later* term in the third of a century 1533–66. The use of third-centuries was necessitated by the common practice of giving dates 'early', 'middle', or 'late' in a century, and by the need to standardise the differing conventions used in study of the various categories of material to a single system for comparative purposes.[25]

Material assigned to a date beginning c 1685 or later, asterisked in Tables 4–6, is even less in quantity.[26] It consists of bottle glass of Type IV from Garderobe 1 (a special case discussed above[27]), four clay pipes of Type 25 from demolition deposits, six pieces of earthenware of Type 50, and five examples of tin-glazed ware, a total of 16 (11.6%) of 138 entries in Table 6.

Artefacts with assigned earlier dates of *c* 1670 or later in closed groups of Phases 4 and 5 (Table 1)[28] come from six of the eleven full or half-full garderobes (Table 4), two of them in the Inner Court (Garderobes 11 and 19), the other four in the Outer (Garderobe 31) and Inner (Garderobe 9) Gatehouses, and the east range of the Outer Court (Garderobes 4 and 6). They also come from Garderobe 1, the Well in Room 24, the Great Cellar, Dump 2, and Soakaway G. Artefacts with assigned earlier dates of *c* 1685 or later in these closed groups (asterisked in Table 4) come from the Outer Gatehouse (Garderobes 1 and 31), the east range (Garderobes 4 and 11), and from Soakaway G.

Artefacts with assigned earlier dates of *c* 1670 or later from the Phase 5 demolition deposits (Table 5) are found principally at the west end of the central range (S7, Q8, R8, S8) and in the Kitchen Court (X4 to X8) and adjacent areas. Artefacts from Phase 5 with assigned earlier dates of *c* 1685 or later come from in or beside the Kitchen Court (W5, X5, X7, X8) and from three other widely scattered locations (Q1, S15, T2).

The distribution of the material in Table 4 suggests that the last parts of the palace to remain in use were the Outer Gatehouse, some rooms in the east range of the Outer Court, and in the central range, including perhaps the Inner Gatehouse, a room or rooms in the east range of the Inner Court, and perhaps the south-west tower. The distribution of the material in Table 5 suggests that at the time of the demolition there was in addition material of *c* 1670 or later available to be incorporated in the demolition deposits of the West Cellar (R8, S8) and the Kitchen Court (X5 to X8). These areas are more or less exactly the same as those from which the bulk of the artefact material is derived (Figs 28–33).

A few of the artefacts with assigned earlier dates of *c* 1670 or later are of notable quality. These include the English crystal glasses **77** and **78** of *c* 1676–8 and *c* 1680 respectively, the possibly

24. Material datable after c 1670 forms 174 (11%) of the 1603 records on the database represented by Concordance I
25. Biddle 1990, p 18–20
26. Material datable after *c* 1685 forms 41 (2.6%) of the 1603 records on the database represented by Concordance I
27. See above, p 47
28. See above, p 45

Florentine flasks **109–10** (to which **108**, from an uncertain phase, should be added) and a number of tin-glazed pieces, some assigned to dates after *c* 1685 (Table 6). Whatever the nature of this latest occupation, it does not seem to have been casual squatting.

Table 4. Datable artefacts in Concordance I with assigned earlier terms of c. 1670 or later from closed groups (Phase 4 and immediately overlying demolition deposits of Phase 5).[1]

Closed group (cf Table 1)		**Date range**[2] **(dates after 1685*)**	**Category**	**Type/catalogue Number**
G.1	Demolition	*1750–1800	Bottle glass	IV[3]
G.4	Demoliton	1680–1730	Bottle glass	II
	Fill	1670–90	Clay pipe	**20–22**
		1680–1730	Bottle glass	II (3)
		*1700–20	Earthenware PMFR	**50c**
G.6	Fill	1680–1730	Bottle glass	II (8)
G.6/7	Fill	1670–90	Clay pipe	**20–22**
G.9	Demolition	1680–1730	Bottle glass	II (2)
	Fill	1675–85	Clay pipe	**6**
G.11	Fill	*1700–20	Earthenware PMCR?	**50a**
G.19		1675–85	Clay pipe	**6**
G.31	Demolition	1680–1730	Bottle glass	II (2)
		*1700–20	Earthenware PMFR	**50b**
	Fill	1671	Earthenware METS	**7**
		1675–90	Tin-glaze	**21**
		1680–1730	Bottle glass	II (2)
		*1685–95	Tin-glaze	**3**
		*1700–1720	Earthenware PMFR	**50b**
Well	Demolition	1680–1730	Bottle glass	II
	Fill	1675–85	Clay pipe	**6**
		1680–1730	Bottle glass	II
Great Cellar	Demolition	1670–90	Clay pipe	**20–22** (6)
		1680–1730	Bottle glass	II (5)
	Fill	1670–90	Clay pipe	**20–22**
		1675–85	Clay pipe	**6** (4)
		1680–1730	Bottle glass	II (13)
Dump 2	Demolition	1670–90	Clay pipe	**20–22**
Soakaway G		1675–85	Tin-glaze	**28**
		*1700–20	Earthenware PMFR	**50c**
		*1700–50	Tin-glaze	**142**

1 Ignoring obvious contaminations marked (c) in Concordance I. Multiple occurences of items are shown in ( ) in the right-hand column. Multiple ocurrences of fragments certainly from a single vessel are not noted.
2 All dates are 'circa', except G.31, Earthenware **7**
3 Discussed above, p 47

Table 5. Datable artefacts in Concordance I with assigned earlier terms of c. 1670 or later from demolition deposits of Phase 5 (excluding demolition deposits immediately overlying closed groups, see Table 4).

Demolition context (Trench/layer)		**Date range[1] (dates after 1685*)**	**Category**	**Type/catalogue Number**
CH II	6.0	1680–1730	Bottle glass	II
Q1	3.0	1680–1730	Bottle glass	II
		*1700–50	Tin-glaze	**144**
Q2 I	3.0	1670–90	Clay pipe	**20–22**
Q8	3.0	1675–85	Clay pipe	**6**
		1675–85	Fine glass	**110**
	17.0	1671	Earthenware	**7**
R7 III	5.0	1680–1730	Bottle glass	II
R8	3.0	1676–8	Fine glass	**77**
		1680–1730	Bottle glass	II (10)
	6.0	1675–85	Fine glass	**109**
		1680–1730	Bottle glass	II
	7.0	1680–1730	Bottle glass	II
	8.0	1680–1730	Bottle glass	II
S8	2.0	1680–1730	Bottle glass	II (7)
S15	4.0	1670–90	Clay pipe	**20–22**
	5.0	*1695–1705	Tin-glaze	**27**
T2	2.0	*1710–60	Clay pipe	**25**
T14 II	3.0	1670–90	Clay pipe	**20–22**
U14	4.0	1675–80	Clay pipe	**6**
V14	5.0	1680–1730	Bottle glass	II
W2	5.1	1675–90	Tin-glaze	**2**
W4	3.0	1670–90	Clay pipe	**20–22**
W5	6.0	1675–90	Tin-glaze	**23**
		*1710–60	Clay pipe	**25**
W5ext	2.1	1675–90	Tin-glaze	**23**
		1680–1730	Bottle glass	II
W6ext	2.0	1680–1730	Bottle glass	II (8)
X4 I/III	3.0	1670–90	Clay pipe	**20–22**
X5	3.0	*1710–60	Clay pipe	**25**
X5 I/II	5.0	1680–1730	Bottle glass	II
X5 III/IV	6.0	1680–1730	Bottle glass	II
	19.0	1675–85	Fine glass	**78**
X6	13.0	1680–1730	Bottle glass	II
X7	3.0	1680–1730	Bottle glass	II
	6.0	1675–85	Tin-glaze	**25**
		1675–90	Tin-glaze	**23**
		*1685–95	Tin-glaze	**3**
7.0		1670–90	Tin-glaze	**55**
		1680–1730	Bottle glass	II

continued opposite

Table 5. continued.

Demolition context (Trench/layer)		Date range[1] (dates after 1685*)	Category	Type/catalogue Number
X8	2.0	1675–85	Tin-glaze	**26**
	4.0	1670–90	Clay pipe	**20–22**
		*1710–60	Clay pipe	**25**
X9	9.0	1670–90	Clay pipe	**20–22**
Y4	2.0	1670–90	Clay pipe	**20–22**
		1675–85	Clay pipe	**6**
	4.1	1675–85	Clay pipe	**6**
	14.0	1670–90	Clay pipe	**20–22**
Y5	6.0	1675–85	Tin-glaze	**29**
Y7	4.0	1680–1730	Bottle glass	II
	6.0	1675–85	Clay pipe	**6**

[1] All dates are circa, except Q8 17.0 Earthenware **7** and perhaps R8 3.0 Fineglass **77**

Table 6. Categories and numbers of datable artefacts in Concordance I with assigned earlier terms of c. 1670 or later from closed groups and demolition deposits (cf. Tables 4 and 5).

Category		type/cat. No.	Date range[1] (dates after 1685*)	In closed groups	In demolition
Tin-glaze		**55**	1670–90	–	1
		25–6, 28, 29	1675–85	1	3
		2, 21, 23	1675–90	1	4[2]
		3	* 1685–95	1	1[3]
		27	* 1700	–	1
		142	* 1700–50	1	–
		144	* 1700–50	–	1
Earthenware	METS	**7**	1671	1	1[4]
	PMCR?	**50a**	* 1700–20	1	–
	PMFR	**50b**	* 1700–20	2	–
	PMFR	**50c**	* 1700–20	3	–
Fine glass		**78, 109–10**	1675–85	–	3
		77	1676–8	–	1
Bottle glass		II	1680–1730	36	39
		IV	* 1750–1800	1[5]	–
Clay pipes		**20–22**	1670–90	10	9
		6	1675–85	7	5
		25	* 1710–60	–	4
Total entries in Concordance I				65	73

[1] All dates are 'circa', except Earthenware **7** and perhaps Fine glass **77**. Three of these sherds appear to be from the same plate **23**
[2] Three of these sherds appear to be from the same plate **23**
[3] From the same vase
[4] From the same jug
[5] Discussed above, p 47

iv. DATE RANGES AND DATING CONVENTIONS USED IN THE STUDY OF DATABLE ARTEFACTS FROM THE PALACE

Up to this point, apart from a few objects bearing actual dates (Tables 2, 3), the discussion has been concerned with the earlier term of the ranges of date during which an artefact may have been produced. Clearly, such a date provides a *terminus post quem* for the deposit in which it is found. The actual date of the deposit may however be much later and even, where the object has remained long in use or is of the character of an heirloom, long after the latest possible date of its manufacture.

The earliest and latest dates assigned to each catalogued artefact in the six main datable categories recovered from all phases are presented in Figs 34 and 35 as histograms, the dates grouped by decades and graphed by thirds of a century, as explained above.[29] If we examine the latest dates, we see that the peaks fall as follows:

tin-glazed ware	(Fig 34.1B)	third-century ending 1700[30]
stoneware	(Fig 34.2B)	third-century ending 1700[31]
earthenware	(Fig 34.3B)	third-centuries ending 1633 and 1700[32]
vessel glass	(Fig 35.4B)	third-century ending 1666[33]
bottle glass	(Fig 35.5B)	third-centuries ending 1700 and 1733[34]
clay pipes	(Fig 35.6B)	decade ending 1680[35]

In the same way as the earlier terms of the date ranges will produce too early an approximation to the actual date of a deposit, the later terms may produce too late an estimate. Although it may be theoretically correct to say that the closest approximation will be given by the latest date of the latest artefacts, we are dealing here not with dated, but with datable artefacts, whose actual date of manufacture can only be expressed in terms of a range. This range may be an expression of different factors in relation to each artefact:

the known period over which it was in production
the assumed period (in default of better evidence) over which it was in production
the known earliest and assumed latest or assumed earliest and known latest date it was in production;

and these dates may in each case be based on different criteria:

written evidence
dated examples
stylistic or typological development
discovery with other artefacts of assumed or known date
discovery in contexts of assumed or known date.

The use of such ranges in trying to establish actual dates of manufacture, use, and loss must clearly be hazardous, and dating by the latest term will tend in all probability to produce too late a date for the group under study.

It is also clear that different conventions may have grown up among scholars in dating the different categories of artefact considered here. The study of tin-glazed wares, stoneware, and vessel glass, for example, has grown up within the fields of art history and the decorative arts,

29. See above, p 48
30. 71 out of 144 records on the database
31. 440 out of 493 records on the database
32. 64 and 82, respectively, out of 232 records on the database
33. 129 out of 241 records on the database
34. 167 and 54, respectively, out of 221 records on the database
35. 97 out of 213 records on the database

while the dating of earthenware, bottle glass, and clay pipes has grown up within archaeology. There is increasing cross-fertilisation between these studies, of which the present exercise is an example, but variations in practice and tradition will inevitably result in slightly differing results. An attempt to express these variations is provided by Fig 36, which compares the dating patterns resulting from the date ranges assigned in the study of four principal categories of artefact. This shows that the combined earliest dates peak in the thirds of a century up to 1600 and up to 1633, while the latest dates peak in the thirds of a century up to 1666 and up to 1700, with sharp declines in the third-century up to 1666 and the third-century up to 1733, respectively.

The variations within the histograms are instructive. There would seem, for example, to be relatively large amounts of earthenware of types which, in the current literature, are assigned dates in the sixteenth or even late fifteenth century (Fig 36.1). Since earthenware is unlikely to be highly residual, let alone of heirloom character, this early dating probably reflects inadequacies in the current state of our knowledge of the dating of earthenware as between the sixteenth and seventeenth centuries. The study of the earthenware presented below does indeed advocate a later date for some earthenware types than is generally proposed.[36] The histograms for tin-glazed ware, stoneware, and vessel glass present more normal distributions, but each show small amounts of material firmly in the sixteenth century by latest decade (Fig 36.2). When looked at by earliest decade (Fig 36.1), this material can even be seen to decline slightly from earlier quantities. This suggests the presence of material of 'heirloom' character, a view confirmed by the presence in these categories of individual items of high quality.

Some apparently clear differences of pattern between the categories can also be seen in Fig 36. The latest dates for tin-glazed ware fall off very sharply after 1700, whereas the latest dates for earthenware increase. There are no earliest dates for stoneware after 1633, whereas there are for the other three categories graphed. Vessel glass has by far the largest number of its latest dates (more than the three other categories combined), in the third-century up to 1666, and does not appear after 1700. It seems probable that these variations are the product both of real differences in the date ranges of individual categories – stoneware for example may be relatively early but have survived longer in use – and of dating fashions. What does seem to emerge is the difficulty of establishing with any degree of precision either the start or the end of the period of occupation using graphical data of this kind, at least until the date ranges of the artefacts are more accurately known, and their relative popularity within these ranges ascertained.

v. THE OCCUPATION OF NONSUCH: CONCLUSIONS BASED ON THE ARCHAEOLOGICAL EVIDENCE

The following conclusions seem justified on the basis of archaeological evidence alone:

1. The *closed groups* share a wide range of types in the different categories of material, suggesting that the deposit of the groups was, with few exceptions, broadly contemporary
2. The material from the *demolition deposits* is similar, suggesting:
   a. that the deposit of the closed groups and the demolition of the palace are not far removed in time and
   b. that prior to this final period of use the palace was kept clean of occupation debris
3. The distribution of the various different categories of material in the closed groups and in the demolition deposits shows a clear concentration on the Outer as opposed to the

36. Further discussion, below, p 126–34

Inner Court, and within the Outer Court on the east range and on Outer and Inner Gatehouses.

4. This distribution of broadly contemporaneous deposits contrasts with the considerable areas of the palace where the garderobes were empty and where there were in general relatively few finds. It appears from this and from Possibility 2 above, that the palace as a whole was thoroughly cleansed at some date and large areas of it never brought back into use.
5. The deposits comprising closed groups appear to be datable to the period *c* 1650 to *c* 1680 with some material (including some of high quality) of the 1680s, but very little that need be later than 1685, and nothing later than 1700.
6. The latest material comes from the same areas of the palace as the material broadly datable *c* 1650 to *c* 1680.
7. The demolition deposits have a similar terminus in the 1680s.
8. There is some activity on the site after 1700, but only the Outer Gatehouse (or a fragment of it) seems to have been standing as late as the 1760s.

It will be noticed that these datings are more precise than might be derived from the histograms (Figs 34–6). They are based principally on a consideration of the earlier terms of the date ranges, and on the dated finds. Comparison with the documentary evidence for the use of the palace may provide some check on the reliability of this dating proposed on the basis of the artefactual and archaeological evidence alone.

vi. WRITTEN EVIDENCE FOR THE USE OF NONSUCH[37]

The palace was constructed in 1538–46, and must have been ready for at least partial occupation by September 1544 when Queen Catherine Parr dined there. Henry visited Nonsuch briefly in May 1545, paid a full-scale visit for three days in July in the course of that summer's royal progress, and stayed at the palace the last time for perhaps a week just before Christmas 1546. He died in January 1547. Edward VI and Mary spent very little money on Nonsuch. Edward was there once, for a few days, in September 1550, but Mary seems never to have visited the palace. This first period of intermittent royal use from 1544 to 1550 came to an end with the grant of Nonsuch to Henry Fitzalan, Earl of Arundel, in 1556.

Nonsuch remained in the hands of Arundel and his son-in-law, John, Lord Lumley, until 1592 when Lumley reconveyed it to the Crown. During these thirty-six years the palace seems to have been in constant use and it was at Nonsuch that Arundel and especially Lumley formed their art collection and famous library. Elizabeth visited Nonsuch at least fifteen times during these years, sometimes staying for several weeks.

After her reacquisition of the palace in January 1592, Elizabeth visited every year (except 1597) up to and including 1600, often for weeks at a time, and may have been there briefly in January 1603. On James I's accession Nonsuch was granted to Anne of Denmark as one of her jointure houses and in 1626, following the accession of Charles I, it was included in the jointure of Henrietta Maria, who held it until her death in 1669.

37. See above, p 1–2; Dent 1981, 134–216; Biddle and Summerson 1982. Full documentation for royal and other visits to Nonsuch is contained in the Nonsuch archive, Files 1 and 2, and in the date, visit, and nominal card indexes to these files. In the section which follows, specific references are given only to key documents in the discussion

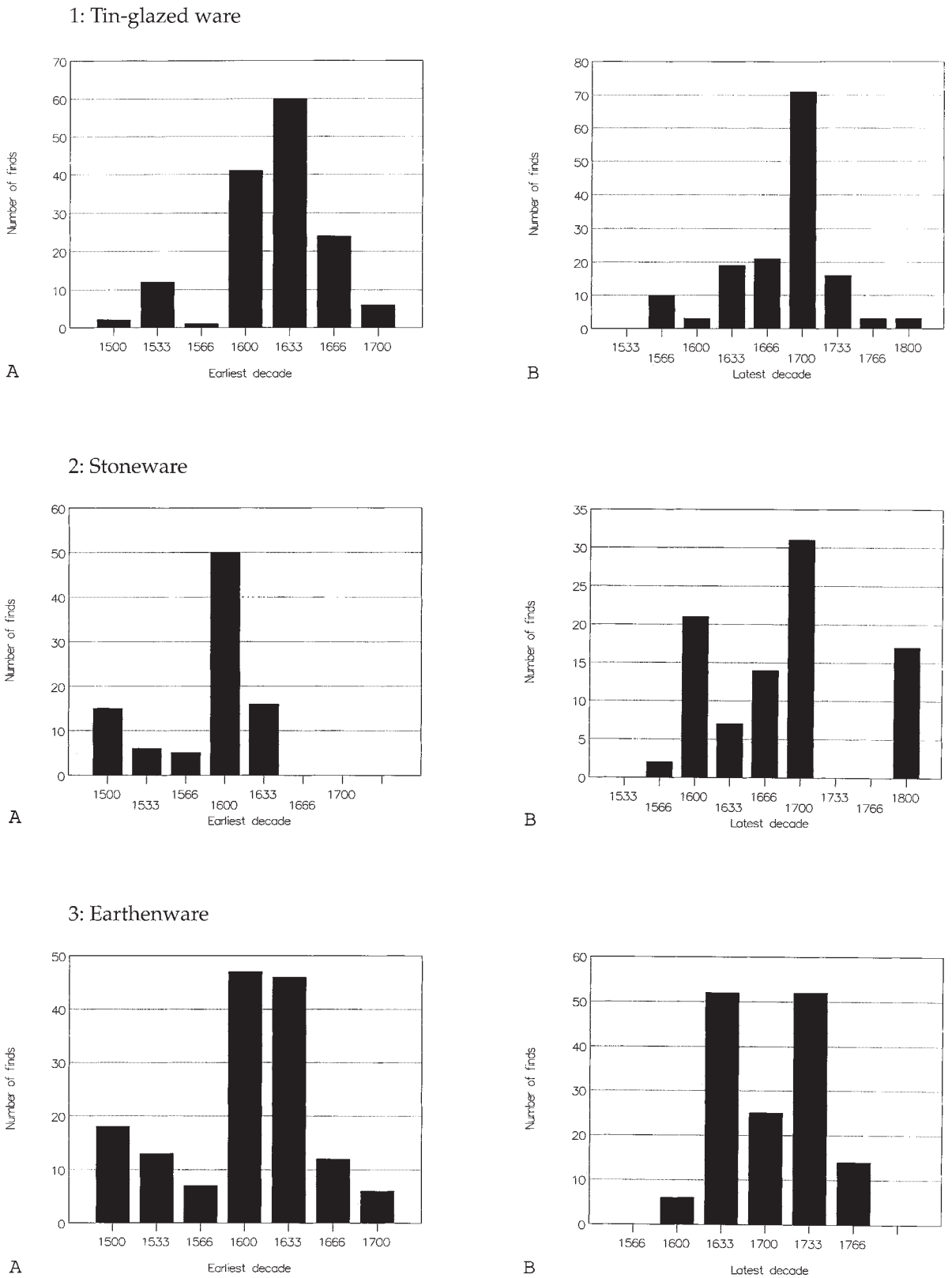


Fig. 34 The datable artefacts, earliest and latest decades assigned by the contributors (in thirds of centuries): 1, Tin-glazed ware; 2, Stoneware; 3, Earthenware.

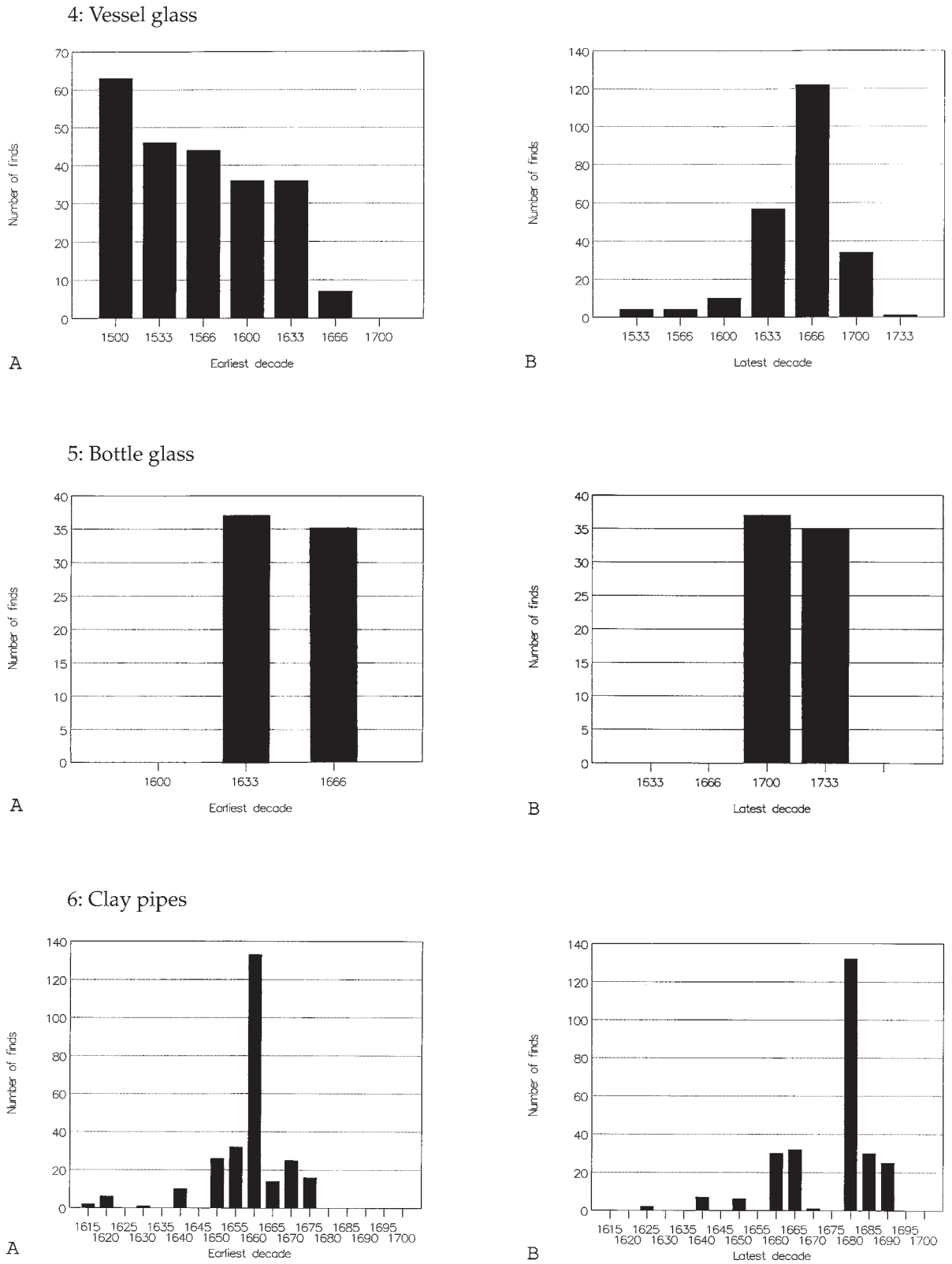


Fig. 35 The datable artefacts, earliest and latest decades assigned by the contributors (in thirds of centuries, except 6 in five-year groups): 4, Vessel glass; 5, Bottle glass; 6, Clay pipes.

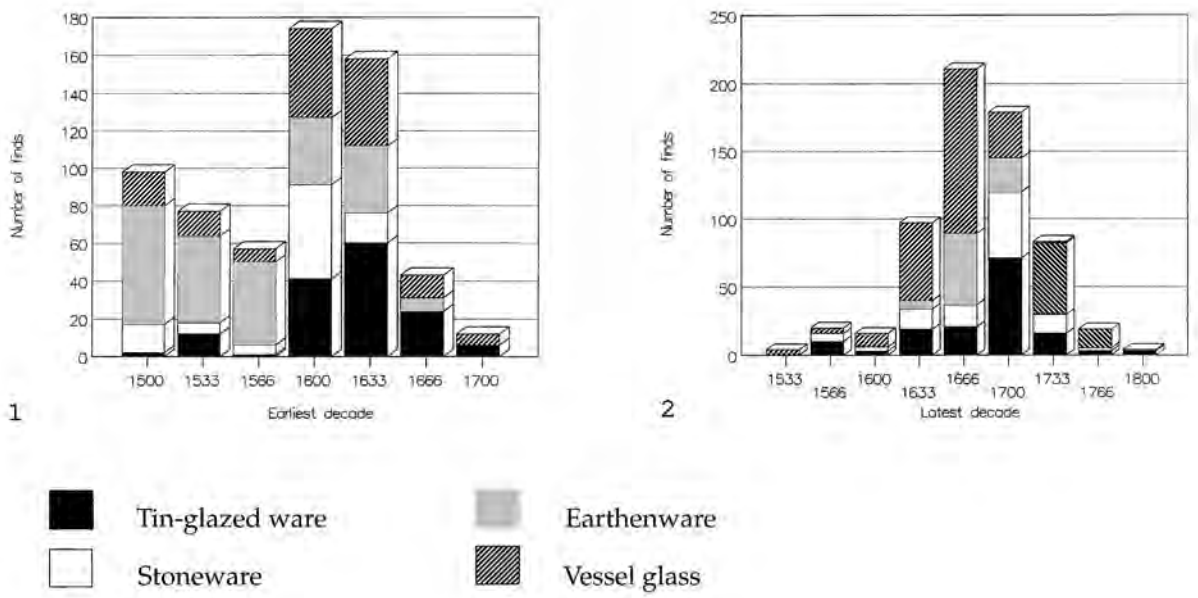


Fig. 36 The datable artefacts: comparison of the contributors' assigned dates for four principal classes of artefacts, by earliest and latest decades.

From 1603 to the surrender of Charles I in 1646, there were many royal visits of which records survive; five by James I and one separately by Queen Anne; five by Henry Prince of Wales, three by Charles Duke of York (two with his brother, one on his own); from 1625 onwards Charles came as king on seven or eight occasions, and Henrietta Maria visited Nonsuch at least twice on her own. These visits usually lasted several days, sometimes several weeks.

Charles visited for the last time in 1640. Regular repairs continued until 1648–9.[38] Over the 58 years from 1592 to 1649, Nonsuch had been visited on at least twenty-seven separate occasions by the monarch or by members of his immediate family.

The king's goods at Nonsuch were inventoried in September 1649, but there was little there to be sold by comparison with other palaces, and it seems that much of the contents had already been removed.[39] The palace was surveyed under the Commission for the Sale of the Late King's Lands[40] in April 1650 and sold that month to trustees for the payment of the Northern Brigade.[41] In 1654 it was purchased by Major-General John Lambert, who also acquired Wimbledon House. By resolution of the House of Commons on 23 June 1660 the palace was restored to Henrietta Maria, now the Queen Mother.

The only sign that the palace was used at all during the years 1649–60 is a letter from Carew Ralegh to the Earl of Dorset dated at Nonsuch on 11 July 1655,[42] but this does not show whether the writer was at the palace, or at one of the lodges, or was merely on a passing visit.

With the return of the palaces to royal hands, annual accounts for their repair and maintenance recommence.[43] Initially, nothing was spent on Nonsuch, but in September 1663 36,000 slates

38. PRO, AO1/2432/82. The annual repair and maintenance accounts for 1592–1645 are in PRO, E351/3227–73. Accounts for 1645–9 are in PRO, AO1/2429/73, 2430/76, 2431/79, and 2432/82
39. Millar (ed) 1972, 416–18, Nos 1-33; MacGregor (ed) 1989, 32
40. PRO, E317/Surrey/41; printed in Dent 1981, 286–94
41. Dent 1981, 196–9
42. HMC, 4th *Report* (1874), 300
43. PRO, E351/3274 (1660–1) onwards; PRO, Works 5/7, 5/10, 5/13

were purchased and delivered.[44] Two years later, in August and September 1665, £455 7*s* 1½*d* was spent on extensive repairs and on fitting Nonsuch up to house the Receipt and other offices of the Exchequer, moved from London because of the Great Plague.[45]

Large parts of the palace were put in order, including both the Outer and Inner Courts, and the kitchens.[46] A 'Courte of Guard' to house the detachment of soldiers protecting the offices and the treasure was built in the backyard, presumably the yard north of the Kitchen Court (Fig 5). Offices were provided for the Receipt, the Pells, the Tellers, and the Tallies; the Pell Office was in the Inner Court 'under the Gallery', that is in Rooms 43–6 of the south range. Private offices were also made ready for five senior officials, and lodgings, usually consisting of two or three rooms and a 'house of office' (a latrine), were prepared for some twenty named officials. At least three of these lodgings were in the Inner Court. Repairs to the roofs and ceilings show that all parts of the palace were involved: the 'upper' and 'lower' courts, the king's and queen's lodgings, and the long gallery. The cleaning or renewal of the leads and gutters 'over the offices and over the lodgings round about the first court and ... over the offices and lodgings over the second court, longe gallery and divers other places about the house' show that the Exchequer offices and lodgings occupied both courts. The water-supply from the conduit house on the hill half a mile south of the palace (Fig 2) was reinstated and the cisterns and pipes repaired throughout the house and even extended.

The Exchequer opened at Nonsuch on 15 August 1665 and the Receipt and Tally Office remained there until 20 January 1666,[47] a period of over five months during which the palace was the seat of one of the key departments of state. Samuel Pepys, as Secretary of the Navy, visited Nonsuch four times during these months to have tallies cut for monies required for his office,[48] and John Evelyn dined there in January 1666 with his friend Philip Packer, an officer of the Receipt.[49]

Nothing further was spent on the repair and maintenance of Nonsuch during the later months of the Exchequer's presence, nor during the rest of 1666, but some £378 was spent from September to December 1667, almost entirely on the roofs, gutters, and drain pipes.[50] Nothing was done in 1668, but in May 1669 67,000 slates were purchased and from July 1669 to February 1670 work continued each month on the roofs, gutters, water supply, and drains, to a total cost of over £571.[51]

This is considerably more than was spent in 1665 on repairing and fitting up Nonsuch for the Exchequer, and more than was spent in all but two years from 1592 to 1649 when the palace was used as a royal residence.[52] Over fifteen thousand square feet (15,154 ft²) of the roofs, about half their total area, were reslated and 4288 ft², probably the whole of the kitchen roof, retiled; the heads of 85 chimneys were repaired. The last account is for February 1670, when the work appears to have ceased.[53]

These repairs, begun in May 1669 some months before Henrietta Maria's death, were probably undertaken in the normal course of its duty by the Office of Works, presumably in anticipation

44. PRO, Works 5/7, ff 156–7; E351/3278
45. PRO, Works 5/7, ff 158–64; summarised in E351/3279
46. The details which follow are recorded in PRO, Works 5/7, ff 158–64
47. *Calendar of Treasury Books*, i, *1660–7*, 675, 687, 712; *Calendar of State Papers Domestic, Charles II, 1664-5*, 492; *1665–6*, 191
48. Latham and Matthews (eds) 1972, 235, 244, 303–4, 312
49. De Beer (ed) 1955, 426–7
50. PRO, Works 5/10; E351/3281; not including the cost of £16 8*s* 7*d* for recovering and taking to the palace the materials of the Banqueting House 'that was pulled downe': Works 5/10, August 1667
51. PRO, Works 5/13, ff 181–92; cf PRO, E351/3282–3. The totals cannot be precisely reconciled
52. £1682 0*s* 5½*d* was spent in 1609–10 and £1032 3*s* 10*d* in 1628–9: PRO, E351/3244 and 3262
53. Expenditure for the year to 31 May 1670 in the declared account (PRO, E351/3283) corresponds to the expenditure recorded in the detailed monthly accounts for June 1669 to February 1670 (Works 5/13), indicating that work ended in the latter month

that the palace would continue in royal ownership. When Henrietta Maria died in August 1669, Nonsuch reverted immediately into the king's hands.[54] By December, George Lord Berkeley, keeper of Nonsuch and its Little Park since 1660, was aware that the park at least might be going to change hands,[55] and this possibility may also lie behind the cessation of repairs to the house the following February. A year later, on 18 January 1671, the palace and the Great and Little Parks were granted to trustees for Barbara Villiers, Countess of Castlemaine, then recently created Duchess of Cleveland.[56] Since Barbara had also been created Baroness Nonsuch of Nonsuch Park the previous July,[57] and her trustees had been asking about the king's possessions at Nonsuch the same month,[58] it is clear that negotiations had been in progress since at least the summer of 1670. Berkeley's long-standing interest as keeper of the house and Little Park was mentioned in the grant to Barbara's trustees, but his rights were not defined. Although Berkeley's position was perhaps theoretically unaffected, their overlapping interests were bound to cause trouble.

Nonsuch continued in Barbara Villiers' hands, but was allegedly in 'great decay and ruine' by the summer of 1682 when she claimed that she was unable to repair or rebuild the house and obtained the king's warrant to demolish it and sell the materials.[59] By an agreement of 29 August 1682, George, now 1st Earl of Berkeley, purchased from the Duchess of Cleveland and her trustees for £1800 all the materials of the palace and its ancillary buildings, the fountains, figures, and pavements of marble and stone in the gardens and elsewhere, and the cisterns and pipes of lead both above and below ground.[60] The agreement was complicated by a distinction in the leasing of the two courts. The first or lower court (ie the Outer Court) with all the buildings around it and the cellars beneath were leased to Berkeley for 60 years, or until the death of the duchess, after which he was to have a further two years 'for the takeing downe and carrying away all and every the materials and things ariseing and comeing of the said first or lower court'. The upper court (ie the Inner Court) together with the courts, stables, coach house, and gardens, were leased to Berkeley for two years from the date of the agreement (ie, from August 1682 to August 1684) during which time he was to have liberty of access to take away their materials including the garden walls. The lodges in the park and the houses at the gates were excluded from the agreement.

By June 1683 Berkeley had begun and was still 'att worke in pulling and taking downe' the house, but that month the duchess and her trustees sought an injunction against him alleging trespass and various infringements of the agreement of 29 August 1682.[61] A complex suit on the Equity Side of the Court of Chancery and in the Court of King's Bench then ensued, the matter being brought to an end by the withdrawal of Berkeley's complaint in June 1684 and by the dismissal of a counter-complaint by the duchess and her trustees in July.[62]

Evidence for the use of the palace since the 1660s is slight and difficult to interpret. A distinction has to be made between use by the owners of Nonsuch – Henrietta Maria followed by the Duchess of Cleveland – and use by others permitted to live there by virtue of their office, such as the officials of the Exchequer in 1665–6, and George Berkeley, keeper of the house and park since 1660. Henrietta Maria did not visit Nonsuch after 1660, and in 1665 left England for

54. *Calendar of State Papers Domestic, Charles II, 1664–5*, 162
55. *Calendar of Treasury Books*, iii, *1669-72*, pt. 1, 173. For George Berkeley, 1st Earl of Berkeley (1627–98), see *DNB*; Gibbs (ed) 1912, 139–40. For his grant of the keepership, see below, nn 69, 77
56. *Calendar of Treasury Books*, iii, *1669–72*, pt. 1, 699; PRO, C66/3120 No 6
57. *Calendar of State Papers Domestic, Charles II, 1670. With Addenda 1660–70*, 357.
58. *Calendar of Treasury Books*, iii, *1669–72*, pt.1, 487
59. Northamptonshire Record Office, G.3197, Abstract of Title of the Nonsuch Estate, reciting (Sheet 3) the royal warrant of 31 July 1682; the disputes and events which this entailed can be followed in Dent 1981, 210–15
60. PRO, C9/87/30 (Complaint)
61. PRO, C9/87/30 (Answer)
62. PRO, C33/261, f.737; PRO, C33/262, f.610

France, never to return. The Duchess of Cleveland seems never to have lived at the palace. In 1677 she left England to live in Paris, only returning in 1684, a few months before Charles II's death, when the demolition of Nonsuch was well advanced. When she did try to gain entry to the park in 1687, she was forcibly repulsed.[63]

There is in fact no sure indication that anyone was living at Nonsuch after the departure of the Exchequer in January 1666 up to the time of Henrietta Maria's death in 1669, or afterwards during the negotiations which led up to the grant to Barbara Villiers' trustees in January 1671. But the evidence is negative and may be unreliable. As we shall see, Berkeley's lodgings in the palace were being repaired in 1669–70, but this in itself does not show that they were in use. By the later 1670s, however, some people were in residence. Robert Coke, Receiver General of Surrey, described as 'of Nonsuch' in 1678,[64] died 'at Nonsuch' in June 1681.[65] Later the same year 'a lady' was reported as going to Nonsuch 'to continue there the winter'.[66] Her identity is uncertain, but in October 1682 Elizabeth, Viscountess Dursley, was reported to be *returning* to Nonsuch,[67] and she was writing from there in May 1686.[68]

As we shall see, both Coke and the viscountess were Berkeley's relatives. The problem is to know where they were living, for in addition to the palace there were two lodges in the park and houses at both the principal gates, and Berkeley claimed possession of these lesser dwellings by virtue of his powers of keepership.[69]

Robert Coke was Berkeley's cousin by marriage, a grandson of Sir Edward Coke the jurist.[70] He had apparently been underkeeper of Nonsuch until his death in 1681, for his widow Theophila in 1684 still occupied one of the lodges or houses in the park as an underkeeper or deputy of Berkeley, presumably because she continued to hold, at least by courtesy, her late husband's office.[71] Coke had probably been underkeeper since at least 1667 for he was involved with Berkeley that year in the unauthorised demolition of the Banqueting House and the sale of its materials, some of the lead having to be recovered from 'Capt. Cookes Lodge'.[72] There is no indication, therefore, that Coke lived in the palace as distinct from one of the lodges in the park.

Elizabeth, Viscountess Dursley, was George Berkeley's daughter-in-law, the wife of his son and heir Charles Berkeley, styled Viscount Dursley by courtesy since his father's creation as first Earl of Berkeley and Viscount Dursley in 1679.[73] Charles Berkeley and Elizabeth Noel were married at Exton in Rutland in 1677, her family home. It was from her sister's at Belvoir near there that she was returning to Nonsuch in October 1682. Their first child was born and christened at Cranford in Middlesex in 1679, the Berkeley family's principal residence in the south-east.[74] Their next three children, born in 1680, *c* 1685, and *c* 1687, were all baptised at Berkeley in Gloucestershire, the Berkeleys' ancestral home. In 1689 Viscount Dursley was appointed envoy extraordinary and plenipotentiary to the States of Holland where he was resident until 1695. Their fifth child, Henry, was baptised at St Martin-in-the-Fields, Westminster,

63. See below, p 62
64. *Calendar of Treasury Books*, v, *1676–9*, pt.2, 951
65. For the inscription on his memorial in Epsom Church, see Aubrey 1718, ii, 216; Manning and Bray 1809, 618. For a glass bottle-seal with the Coke crest found beside the Kitchen Court of the palace, see below p 306 (Fig 143, **4**)
66. *Rutland Manuscripts* (HMC 24), ii, 61
67. Ibid. 78
68. Ibid. 107
69. PRO, C9/87/36; PRO, C9/87/30 (Answer) shows that Berkeley believed he was entitled to the use of the lodges and houses for his underkeepers under the terms of his grant by Letters Patent (for the grant, see PRO, C66/2943, No 13), and claims that he and his predecessors as keeper had constantly had such use of them
70. Manning and Bray 1809, ii, 617–18
71. PRO, C9/87/36
72. PRO, Works 5/10 (August 1667); *Calendar of Treasury Books*, ii, *1667–8*, 17, 19, 20, 24
73. For Charles Berkeley, 2nd Earl of Berkeley (1649–1710), see Atkyns 1712, 268; Rudder 1779, 277–8; *DNB*, under the general entry for the family; Gibbs (ed) 1912, 140–1; Henning 1983, i, 631–2. For his and Elizabeth's first child, Charles (1679–99), see Gibbs (ed) 1912, 141. For the baptism of their children at Berkeley and London, see *IGI*, Gloucestershire and London microfiche, sn Berkeley
74. Reynolds (ed) 1962, 179–81. George Berkeley had inherited the house and manor from his grandmother who had purchased it in 1618. The 17th-century Berkeleys were also buried there in St Dunstan's church: ibid 185

in 1690, but their next two children, for whose baptism no record has yet been found in the English records, may have been born in Holland. The last child was born in 1696 and baptised at Berkeley. Viscountess Dursley's use of Nonsuch during the 1680s (in 1681–2(?), 1682–3, and 1686) was thus at best intermittent: it was perhaps only an occasional winter home. There is no sign that she made any use of the house after 1686.

When the viscountess was at Nonsuch she presumably used her father-in-law's lodgings. As might perhaps be expected, these were in the main house. In December 1669 bricklayers took down 'a stack of chimneys that was likely to fall at the Lord Barkleys kitchin' and the following February, in the last account for the king's works at Nonsuch, a bricklayer mended the tiling 'over the Lord Barkley lodgings'.[75] In the February account the tiling over Berkeley's lodgings is contrasted with slating over the privy lodgings, ie the royal apartments, suggesting that Berkeley's lodgings were not in the Inner Court. The fact that his lodgings were tiled rather than slated may suggest that they lay at least in part above the kitchens, for the accounts of 1669–70 show that while the roofs of the Outer and Inner Courts were reslated, the roofs around the Kitchen court were retiled.[76] The Parliamentary Survey of 1650 shows that the rooms occupied by Berkeley's predecessor as keeper, the Countess of Carlisle,[77] were in the Outer Court.[78] Her lodgings there were repaired on several occasions in the 1640s and lay apparently on the west side of the gatehouse.[79] Her kitchen and great kitchen were also repaired, but there is no indication where these lay.[80] There can be no certainty that Berkeley occupied the same lodgings twenty years later in 1669–70, or that his daughter-in-law occupied his apartments rather than another lodging in the 1680s, but it seems a reasonable inference that the keeper's lodgings were by custom in the Outer Court with perhaps a kitchen or kitchens and other rooms in the Kitchen Court. This may perhaps explain why the oil of Nonsuch by Hendrik Danckerts, painted probably between *c* 1666 and 1679, now at Berkeley Castle, looks towards the Outer Court from the north-east, showing the north and east ranges and the Outer Gatehouse, with the Kitchen Court in the foreground, a surprisingly domestic view-point for so grand a house (*front and back endpapers*).[81]

Berkeley's interest in the Outer Court would explain the distinction made between the Inner and Outer Courts in the agreement of 1682. The royal apartments about the Inner Court, their exterior walls covered with the famous stucco decorations, were not needed and could be demolished at once for the sake of their materials. These Berkeley apparently used to rebuild his house, Durdans, near Epsom.[82] The Outer Court of Nonsuch, used on occasion by his family, could be kept standing (probably with the Kitchen Court attached), Berkeley's possession now confirmed by a lease of sixty years, or until the death of the Duchess of Cleveland, after which he had two further years to demolish and remove the materials. Berkeley may also have wished

75. PRO, Works 5/13, ff 189, 192
76. See above, p 58
77. Berkeley purchased the keepership from the countess in 1660 and, following her death the same year, obtained grants from the queen mother and from the king confirming him in the post: PRO, C9/87/30 (Answer), C8/270/13 (Sheet 1)
78. Printed in Dent 1981, 286–94, at 287
79. PRO, E351/3273 (1644–5); PRO, AO1/2429/73 (1645–6), AO1/2430/76 (1646–7),AO1/2432/82 (1648–9)
80. PRO, AO1/2429/73, AO1/2430/76, AO1/2432/82
81. Two versions of this painting are known, the one at Berkeley Castle and a second bequeathed to the Nonsuch Park Joint Management Committee in 1989 by R. S. Kynnersley-Browne and recently cleaned. The latter is reproduced here (*Front and back endpapers*). For Danckerts, see Harris 1985, 42–3; Harris 1996, 26–8; Burgers 1996
82. Berkeley inherited Durdans from Sir Robert Coke in 1653, rebuilt it from the materials of Nonsuch after 1682, and sold it in 1689. The history of the house is little known, but see Harris 1983; Harris 1985, 61–2, nos 54–6; De Beer (ed) 1955, 15, n.1. Berkeley's removal of the materials of Nonsuch to Durdans is noted by Evelyn before 1697 (Upcott (ed) 1825, 419) and by an annotator (?Richard Rawlinson) of Aubrey's manuscript 'Perambulation of Surrey', now Oxford, Bodleian Library, MS Aubrey 4, f 202; cf Aubrey 1718, ii, 218. The sale of Durdans to Sir William Turner in 1689 for £3450 is recorded in notes from the title deeds of Durdans in a scrap-book kept by the Earl of Rosebery from July 1890 and preserved at Durdans until the 1960s. This seems preferable to the date of 1702 for the sale sometimes quoted

to retain his hold on the Outer Court in order to use his lodgings there while Durdans was being rebuilt. Since all four sides of the Outer Court were to be left standing, as the reference to cellars in the agreement makes clear (Fig 5, Rooms 33–4), the surviving structure would form, with the Kitchen Court, a discrete entity set off from the site of the demolished Inner Court and destroyed gardens to the south.

If this interpretation of the written evidence is correct, Berkeley's daughter-in-law, Viscountess Dursley, returned to live in the Outer Court in October 1682, when the demolition of the Inner Court may already have been in progress. She was there again in May 1686, when the two years allowed by the agreement for the demolition of the Inner Court had long already expired, and its removal may be supposed to have been complete.

In May 1687 the Duchess of Cleveland and her trustees made a determined effort to dispark the Little Park. Her attempt to force an entry was resisted by Berkeley's people and in the affray the duchess was insulted and her son Henry, Duke of Grafton, attacked and beaten.[83] Both sides were indicted for riot in the Court of King's Bench, but the indictment against the Duke of Grafton's agents was dismissed: by mid June, well before the cases were determined, the duke was said to have had the better of Lord Berkeley in the King's Bench 'in the business of the riot at Nonsuch'.[84] Faced by the now inevitable disparking and the letting out of the Little Park for farming, with all the consequent loss of amenity and privacy for the surviving part of the house, Berkeley seems to have abandoned the long fight to maintain what he saw as his rights at Nonsuch against the attempts of the Duchess of Cleveland. In March 1688 he received the last payment of his fee as keeper of the house and park.[85] The next year he also sold Durdans. The family's interests in Surrey were thus clearly on the wane in the later 1680s, and it is probably from this time, perhaps from 1688, that their use of Nonsuch ceased.

Yet the date by which Nonsuch, including the Outer Court, had been completely demolished remains uncertain. Peter Le Neve (1661–1729), Norroy King of Arms, added a note to his copy of John Aubrey's *Natural History and Antiquities of Surrey* (London, 1718) that he had seen 'part of the house ... standing in King James the 2d's time or there about', ie in about 1685–8.[86] `The Ruins of None-such-house' are seen in a distant view from Epsom Downs painted in 1702 by John Talman,[87] where they appear as a tower-like block with a lower block adjoining, and are possibly to be interpreted as a gatehouse with an adjacent range or court. In 1711, describing the prospect 'from the Ring on the most eminent part of the Downs ... whence the painter must take his view, when he represents EPSOM', John Toland saw Windsor and Hampton Court and 'within a mile and a half ... the place where that other splendid palace of Nonsuch lately stood'.[88] Before 1722 he had revised this to read 'the place, and only the place.'[89]

83. PRO, KB27/2061, Sheets 2 and 3: the complex events can be followed in Dent 1981, 214–16
84. *Beaufort Manuscripts* (HMC 27), 90
85. *Calendar of Treasury Books*, viii, *1685–9*, pt. 3, 1364, 1369 (12¼ years' arrears paid 19 May 1687); ibid pt. 4, 1937, 1940 (1 year to 25 March 1688). There are no subsequent records of the payment of this fee in the published calendars. See also Dent 1981, 212–15
86. Nichols 1833, 123, n.13. The present location of Le Neve's copy of Aubrey's *Surrey* (Aubrey 1718), once in the ownership of John Claxton (Gough 1780, ii, 275), then J. B. Nichols, and presumably afterwards of his son J.G. Nichols, the author of the 1833 article, is unknown. The note provided by the Revd Robert Lumley Lloyd of Cheam, used by Edmund Curll in preparing his edition of Aubrey's *Surrey* (Aubrey 1718, v, 411, 413), that 'Nonesuch was all standing at ye death of King Charles ye 2d' (Oxford, Bodleian Library, MS Rawl Letters 29.82) is corrected by the strictly contemporary evidence of PRO, C9/87/30 (Answer) which shows that the demolition of the Inner Court was in progress by June 1683: see above, p 59
87. Oxford, Ashmolean Museum, Sutherland Collection: Clarendon III, part II, p.136; Brown 1982, No 214, Plate 121 in microfiche
88. Toland 1711, 27–8
89. Toland 1726a, 112. In this 'New Description of Epsom' John Toland (1670–1722) added the note, 'A great part of it stood in my own time, and I have spoken with those that saw it entire' (ibid). That these revisions were made by Toland before his death in 1722 and not by his editor is clear from the account of his life dated May 1722 which prefaces both editions of his collected works: Toland 1726b, i, lxv, n 34; Toland 1747, i, lxv, n 34

On a map of the Little Park in 1731, the site of the palace is occupied by 'Nonsuch Field'. No buildings are shown except for a house adjacent to the west, on the site of what was later known as Nonsuch Farm and subsequently became Orchard House and finally Cherry Orchard Farm.[90] In 1754 Richard Pococke noted 'at Nonesuch ... only a farm house', but three years later, examining 'the foundations of the palace, which appear to have been built round a court', he saw signs of the foundations of towers to the north and 'ruins of offices for twenty acres to the south ... there is a farm house built close to it.'[91]

If the terms of the agreement of 1682 were strictly adhered to, the Berkeleys[92] may not have moved to demolish the Outer Court until after the death of the Duchess of Cleveland in 1709, following which two years were allowed for taking down the court and carrying away its materials. There seems, however, to have been nothing in the agreement to have prevented George Berkeley from completing the demolition at an earlier date, not least since it was presumably to protect his and not the duchess' interest in the use of the house that the sixty-year lease on the Outer Court had been drawn up. From March 1688, when Berkeley ceased to take his fee as keeper and seems to have accepted the break-up of the Little Park, his only remaining interest can have been in the materials of the surviving part of the house. This seems therefore the most likely moment for the completion of the demolition, perhaps in the two years allowed under the lease during which, although his keepership appears now to have elapsed, he still had right of entry to remove the materials. If this reconstruction of the events is correct, the final demolition of Nonsuch may have taken place in 1688–90.

Something was left standing, however, as Talman's watercolour view of 1702 shows. These ruins too may have gone by 1711 when Toland described that same prospect from Epsom Downs as showing 'the place where ... Nonsuch lately stood.'

The implications of the documentary evidence for the history of the construction, use, and demolition of Nonsuch appear to be as follows:

Nonsuch built	1538–46
First 5 royal visits	1544–50
Owned by Arundel and Lumley 15 royal visits	1556–92
In royal hands, 27 royal visits	1592–1649
In parliamentary/private hands no known use	1649–60
In royal hands, used by the Exchequer 1665–6	1660–70
Owned by trustees for the Duchess of Cleveland	1671–
Outer Court used intermittently by the Berkeleys	1660/9–1686/8
Inner Court demolished	1682–4
Outer Court demolished	1688–90(?)
Ruins levelled	1702–11(?)

90. British Library, Department of Maps, M.T.6.b. 1(17); for 'Nonesuch Farm', see Cary's *Map of Surrey* dated 1805 reproduced in Copley (ed) 1977, 8–9. The farm is not named on the 1st edition of the Ordnance Survey *Old Series* 1in maps, Sheet 8, surveyed 1804–10 and published in 1816; but by 1862 the electrotype edition shows 'Orchard House' (Harley (ed) 1969)

91. Cartwright (ed) 1889, ii, 171, 262

92. George died in 1698; his son and heir Charles, the second earl, died in 1710; he was succeeded by his son James, the third earl: Rudder 1779, 277–8; Gibbs (ed) 1912, 139–42

vii. THE ARCHAEOLOGICAL AND DOCUMENTARY EVIDENCE COMPARED

During the century from the 1544 to 1640 Nonsuch was the setting for 47 royal visits. From 1556 to 1592 it saw a period of almost continuous occupation by the households first of Henry Fitzalan and then of his son-in-law, John Lord Lumley. After surrendering Nonsuch to the Crown in 1592 Lumley remained in residence as keeper for another seventeen years until his death there in 1609.[93]

The royal apartments at Nonsuch were situated around the Inner Court at first floor level and were divided as was normal at the period into the king's side and the queen's side, the former occupying the west range and the latter the east. The apartments were reached by staircases at the north end of the west and east ranges (Fig 5, Rooms 37 and 58/9). They were linked across the south range by the more private rooms (Fig 5, over Rooms 47, 50–4) which looked out over the privy garden and were flanked to the north by the long gallery (over Rooms 43–6). Both the king's side and the queen's side contained a suite of formal rooms allowing for graded access to the monarch and his queen: guard chamber, presence chamber, privy closet, privy chamber, bed chamber, as well as other private rooms. Arundel and Lumley appear to have used at least some of the royal apartments as their own. Elizabeth I may be assumed to have used the king's side and the south front. James I and Anne of Denmark, Charles I and Henrietta Maria, will have used all the available royal apartments around the Inner Court during their visits.

The state of squalor to which houses were reduced by prolonged visits of the Tudor and Stuart court is well known: the conditions at Nonsuch require little imagination in a house served by undrained shaft latrines set at intervals along the outer walls and even in their thickness. Since the Nonsuch latrines must have been in constant use during the long periods over which the palace was occupied, and since all but two of the thirteen garderobes serving the royal apartments around the Inner Court were found on excavation to be clean, and empty or virtually so of latrine deposits and domestic rubbish (Table 1), it follows that they must have been cleaned out and not reused. The garderobes were emptied through an opening in one face, usually giving onto the exterior of the palace. After emptying, this opening was reclosed with a blocking wall of mortared brickwork. Since these blocking walls were found in position in every garderobe whose opening had not been destroyed in the demolition (Figs 15, 19, 22–3), continued use was clearly anticipated when the garderobes were last cleaned.

It must therefore seem that the earliest moment at which the garderobes serving the royal apartments around the Inner Court can have been emptied and reblocked is following the last recorded royal visit in 1640. Since, however, the offices of the Exchequer and the lodgings of its officers occupied both the Outer and Inner Courts continuously for five months in 1665–6, it must follow that the earliest moment at which the garderobes can have been cleaned out is after the departure of the Exchequer in January 1666.

It is important to try to ascertain who would have been responsible for emptying and reblocking the garderobes. It might seem at first sight that this would have been done by the Office of Works. The annual accounts surviving for the years 1592–1649[94] record the cleaning and repair of 'the vaultes which serve the kitchens, larders and scullarye' (1606–7), the cleansing of wells (1634–5), including one in the scullery which may be the well excavated in Room 24 in the Kitchen Court, and a boy 'creeping into the bricke draines to cleanse them' (1646–7), but say nothing of cleaning out or walling up the garderobe shafts, by any of the possible names by which they might be known.[95] This is in contrast to the arrangements for sweeping and cleaning

93. Dent 1981, 173–4, 188
94. See above, n 15
95. PRO, E351/3242; E351/3266; AO1/2430/76

the leads and gutters which seem for many years (at least from 1630 to 1633 and in 1646–7) to have been done by agreement with members of the Umberfield family.[96] In the 1660s the same pattern appears, drains are occasionally cleaned, and the leads and gutters cleared, now by the labourers of the Works, but there is no mention of the garderobes, except in 1665–6 when carpentry repairs were made to 'a seat to a house of office' and the floor and door of another.[97] It is possible that the work is silently included among the tasks of the labourers, but if this was so, it seems unlikely that there should be no specific mention of it over so long a period of detailed accounts.

It seems more likely that the emptying and reblocking of the garderobes was a household task, the responsibility for which fell to the keeper of the house. The grant of the keepership to George Lord Berkeley in 1660 specifically enjoined the officers of the Exchequer to pay Berkeley, not only his annual fee of £26 13*s* 4*d*, but also 'all such further summes of money as by Bill subscribed by him ... shall appeare to haue beene expended and laid out For the keeping cleane and ayering of the said howse and keepeing and weedeing of the Courtes and yards'.[98] Berkeley claimed his fees until 1688 and until the end of 1670 made a series of other claims for expenses, suggesting that he was carrying out his duties in relation to the house and park until they were granted to the Duchess of Cleveland at the start of 1671.[99] After that date, although his fee was still paid, Berkeley had presumably no grounds for claiming expenses from the Crown for the upkeep of either the house or its park.

This suggests that the cleaning of the palace after the departure of the Exchequer in January 1666 was probably undertaken by Berkeley's agents in anticipation that the house would be used by the king, just as the Office of Works undertook major repairs to the roofs in 1667 and in 1669–70.[100] Instead, the palace was granted away and the royal apartments around the Inner Court never reoccupied. Part of the palace was used, at least intermittently, in the 1680s, as we have seen, but there is no documentary evidence to show whether this use had been continuous through the 1670s. What the documents do suggest, is that the occupied area was confined to the Outer Court, and, if the hint provided by the direction of view of the Danckerts painting of *c* 1666–79 is significant, may have been on the eastern rather than the western side of the court.

This is precisely what the patterning of the archaeological distributions suggests (Figs 28–33). In general terms, these distributions concentrate upon the four ranges surrounding the Outer Court, that is upon that part of the palace leased to Berkeley in 1682 for his continued use and eventual demolition. The Inner Court is, by contrast, relatively free of archaeological material and all but two of its garderobes were found clean and empty. At a more detailed level, the distributions concentrate upon the Outer Gatehouse and upon the east and south ranges of the court, including the Inner Gatehouse, and upon the Kitchen Court, that is upon those areas of the palace in which successive keepers seem to have had their lodgings, and in which for various reasons Berkeley's interests seem to have been focused.

We may therefore explain the patterning displayed by the finds from Nonsuch on the hypothesis that they represent the use of the house by the Berkeley family between the last thorough cleansing sometime in the years 1666–70 and the demolition, first, of the Inner Court in 1682–4 and then of the Outer Court perhaps in 1688–90.

It only remains to consider the impact of this explanation on the dating suggested for some of the finds. This discussion falls into two parts:

1 the significance of an overall date of 1682–90 for the demolition of the palace, in relation to the dates proposed for the latest finds

96. PRO, E351/3266; AO1/2430/76
97. PRO, Works 5/7, ff 158–64
98. PRO, C66/2943, No 13, Sheet 2
99. *Calendar of Treasury Books*, iii, *1669–72*, pt 1, 702; pt 2, 882, 891
100. See above, p 58

2 the significance of a date of c 1670–88 for the last phase of the occupation of the palace, in relation to the dating proposed for the finds from the closed groups, and in particular in relation to the question of residuality.

An overall date of 1682–90 for the demolition of the palace

As Table 6 shows, the excavations produced relatively few finds whose *earliest* likely date falls *c* 1670 or later, and very few indeed for which a date later than *c* 1685 is indicated. Of the 16 entries in Table 6 which fall into this latest group,[101] nine come from closed groups and seven from demolition deposits.

Of these 16 entries, the bottle glass of Type IV from Garderobe 1 is a special case, indicating that this garderobe was still open until the mid eighteenth century.[102] It was perhaps part of 'the foundations of towers to the north' which Richard Pococke saw in 1757,[103] and then or later was still open to receive rubbish.

The clay pipes of Type 25 (4 entries), datable 1710–60, all come from demolition deposits. They fit well with the picture of a demolition site not finally tidied up until after the middle of the century.

The remaining 11 entries represent tin-glazed pottery datable to *c* 1685–95, *c* 1700, and *c* 1700–50, respectively, and a type of earthenware bowl, in the PMFR and PMCR(?) fabrics, which has been assigned to *c* 1700–20. The material represented by three of these entries comes from the demolition deposits where its appearance presents no problems in the context of an untidy ruin-field whose final clearance did not take place until after the 1750s. The material of the other eight entries (including all the earthenware) comes from closed groups. It may comprise the crucial pieces of evidence showing that the Outer Court was not finally demolished until 1709–11, a possibility noted above,[104] but it may be as reasonable to ask whether it is the dates assigned to these few pieces which should rather be questioned. The earthenware bowls of Type 50 are dated by comparison with parallels in deposits of *c* 1700–20 from Aldgate, London,[105] but this does not mean that such bowls were only in use during this time. To the contrary, the Nonsuch evidence may suggest that this vessel type was already in use by the 1680s at the latest.

Of the tin-glazed wares, **3** is assigned to *c* 1685–95, a date which agrees with a possible final date for the occupation of the Outer Court in 1688. Tin-glazed vessels **27**, attributed to *c* 1680–*c* 1710 , and **142–4**, attributed to the late seventeenth or first half of the eighteenth century, may present a more difficult problem. The factors to be considered in reaching their attribution to these dates are set out below in the relevant catalogue entries.[106] It is clearly not impossible that they date to the 1680s and that Nonsuch provides a fixed point in the chronology of these types, but it is important not to force the evidence.

This consideration of the latest finds from the excavation of Nonsuch does not therefore conflict with the conclusion reached from the written evidence that the occupation of the palace ceased c 1688 and that its demolition was essentially complete by c 1700, leaving a fragment of the Outer Gatehouse to be demolished during the next decade and the site as a whole to be tidied up after the middle of the eighteenth century.

101. See above, p 48–9
102. See above, p 47–8, 54
103. See above, p 2
104. See above, p 62–3
105. See below, p 173
106. See below, p 72, 77, 96

A date of c 1679–88 for the last phase of the occupation

A date of *c* 1670 to *c* 1688 for the final phase of occupation (more precisely *c* 1670 to 1682 for the Inner Court, and *c* 1670 to *c* 1688 for the Outer and Kitchen Courts) raises important questions for the make-up of the contents of the closed groups, especially those from the garderobes. There is no evidence in the stratigraphy of the filling of the garderobes to suggest that their contents had been accumulating for a long time (Figs 15, 22–3). The care of the palace discussed in the previous section also suggests that the garderobes were regularly emptied, at least until 1670. It seems therefore safe to assume that the contents of the garderobes were deposited over a fairly short space of time and that they represent the last phase in the use of the palace.

Whether this phase covers the whole period of twelve years from *c* 1670 to 1682 (Inner Court) or of eighteen years from *c* 1670 to 1688 (Outer and Kitchen Courts) cannot be established. Berkeley may have had the garderobes regularly emptied during these years, perhaps after his daughter-in-law's winter sojourns at Nonsuch in the 1680s. If so, the deposition of the contents would have to be dated to a much shorter span of years in the 1680s. There is no evidence that such clearings took place. It is therefore only possible to date the deposition of the contents of the garderobes to *c* 1670–82 (Inner Court) or *c* 1670–88 (Outer and Kitchen Courts).

If this dating is compared to the dating arrived at independently for the various categories of artefact, it is immediately clear that many of the items were old at the supposed time of their deposition. This can be seen from Figs 34 and 35, 1B-6B, which show the *latest* proposed dates by decades grouped into third-centuries for six of the main categories of artefact, and from Fig 36.2 which summarises and compares this evidence for four of these categories. Fig 36.2 shows, for example, that some 350 (55%) of the approximately 640 finds included in this histogram have been assigned to dates no later that 1666, including 140 (22%) assigned to dates no later that 1633. This impression can be confirmed from the individual accounts of the stoneware ('little stoneware was acquired during the final phase of the occupation'),[107] earthenware,[108] wine-bottle seals,[109] coins,[110] and pewter.[111] The green bottle glass[112] and clay pipes[113] by contrast provide very little material whose latest date lies before 1680 (cf Fig 35, 5B and 6B).

The point need not be laboured: if the deposition of the finds in the garderobe pits and other closed groups is correctly dated to *c* 1670–1682/8, as many as one-third of the artefacts included in Fig 36.2 (cf Table 6A) were already ten to twenty years old, and one-fifth had been manufactured fifty years or more before.[114] Since the deposit of the closed groups, being in masonry shafts, began each at some definite moment in time (possibly all roughly contemporaneously) and do not incorporate (as do so many 'open' occupation layers) material disturbed from earlier deposits, it must be supposed that their contents reflect what was actually being used at the time of their deposit. The presence of later with earlier material in all the principal closed groups (Table 6A) shows that it is not possible to argue for the earlier date of any one garderobe (eg, Garderobe 2[115]) relative to another. There is likewise little to suggest that

107. See below, p 101
108. See below, p 126
109. See below, p 305
110. See below, p 320–1
111. See below, p 328
112. See below, p 277–84
113. See below, p 327, and Concordance III
114. See above, p 52–4. 107 (6.7%) of the 1603 records on the database, representing 81 items, have latest dates of *c* 1600 or before. 57 of these occurrences are found in ten different closed groups (G.2, 3, 4, 5, 6/7, 8, 11, 31, the Great Cellar, and the Well). Only 11 of these 107 records come from the west side of the palace. These observations indicate a distribution of this earliest material in conformity with that of the great majority of the other finds from the palace.
115. See above, p 46

certain garderobes (eg, Garderobes 2, 3, and 4) had a longer deposition history than the others: as Concordance I shows, material of both earlier and later dates is found in most of the layers of the Phase 4 fill of these garderobes, as it is in the other principal garderobes.

If the contents of the closed groups do reflect what was actually in use at the time of their deposit, there would seem to be two possible explanations for the presence of a significant quantity of apparently residual material:

1 that it truly reflects the range in date of manufacture of the artefacts in use
2 that the date-ranges assigned to the manufacture of the artefacts are conservative, ie that the artefacts continued to be made longer than is normally assumed.

Both factors are probably involved. A detailed study of the earthenware, directed specifically to the apparent disagreement between the assumed dates of manufacture and deposition of this inexpensive, readily available, and fragile commodity, suggests that current knowledge is unable to establish the date of manufacture of many types and fabrics within a century or more down to *c* 1680 (Fig 71).[116] Even when allowance is made for this, however, it seems possible that a substantial quantity of earthenware was surprisingly old when finally discarded. The age at deposition of a significant amount of the better known and more readily datable finer wares, whether tin-glazed, stoneware, or vessel glass (Fig 34.1B, 2B; Fig 35.4B) appears to conform to the age-pattern suggested by the earthenware. While, therefore, vagaries in our knowledge of the date of manufacture of some categories of material, such as the earthenware, may have contributed to the scale of the apparent disagreement between their dates of manufacture and deposition,[117] there remains a significant quantity of material of all kinds which appears to have remained in use for long periods before finally being discarded.

If the closed groups do accurately reflect the range in age of the artefacts in use at Nonsuch in the 1670s and 1680s, it might be argued (to put the problem in context) that many glass and china cupboards in modern homes contain material in daily use with a range of fifty years or more in date (ie, back at least to the 1940s). Only further study of early modern domestic assemblages derived from different social classes will show whether the Nonsuch pattern is abnormal. If special circumstances were to be sought to explain this pattern, reference might be made to the long period of disuse of the palace from 1645 to 1665, and to the possibility that vessels of every kind might have remained unused for decades in the palace cupboards, only to be brought out again in the 1670s and 1680s. But if they were there, why were these vessels not brought out in 1665–6, to be lost sight of when the garderobe fills from that period of use were cleared away? If such an explanation were sought, *ordinary* domestic assemblages of the period would be unlikely to repeat the Nonsuch pattern. But this explanation seems to require special pleading: it seems much more likely that domestic cupboards in any middle to upper class household contained then, as today, material of a wide range in date.

If other explanations are still sought, it may be necessary to question the dating of the deposition of the closed groups to *c* 1670–1682/8. Is it possible that these groups were missed in earlier cleansings of the palace? Is the deposition history of the individual garderobes much longer that has been proposed? The evidence has been provided here to make such reassessments possible. Whatever alternative explanation is sought, it will have to take into account the co-incidence between the distribution of the garderobes containing closed groups, the general distribution of artefacts in the north-east quarter of the palace (Figs 28–33), and the evidence which exists for the use by the Berkeley family of precisely these areas of the palace in the last phase of its occupation, so strikingly reflected in Hendrik Danckert's painting (*front and back endpapers*).

116. See below, p 122–4, 128–34

117. See above, p 52–3

viii. CONCLUSION

In this discussion the archaeological evidence has been kept strictly separate from the written evidence, and each allowed to tell its own story. The two kinds of evidence have then been brought together in an attempt to account for the patterns observed. This has led to the conclusion that the artefacts recovered from the excavation of Nonsuch Palace derive in large part from its occupation in the 1670s and 1680s by the Berkeleys, an ancient family of considerable but by no means vast wealth in Restoration England.

2

THE ANALYTICAL DATABASE

by JANE WEBSTER

Relative dates are available for several of the major artefact categories at Nonsuch Palace. A computerised database was set up to collate the contextual information for material within these key categories with the dating suggested by the contributors. All catalogued material for which a date has been suggested is included in the database. Non-catalogued material (principally stoneware and green bottle glass) is also included where possible. Material for which no date can be suggested, whether catalogued or uncatalogued, is omitted. The resultant synthesis is a basic tool for analysis of the temporal and spatial distribution of the Nonsuch finds, and contributes to the analysis of the depositional phases within the palace's few sealed horizons.

The database employs the dBase III PLUS software package, and contains a total of 1580 individual records.

Eight artefact categories are included: tin-glazed ware, stoneware, earthenware, fine vessel glass, green bottle glass, coins and tokens, clay pipes, and pewter. Dating of the remaining categories is not sufficiently defined to support an analysis of the present type. All items within these eight categories are recorded where they occur in pre-palace (Cuddington), construction, occupation or demolition contexts. Items from post-demolition and later contexts are only recorded where related fragments occur in demolition or pre-demolition contexts.

Within each record, the basic contextual data for a find (component/trench/layer, and code number) is noted. The preliminary phasing assigned to the context is recorded, as is the absolute date (or more usually, date range) of the object, as proposed in the relevant report. As a result, phase/date anomalies are readily recognised, and detailed analysis of the composition of contexts, and their depositional sequence, is made possible.

A key to the database fields, and the conventions used in entry recording, is provided in the preface to Concordance I.

3

TIN-GLAZED WARE

by MICHAEL ARCHER

(Plates 1–6; Figs 37–52)
For colour conventions used in Figs 38–52 see Fig 37

i. INTRODUCTION

A considerable quantity of tin-glazed earthenware was excavated at Nonsuch, most of which is undecorated and in the form of fragments so small that nothing useful can be said about them. Of the material catalogued, the greatest part belongs to the seventeenth century with a small quantity dateable to the second half of the sixteenth century and even less to the first half of the eighteenth. Predictably the plain white domestic wares, such as plates, porringers, candlesticks, mugs, flower vases, chamber pots and drug jars, form the largest category. Some of the drug jars are elaborately painted and there is a surprisingly large group of mugs speckled with manganese purple.

Of the decorated wares, by far the finest were imports. There are a seventeenth century blue *berettino* Ligurian dish and a few outstanding Netherlandish pieces. The most noteworthy are the fragments of an ornate jug (similar to one in Brussels dated 1562 which is attributed to the workshop of Franchois Frans) painted with strapwork, medallions and bunches of fruit hanging from garlands; a globular mug with floral decoration; numerous dishes with flowers, geometric patterns and motifs derived from Chinese porcelain. The most tantalising object, of which very little survives, appears to be a large flower vase with holes in the upper part, painted all over with foliated scrolls. Many of the drug jars were clearly made in the Netherlands, as were a number of moulded deep dishes. At least one of these and some painted dishes could however be English, and this underlines the difficulty of attribution of pieces made during the late sixteenth and early seventeenth centuries. Fine decorated pieces which are certainly English include a typical so-called tulip charger and a bowl with "chinaman-in-grasses" decoration.

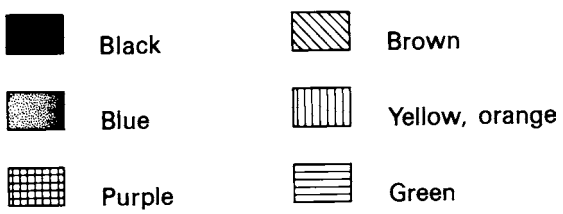


Fig. 37 Tin-glazed ware: Colour conventions used on Figs 40,42–3, 46–9, 51–2.

ii. CATALOGUE: THE TIN-GLAZED WARE

*Fig. 38 Tin-glazed ware: lid **1**, decorated with Chinese figures seated in landscapes, English or continental, dated on interior 1650 (cf Fig 40).*

*Fig. 39 Tin-glazed ware: bowl **2**, decorated with Chinese figures in landscapes, English (probably London), c 1675–90 (cf Fig 40),*

Group I: Miscellaneous forms

1 A number of joined sherds of the lid of a cylindrical jar with knob handle. Buff clay with a greyish glaze on the exterior and interior surfaces. The exterior is decorated with Chinese figures seated in landscapes with distant hills,trees and houses ("Chinaman-in-grasses"). The piece is English or continental and bears the date 1650 on the interior.
Delft 5 (D2); T7 III 3=G26**; Phase 4*

The painting style of this piece is sufficiently sophisticated to suggest that it could be continental rather than English, but the evidence is not conclusive. English vessels decorated with the "Chinaman-in-grasses" type of design were normally painted in a more schematic and less precise manner. Dated examples range from 1669–1699. The much earlier date on this lid reinforces its unusual nature. As the lid has no flange it was clearly intended for a container with a flat shoulder and vertical flange thus excluding posset pots. The most likely candidates are the flattened globular jars with short twisted handles, low stems and spreading domed feet or perhaps urns such as one in the Morgan collection.[1]

2 A number of joined sherds of a small bowl with a ring base. Buff clay with a cream glaze on the exterior and interior surfaces. The exterior surface is decorated with Chinese figures seated in landscapes ("Chinaman-in-grasses"). The piece is English (probably from London) and dates to *c* 1675–1690.
**Delft 4 (D7); W2 5a; Phase 5*

This bowl is larger than those normally associated with tea drinking and so is more likely to have been intended for use on the table, perhaps for condiments, pickles or some such use. The decoration points to a date in the late seventeenth century.[2] A slightly different variant of the shape but of the same size is known in the early eighteenth century.[3]

3 A number of joined sherds of a miniature vase. Buff clay with buff gaze on the exterior and interior surfaces. Decorated with blue and manganese purple strokes and dots on the exterior surface. The piece is English (possibly from Lambeth) and dates to *c* 1685–1695.
Delft 27 (D25); S1 14=G31**; Phase 4. X7 6; Phase 5*

This tiny hollow vessel seems too small to have had any useful purpose and is most likely to have been a decorative miniature vase or pot. The closest parallels are supplied by two small wide mouthed jars in the London Museum [4] and two others in the Wellcome Collection.[5] The decoration of blue and manganese strokes is

1. Archer and Morgan 1979, 42
2. Lipski and Archer 1984, 138, 143, 144, 164 and 165
3. Victoria and Albert Museum Collection; *c*. 12–1963
4. A.4368 and A.23679. Britton 1987, 137
5. Crellin 1969, Pl 192

found on a dish,[6] at least seven porringers,[7] a straight sided mug[8] and a globular mug.[9] The last is of a shape that can be dated to *c* 1685–95,[10] the likely period for this type of decoration. Fragments of porringers with similar blue and manganese splashes have been found on a site in Lambeth.[11]

4 A number of joined fragments of a candlestick. Buff clay with greyish-white glaze on the exterior and interior surfaces. This piece is English (probably from London) and dates to *c* 1650–70.
**Delft 214 (D74); Q8 6; Phase 5; P/Q 15/16 12; Phase 6*

This is the upper part of a candlestick between the drip-pan and the mouth or a ring just below the mouth. Two examples with a similar shape dated 1648 and 1653 respectively are known.[12] The same form but without the horizontal ring below the mouth is found in a candlestick in the Manchester Museum and Art Gallery.[13] This is decorated with the "Chinamen-in-grasses" motif (see the discussion of this motif on **1** above) and so is likely to date to *c* 1670–90. The form clearly derives from contemporary metalwork.

5 Handle painted in blue, yellow and green. Pink clay with greyish glaze on exterior. The interior seems to have been glazed with a now much degraded lead, or possibly tin, glaze. The piece is continental, perhaps Italian, and dateable to the second quarter of the sixteenth century.
Delft 18a (D12); X15 10=D2**; Phase 5*

This seems to be a wide strap handle with three deep grooves along its length. A hole is pierced through, possibly for the attachment of a metal mount perhaps supporting a hinged lid. The reddish clay points to a continental origin. The glaze and pigments are identical to those on an Italian jug with a metal lid in the Victoria and Albert Museum (12–1867), attributable to the Marches and dateable to *c* 1535–40.[14]

Group II: Plain white plates

6 Two joined fragments giving the complete profile of a plate. Buff clay with white glaze on the exterior and interior surfaces. The piece is probably English and cannot be dated closer than to the seventeenth century.
Delft 22 (D23); W2 5c=G3**; Phase 4*

Plain white plates were evidently made in large numbers throughout the seventeenth century both in England and the Netherlands. They vary in shape and many types were concurrent and continued to be made throughout the century. It is unlikely that once the Delft-ware industry was well established in England it would have been profitable to import undecorated utilitarian objects such as plates.

7 Fragment of a plate sufficient to give a complete profile. Buff clay with white glaze on the exterior and interior surfaces. For discussion of this vessel type see **6**, above.
Delft 206 (D169); Q13 (?for 14) III 5=SA G**; Phase 5*

8 Fragment of a plate sufficient to give a complete profile. Buff clay with white glaze on the exterior and interior surfaces. For discussion of this vessel type see **6**, above.
Delft 126 (D73); W5 4=D1**, W5 4c=**D1**, W5ext 2, W5ext 2a, W5ext 2b; Phase 5*

9 Rim fragment of a plate. Buff clay with white glaze on the exterior and interior surfaces. For discussion of this vessel type see **6**, above.
Delft 157 (D113); X7 5; Phase 5

10 Rim fragment of a plate. Buff clay with white glaze on the exterior and interior surfaces. For discussion of this vessel type see **6**, above.
Delft 158 (D113, D152); X7 5; Phase 5

Group III: Plates with floral decoration

11 A number of joined fragments of a plate. Buff clay with a strong duck-egg blue glaze on the exterior and interior surfaces. The interior surface is decorated with flowers and leaves in blue. The piece is Dutch (probably from Delft or Haarlem) and dates to the third quarter of the seventeenth century.
**Delft 21 (D17); W2 5a; Phase 5*

Painted decoration of this distinctive type was practised both in the Netherlands and, in a slightly different form, in England. Dishes of this sort have been found in Norwich[15] and in Haarlem[16] where one carried the date 1660. Van Dam illustrates the type[17] and states that dishes decorated in this way were produced at Delft as well as Haarlem, suggesting a date of 1640–60. The distinctive greenish duck-egg blue is a colour used in France and England in the period *c* 1670–80.

6. Lipski collection, Sotheby 10:03:1981, lot 20
7. A representative example may be seen in the Hall Warren collection: Ray 1968, No 186
8. Lipski collection, Sotheby 10:03:1981, lot 15
9. Marsden-Smedley collection, Sotheby 18:06:1943, lot 74
10. Lipski and Archer 1984, 793 and 797
11. Garner 1937, 56
12. Lipski and Archer 1984, 1559 and 1560
13. Greg collection: 269
14. Rackham 1940, No 214
15. Jennings 1981, 190-191, 193, Figs 82, 83 and 84
16. Korf 1968, Figs 154–159
17. van Dam 1982–4, 139

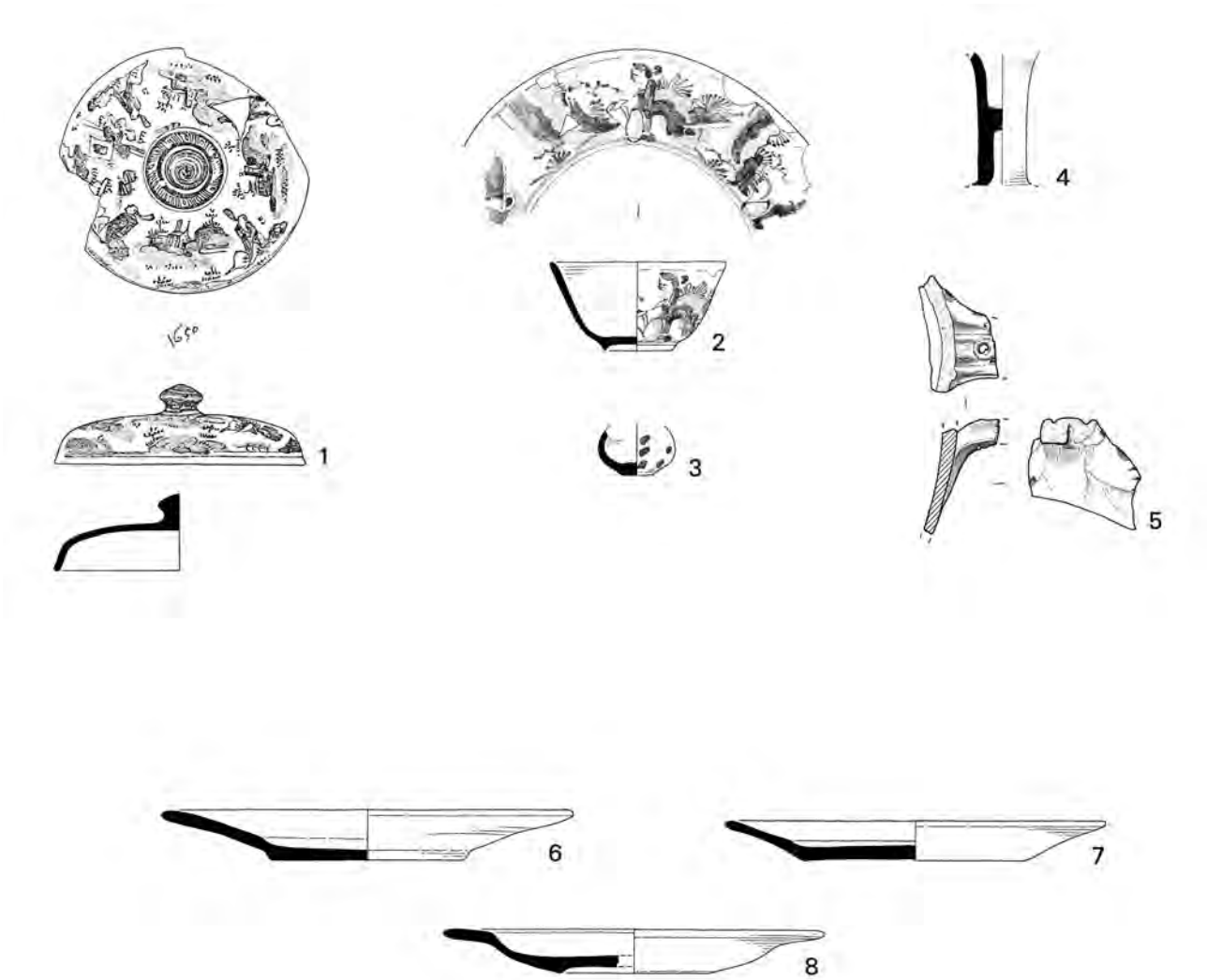


Fig. 40 Tin-glazed ware: Group I, ***1–5****; Group II,* ***6–8*** *(1:4).*

12 A ring base fragment of a plate\dish\small bowl. Buff clay with duck-egg blue glaze on the exterior and interior surfaces. The interior surface is decorated with leaves in blue. The piece is Dutch (probably from Delft or Haarlem) and dates to the third quarter of the seventeenth century. For discussion of this vessel type see **11**, above.
Delft 141 (D113); X7 5; Phase 5

13 A body sherd of a plate\dish\small bowl. Buff clay with duck-egg blue glaze on the exterior and interior surfaces. The interior surface is decorated with flowers and leaves in blue. The piece is Dutch (probably from Delft or Haarlem) and dates to the third quarter of the seventeenth century. For discussion of this vessel type see **11**, above.
Delft 142 (D113); X7 5; Phase 5

Fig. 41 Tin-glazed ware: plate ***11****, decorated with flowers and leaves, Dutch, third quarter 17th century (cf Fig 42).*

14 A body sherd of a plate. Buff clay with white glaze on the exterior and interior surfaces. The interior surface is decorated with leaves in blue. The piece is Dutch (probably from Delft or Haarlem) and dates to the third quarter of the seventeenth century. For the discussion of this vessel type see **11**, above.
Delft 143 (D113); X7 5; Phase 5

15 A rim sherd of plate. Buff clay with white glaze on the exterior and interior surfaces. The interior surface is decorated with foliage in blue. The piece is Dutch (probably from Delft or Haarlem) and dates to the third quarter of the seventeenth century. For discussion of this vessel type, see **11**, above.
Delft 165 (D113); X7 6; Phase 5

16 A rim sherd of a plate *c* 280mm in diameter. Buff clay with white glaze on the exterior and interior surfaces. The interior surface is decorated with foliage in blue. The piece is Dutch (probably from Delft or Haarlem) and dates to the third quarter of the seventeenth century. For discussion of this vessel type see **11**, above.
Delft 240; X8 3; Phase 5

Group IV: Dish with relief and painted decoration

17 A number of joined fragments of a large dish. Buff clay with white glaze on the face and lead glaze on the back. The dish is decorated with a serrated rim and a series of raised prunts around the flange and painted decoration of fruits, leaves and geometric patterns in yellow, blue, green and yellow ochre. The piece is Dutch or English and dates to the second quarter of the seventeenth century.
**Delft 25 (D22); X7 6; Phase 5 (Plate 1)*

Dishes painted with fruit and leaves either on their own or in combination with other types of decoration[18] first appear in the Netherlands in the early part of the seventeenth century. However the Nonsuch dish is closest in style to two dishes dated 1634 and 1639 in the Fitzwilliam Museum, Cambridge.[19] A date in the 1630s for this piece is supported by three dishes with serrated edges and bosses in relief around the flange which are dated 1635,1636 and 1637.[20] For a discussion of this group see Archer and Morgan[21] and Hume.[22] Although bosses in relief are found on dishes made in England they are also common in the Netherlands and can be seen on dishes excavated in Amsterdam (now in the Gemeente Museum, the Hague), Rotterdam[23] and Haarlem.[24] It is almost impossible to make positive attributions as between England and the Netherlands of much tin-glazed earthenware at this time, but the brilliant colouring and shiny glaze of the Nonsuch dish may make a Dutch origin slightly more likely.

Group V: Dishes with Chinese derived geometric decoration

18 A number of fragments which appear to be part of the same dish and which give a complete profile. Buff clay with white glaze on the face and lead glaze on the back. The interior surface is decorated with floral, geometric and Chinese (Wan Li) derived ornament in blue. The piece is probably from London and dates to the mid seventeenth century.
Delft 35 (D31); U8 4; Phase 3 (Contamination). U7 8=G9**; Phase 4. U7 2, W8 3, X7 6; Phase 5. T8 2, X5 II\IV 2; Phase 6. X7 1, U7 1; Phase 8*

A close parallel to this dish is provided by one in the Victoria and Albert Museum.[25] Large numbers of fragments have also been found in Southwark and the category is fully discussed by Hume.[26] The type is also known from Dover Castle[27] and Norwich.[28] However, fragments of similar dishes have been found in Haarlem.[29]

19 A number of sherds which appear to be of the same vessel and which give a complete profile of a deep dish. Buff clay with white glaze on the face and lead glaze on the back. The interior surface is decorated with floral, geometric and Chinese (Wan Li) derived ornament in blue. The piece is probably from London and dates to the mid seventeenth century. For discussion of this vessel type see **18**, above.
**Delft 79 (D46); Q8 3; Phase 5. Q8 2; Phase 6. Q8 1; Phase 8*

20 A small body sherd of a dish. Buff clay with a white glaze on the exterior and interior surfaces. The interior surface has decoration in blue. For discussion of this vessel type see **18**, above.
D109 (D114); X8; unstratified.

18. van Dam 1984, Pls 22 and 23
19. Lipski and Archer 1984, Nos 5 and 12
20. Lipski and Archer 1984, Nos 6, 7 and 9
21. Archer and Morgan 1977–79, 22
22. Hume 1977, 47
23. De Jonge 1947, Pl 31
24. Korf 1968, Pl 8
25. Catalogue No.3859–1901
26. Hume 1977 45–46, 77–78
27. Mynard 1969, 35, Fig 10
28. Jennings 1981, 196, Fig 86
29. Korf 1968, 148 and 149

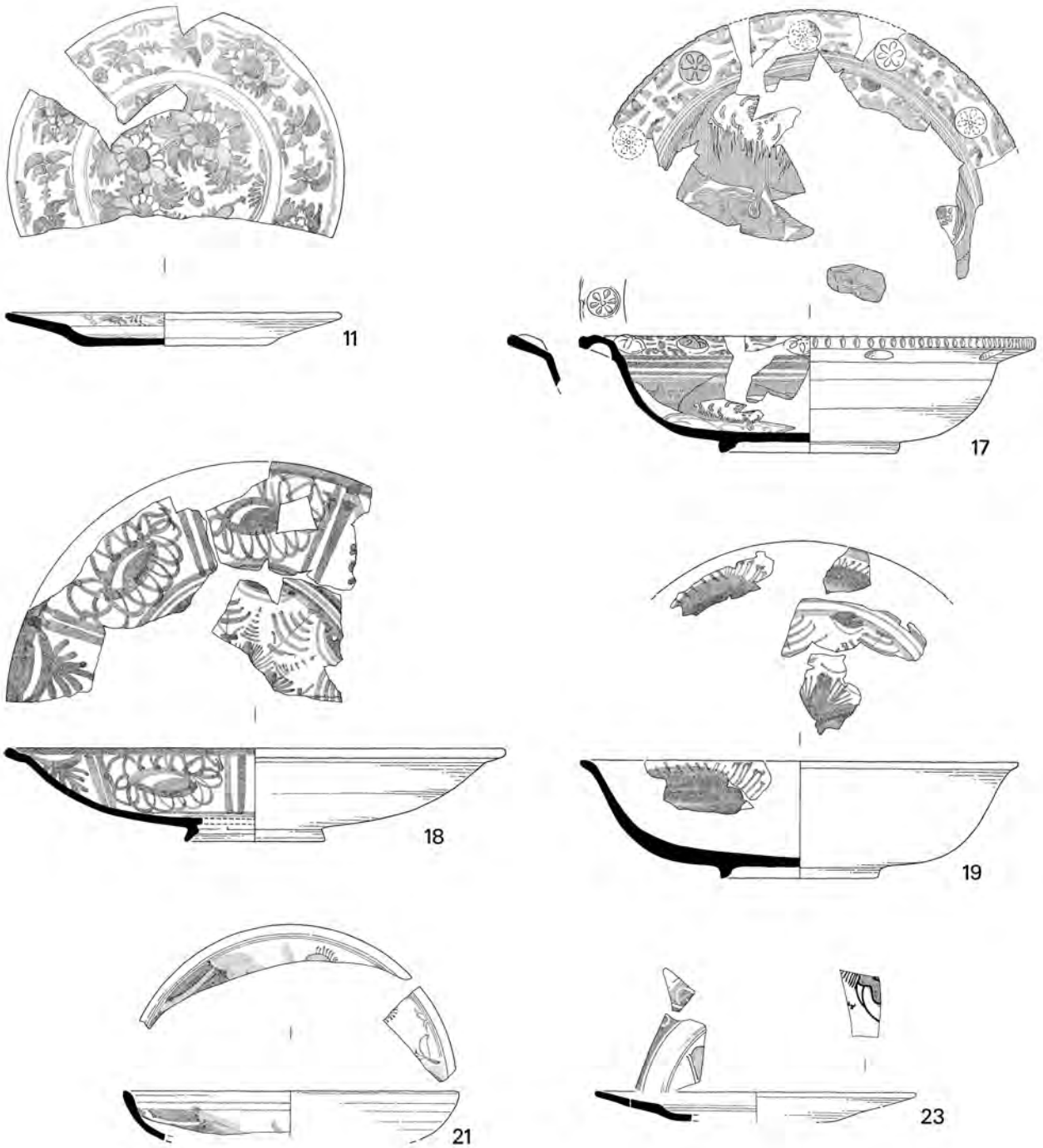


Fig. 42 Tin-glazed ware: Group III, ***11****; Group IV,* ***17****; Group V,* ***18–19****; Group VI,* ***21****,* ***23*** *(1:4).*

Group VI: Dishes with "Chinaman-in-grasses" decoration

21 Four rim sherds of which three fit together of a shallow dish. Pale reddish clay with white glaze on the exterior and interior surfaces. The interior has "Chinaman-in-grasses" type decoration in blue. The piece is English (London or Brislington) and dates to *c* 1675–90.
Delft 462 (D49); S1 14=G31**; Phase 4*

A dish of comparable shape and decoration was found in Southwark.[30] For a discussion of the decoration see **1**, above. The primitive nature of the painting points to an English rather than a continental origin for the vessel.

22 A rim sherd of a dish\plate. Buff clay with white glaze on the exterior and interior surfaces. The interior surface is decorated with the head of a figure in a "Chinaman-in-grasses" pattern. The piece is English (London or Brislington) and dates to *c* 1675–90. For a discussion of this decoration and vessel type see **1** and **21**, above.
D144 (D113); X7 5; Phase 5

23 Two body sherds and a rim sherd which appear to be from the same plate. Buff clay with blueish white glaze on the exterior and interior surfaces. The interior is decorated with a "Chinaman-in-grasses" type motif in blue and manganese purple. The piece is English (probably from London) and dates to *c* 1675–90.
**Delft 486, 487, 488 (D103); W5 6, W5ext 2a, X7 6; Phase 5.*

For a discussion of this form of decoration and vessel type see **1** and **21**, above. Purple in conjunction with blue is frequently found in this class of ware. As with **21**, the painting looks English and the sgraffito decoration through the blue band on the flange suggests a London origin for the piece.

Group VII: Dishes with floral decoration

24 A number of joined sherds giving the complete profile of a dish. Buff clay with greyish-white glaze on the exterior and interior surfaces. The interior is decorated with a flower spray in the centre with a border in blue and yellow ochre in a geometric pattern. The piece is Dutch (possibly from Haarlem) and dates to the second quarter of the seventeenth century.
**Delft 24 (D24); U1 6; Phase 5. T1 1; Phase 8 (Plate 2)*

The border on this dish can be seen on a dish excavated in Haarlem,[31] but with a spiral rosette in the centre. The flower spray on the Nonsuch dish has no English parallel and it therefore seems probable that it was made in the Netherlands, perhaps in Haarlem, in the second quarter of the seventeenth century as suggested by Korf (1968).

25 A base sherd of a dish(?). Pinkish buff clay with white glaze on the face and decayed lead glaze on the back. The interior is decorated with foliage(?) in blue, green and manganese purple. The piece is English (from London) and dates to *c* 1680.
Delft 488 (D113); X7 6; Phase 5

26 A number of joined sherds giving the full profile of a dish. Pinkish buff clay with blueish-white glaze on the face and lead glaze on the back. The interior is decorated with a flower spray in the centre with a geometric border in green, blue and manganese purple. The piece is English (probably from London) and dates to *c* 1680.
**Delft 26 (D45); X8 2; Phase 5*

An exact parallel to this dish was once in the Lipski collection.[32] It was painted in blue, green and ochre and had dashes on the rim rather than concentric bands. Fragments of the schematic leaves and the same geometric border were found in Lambeth.[33] The type is discussed by Morgan.[34]

27 Sherds of the ring base and rim of a dish. Buff clay with white glaze on the interior surface. The white tin-glaze on the exterior surface has largely disappeared. The interior is decorated with a flower spray in the centre with a geometric border in blue, yellow, orange and red. The dish is English (from London) and dates to *c* 1680–*c* 1710.
**Delft 23 (D21); S15 5; Phase 5 (Plate 2)*

This dish is much smaller than **26** and has closely similar decoration but in different colours. This dish has a red pigment which is rare in the seventeenth century as is white tin-glaze on the back of dishes of this shape. A London attribution seems likely.

28 A number of joined sherds of a dish. Buff clay with white tin-glaze on the face and lead glaze on the back. The interior is decorated with foliage and geometric decoration in blue, green, yellow, orange and red. The piece is English (probably from London) and dates to *c* 1675–85.
Delft 90 (D57); Q14 III 5=SA G**; Phase 5 (Plate 2)*

30. Hume 1977, Fig XIII
31. Korf 1968, Fig 134
32. Sotheby, 17:11:1981, lot 249
33. Bloice 1971, Fig 56
34. Archer and Morgan 1977–79, 51

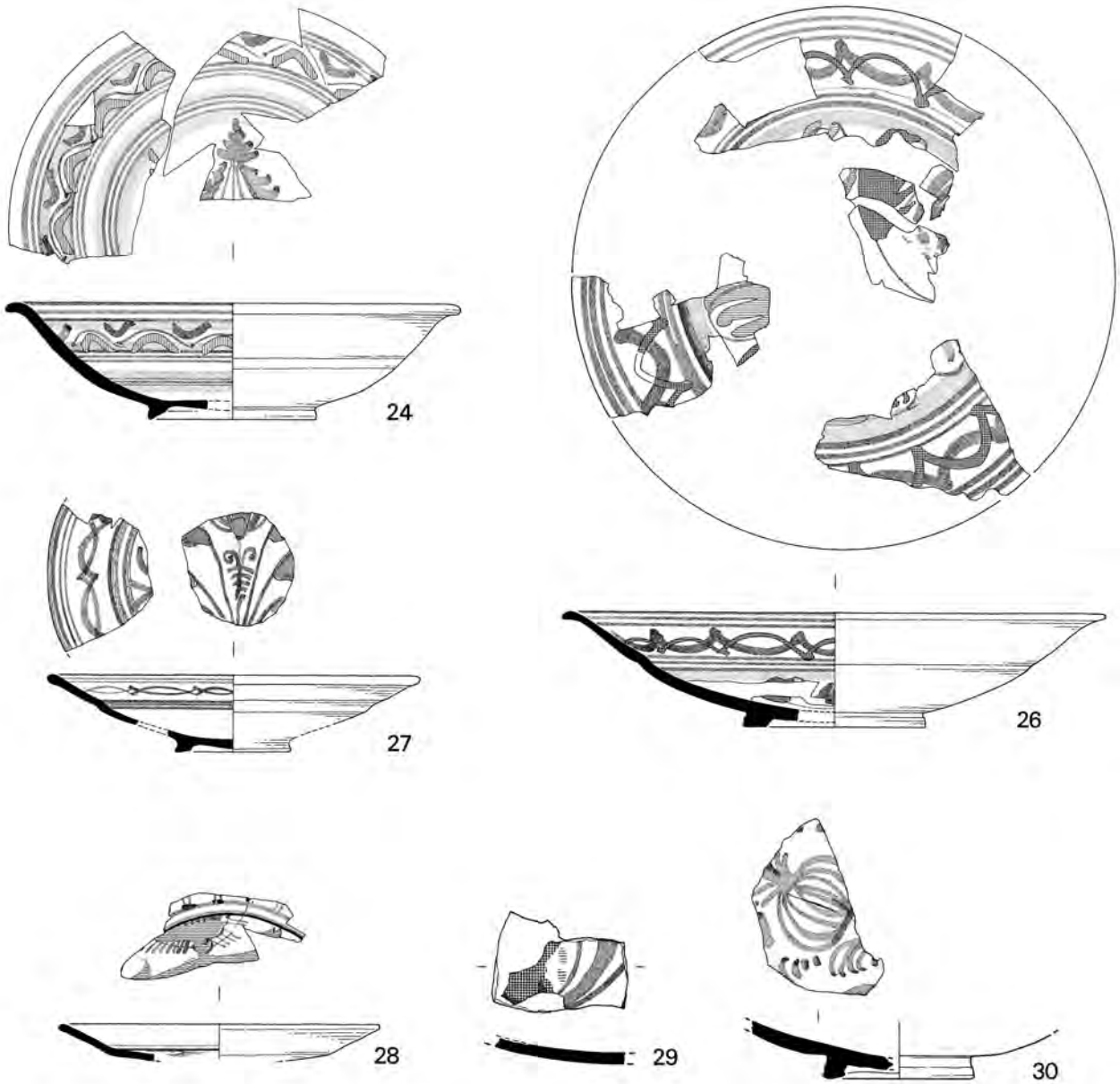


Fig. 43 Tin-glazed ware: Group VII, ***24, 26–30*** *(1:4).*

These fragments evidently form part of an unusually small dish of the type known as "blue-dash chargers". Like many of the type[35] it is painted with a flowering plant growing from a small mound with a schematic blue fence-like motif on either side. There is a small trace of blue near the rim suggesting a border of dashes outside compartments divided by pairs of blue lines. A comparable border appears on a deep bowl with a similar flower growing from a mound in the Saffron Walden Museum.[36]

29 A body sherd of a dish. Pinkish buff with white glaze on the face and decayed lead (?) glaze on the back. The interior surface is decorated with foliage in blue, green and manganese purple. The piece is English (from London) and dates to *c* 1680.
**Delft 494 (D117); Y5 6; Phase 5*

30 The base sherd of a dish. Buff clay with red inclusions.Greyish white glaze on the interior, and lead glaze on the exterior surfaces. The

35. Archer 1982, Pl 55 f

36. W.M.T. 58

interior is decorated with a floral element in blue. The piece is probably English and dates to the second quarter of the seventeenth century.
**Delft 491 (D43); BH G3 2; BH Phase 5*

The painting on this fragment appears to be part of a bud on a flowering plant. It is similar in certain details to two buds supported in a vase on the back of an elaborate cistern in the Hanley Museum[37] dated to 1638 for which a tentative English attribution can be made.

Group VIII: Dishes with geometric decoration

31 A number of joined sherds giving the complete profile of a dish. Buff clay with greyish white glaze. The interior surface has geometric decoration in blue, green and yellow ochre. The piece is Dutch and dates to *c* 1635–75.
Delft 7 (D4); W2 5b=G3**; Phase 4 (Plate 3)*

A dish of almost identical pattern is illustrated by van Dam.[38] He suggests a date from about 1635 onwards for dishes of this type which often have a central decoration of a rosette in numerous variations within a variety of borders. He states that in general terms the bulk of the ware produced between 1625 and 1650 came from Rotterdam and Delft while Friesland became the major producer after the middle of the century.

32 Numerous related fragments, not all of which join. Almost the complete profile was obtained, however. Buff clay with greyish white glaze. The interior has geometric decoration in blue and what was probably a dark yellow ochre. The piece is Dutch and dates to the second half of the seventeenth century.
Delft 14 (D20); U7 8=G9;** Phase 4. U7 2, W8 1a, X7 7; Phase 5; T8 2; Phase 6. U12 1, X7 6; Phase 8*

This dish has a similar central motif to **31**, but a quite different border of triangular panels containing pyramids made up of curved strokes, diminishing in length towards the point of the pyramid.

33 A number of associated rim and body sherds of a dish, some of which are joined to one another. Buff clay with greyish white glaze on the face, brownish lead glaze mixed with some tin-glaze on the back. The piece is Dutch and dates to the second half of the seventeenth century.
Delft 39 (D50); U8 3=Great cellar** Phase 4; U8 2a, X7 2, X7 4, X7 5, X7 6, X7 7; Phase 5; X7 1; Phase 8*

The colours used in this dish have darkened either through over-firing or through burial. The design seems likely to be a finer version of **31**, and this, taken with the whiter glaze, suggests a date a little later.

34 Two body sherds of a dish. Buff clay with white glaze on the face and greenish lead glaze on the back. The interior surface is decorated with a geometric pattern in blue, green and yellow ochre. The piece is Dutch and dates to the second or third quarter of the seventeenth century.
Delft 489 (D43); W15 5=SA C**; Phase 5; W15 8; ?natural*

This dish has geometric decoration of a generally similar type to that found on **31–33**, above, including the motif of a pyramid made up of strokes diminishing in length. The shiny lead back and the good quality white glaze suggest a date slightly later in the seventeenth century.

35 A base sherd of a dish. Buff clay with buff glaze. Geometric decoration on the interior in yellow and blue. The piece is Dutch and dates to *c* 1625–75. For a discussion of the decoration and vessel type of this piece, see **31**, above.
**Delft 97 (D151); X14 5; Phase 5*

Group IX: Ligurian dishes

36 A number of joined sherds forming a virtually complete shallow bowl. Buff clay with pale blue glaze. The decoration on the interior consists of false gadrooning surrounding a central rosette. Painted in white and shades of blue on a pale blue glaze. The exterior of the bowl is decorated with intersecting blue lines in a spiral pattern. The piece is Italian (probably Ligurian) and dates to the mid seventeenth century.
Delft 42 (D47); T7 III 3=G26**; Phase 4*

Blue glazed (*berettino*) Ligurian wares were imported into the Netherlands and to a lesser extent into England in the late sixteenth and seventeenth century. See Hurst[39] for a discussion of such *berettino* wares and for further references. A number of typical fragments including an example with a comparable centre motif are illustrated by Barile.[40]

37 Four associated sherds, of which three join one another, of a dish or bowl. Buff clay and pale blue glaze. Floral decoration in blue on the interior surface. The piece is probably Italian (Ligurian) and dates to the mid seventeenth century.
**Delft 29 (D37); X6 4; Phase 3 (contamination); X8 8 (?for 2 or 2a); Phase 5*

37. Museum No.661
38. van Dam 1982–84, Pl 48
39. Hurst *et al* 1986, 26–30
40. Barile 1965, Pl III

*Fig. 44 Tin-glazed ware: dish **36**, decorated with false gadroons surrounding a central rosette, Italian (probably Ligurian), mid 17th century (cf Fig 46).*

*Fig. 45 Tin-glazed ware: dish **37**, floral decoration, probably Italian (Ligurian), mid 17th century (cf Fig 46).*

The colour of the glaze and the painting suggest an attribution to a Ligurian factory.[41] For a discussion of the decoration and vessel type of this piece, see **36**, above.

Group X: moulded dishes

38 A number of joined sherds of a shallow moulded dish giving the complete profile. Pale reddish brown clay with white glaze on the exterior and interior surfaces. The piece is probably from the Netherlands and dates to *c* 1630–60.
Delft 8 (D14); T7 III 3=G26**; Phase 4*

This dish has moulded decoration of shallow gadroons and an outer edge which is vertically scalloped. The body is noticeably darker and redder than that normally found in English pieces suggesting that it is continental. The glaze is not of a high enough quality to be characteristic of *bianco di Faenza* and so a Netherlandish origin seems the most likely. Moulded dishes of a similar type have been found in excavations in England[42] but most have a pronounced foot. A close parallel is supplied by a footed dish of almost identical moulded shape in the British Museum[43] dated 1629 which is painted in an apparently Netherlandish manner. A rather different but undoubtedly English moulded deep dish, also in the British Museum[44] dated 1653, shows that comparable pieces were made in England.

39 A number of rim sherds of a shallow moulded lobed dish. Pale pink clay with white glaze on the exterior and interior surfaces. The piece is from the Netherlands (perhaps from Delft or Haarlem) and dates to *c* 1640–70.
**Delft 298 (D505); BH D5 IV 3; BH Phase 5*

A prominent scar shows that this dish was fired in a sagger supported on pegs. The pink body and the moulded form suggest a Netherlandish origin. The shape is clearly based on a metalwork original and van Dam states that the type first appears in Delft and perhaps Haarlem in about 1640. He illustrates a typical undated example.[45] There is a similar decorated dish dated 1667 in the Burnap collection, Kansas.[46] White dishes of this particular shape have been excavated in Amsterdam[47] and since all dated examples can be attributed to the Netherlands it seems likely that the whole category was made there. However, there is a small group of these dishes decorated with the arms of City Companies which have been thought to have been made in England. There is evidence to suggest that these were painted in the late nineteenth century or early twentieth century on genuine seventeenth century Dutch dishes, copying the arms on genuine English dishes of different shape.

41. Barile 1965, 1975
42. Jennings (1981); 202, Fig 90: Nos. 1434, 1436 and 1437. Moorhouse 1970, Fig 18
43. B.M. 87,2-10, 146. Lipski and Archer 1984, 89
44. E.44. Lipski and Archer 1984, 101
45. van Dam 1982–84, Plate 136
46. 55–12. Lipski and Archer 1984, 115
47. Baart *et al* 1968, Pl 12

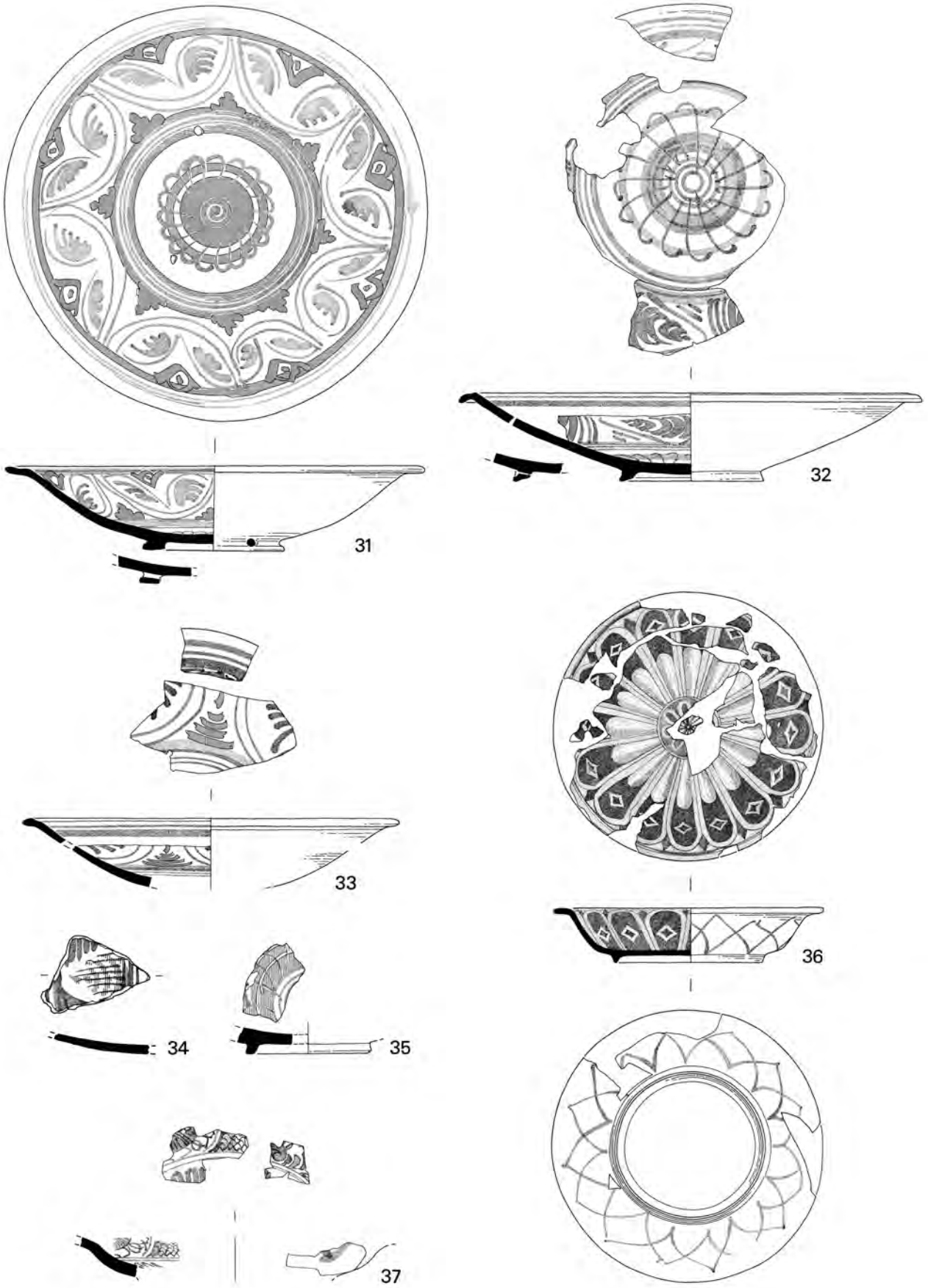


Fig. 46 Tin-glazed ware: Group VIII, ***31–5****; Group IX,* ***36–7*** *(1:4).*

40 A body sherd of a moulded dish. Pink clay with white glaze on the exterior and interior surfaces. The piece is probably from the Netherlands and dates to the mid seventeenth century.
Delft 316 (D507); BH D5 IV 5; BH Phase 4

This fragment is probably part of a dish similar to 38–39, above. See the entries for those two examples for a discussion of this vessel type and decoration.

41 A body sherd of a moulded dish. Pink clay with white glaze on the exterior and interior surfaces. The piece is probably from the Netherlands and dates to the mid seventeenth century. This fragment is probably part of a dish similar to 38–9, above.
**Delft 123 (D83); Q8 6, Q8 11; Phase 5*

42 Rim sherd of a moulded lobed dish. Buff clay with white glaze on the exterior and interior surfaces. The piece is probably Italian (possibly Ligurian) and dates to the mid seventeenth century.
Delft 212 (D72); S1 14=G31**; Phase 4*

Moulded dishes in white or with limited decoration in blue were made in the Netherlands and England in the seventeenth century. Most of these are of convex lobed or gadrooned shapes. This fragment may belong to one such, but if so the protruberences at one end of the rim would have to be explained as a glaze drip and the scar as a kiln accident. But if the fragment is actually from a dish with a concave lobe then both these features could be intentional parts of the decoration. Italian dishes and other shapes with comparable elaborate moulded forms and decoration are known and this fragment may well be an import of this type.[48]

Group XI: bowl\dish

43 Body sherd of a bowl or dish. Buff clay with blueish glaze on the exterior and interior surfaces. The interior is decorated with lines and a landscape(?) in blue. The piece is English or continental and dates to the eighteenth century.
Delft 299 (D507); R15 4; Phase 5

Although the fabric, glaze, colour and painting style of this piece could easily be English, the hole through the possibly related foot rim of **45** is most unusual. The colour and nature of the glaze as well as the painting all suggest an eighteenth century date.

44 Ring base sherd of a bowl or dish. Buff clay with bluish glaze on the exterior and interior surfaces. Blue line decoration on the interior surface. The piece is English or continental and dates to the eighteenth century. For a discussion of this vessel type see **43**, above.
Delft 308 (D508); R14 1; Phase 8

45 Ring base sherd of a bowl or dish, through which a hole runs. Buff clay with blueish glaze on the exterior and interior surfaces. Blue line decoration on the interior surface. The piece is English or continental and dates to the eighteenth century. For a discussion of this vessel type see **43**, above.
Delft 509 (D112); X6 2; Phase 6

Group XII: Porringer

46 An almost complete porringer with a handle with indented outline and pierced. Buff clay with white glaze on the exterior and interior surfaces. The piece is English (from Lambeth) and dates to *c* 1660–1700.
Delft 514 (D34); T7 III 3=G26**; Phase 4*

Small bowls with one or two handles like this example are known as porringers, although some might also have been used as bleeding bowls.[49] Handles of indented outline pierced with holes, as on this bowl, have been found at Lambeth[50] and at the Norfolk House pottery site, also in Lambeth.[51] The almost straight sided shape was also found at the Norfolk House site and is known from pieces dated 1673[52] and 1696.[53] The handle shape is dateable to between *c* 1660[54] and 1730.[55]

47 A number of joined fragments of a porringer giving the complete profile with an indented handle with pierced decoration. Buff clay with white glaze on the exterior and interior surfaces. The piece is English (from Lambeth) and dates to *c* 1660–1730. For a discussion of this vessel type see **46**, above.
Delft 15 (D19); T7 III 3=G26** Phase 4*

48 A rim fragment of a porringer with a diameter of 120mm (the same as that of **47**). Buff clay with white glaze on the exterior and interior surfaces. The piece is English (from Lambeth) and dates

48. Morrazoni n.d. Pls 35, 36 and 45–48. Barile 1965, Pl 84, 1975, Pl 116
49. For a discussion of the use of these vessels see Archer and Morgan 1977–79, 45, Spiers 1962, 716–717
50. Garner 1937, 56
51. Bloice 1971, Fig 54
52. Lipski and Archer 1984, 1234, 1235 and A
53. Christies:12\07\82
54. A porringer in the collection of the Detroit Institute of Arts (54.38) with the same body shape as an example in Colonial Williamsburg (1959–51) dated to 1660
55. Lipski and Archer 1984, 1241

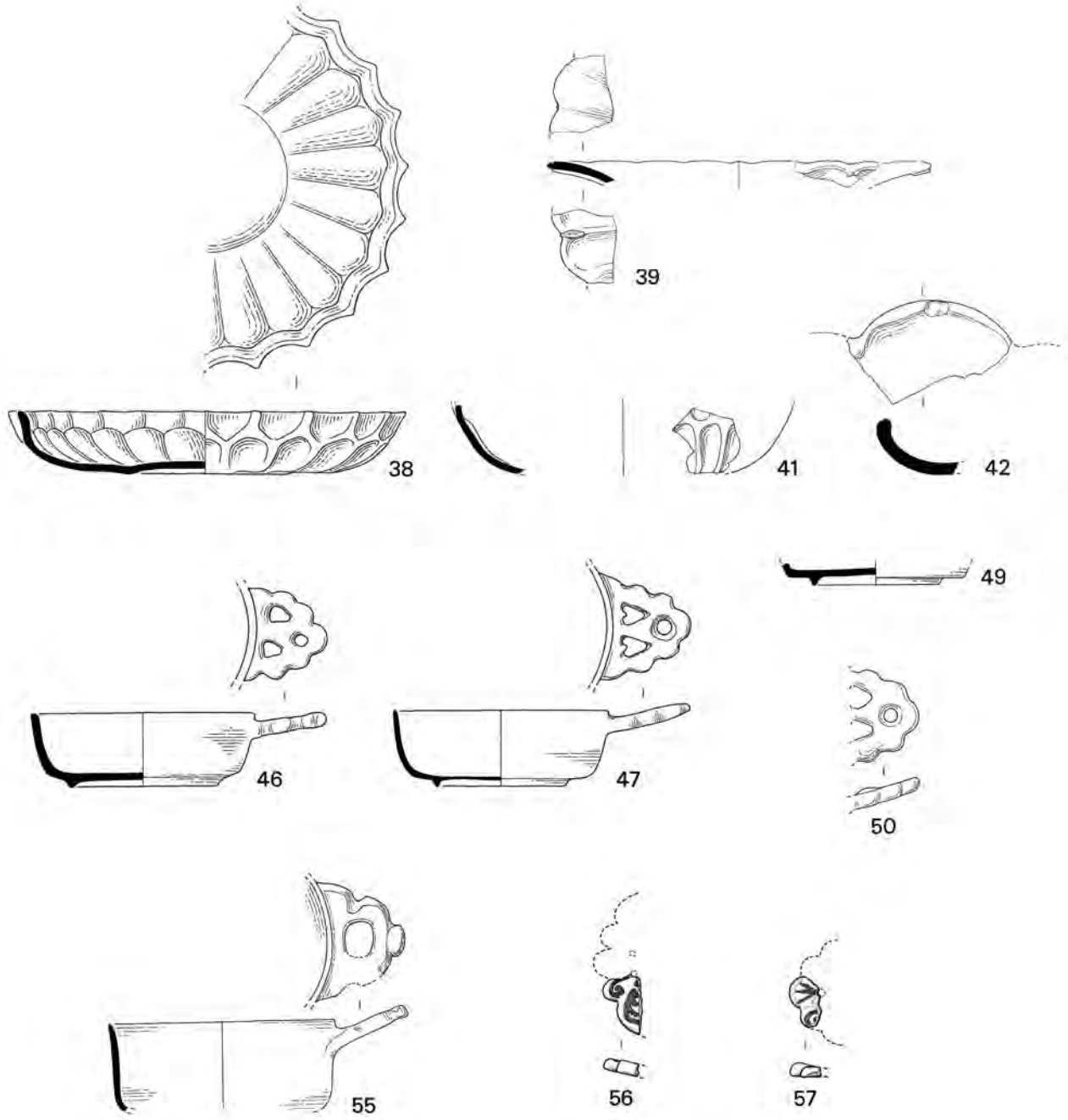


Fig. 47 Tin-glazed ware: Group X, ***38–9***, ***41–2****; Group XII,* ***46–7***, ***49***, ***50***, ***55–7*** *(1:4).*

to *c* 1660–1730. For a discussion of this vessel type see **46**, above.
Delft 17 (D84); W5ext 2; Phase 5

49 A base fragment of a porringer. Buff clay with white glaze on the exterior and interior surfaces. The piece is English (from Lambeth) and dates to *c* 1660–1730. For a discussion of this vessel type see **46**, above.
Delft 64 (D145); Q13 (?for 14) III 5=SA G**; Phase 5*

50 An almost complete handle, with an indented outline and pierced decoration, of a porringer. Buff clay with white glaze on the exterior and interior surfaces. The piece is English (from Lambeth) and dates to *c* 1660–1730. For a discussion of this vessel type see **46**, above.
Delft 201 (D97); U8 3=Great cellar**; Phase 4*

51 A fragment of a handle, with an indented outline and pierced decoration, of a porringer. Buff clay

with a white glaze on the exterior and interior surfaces. The piece is English (from Lambeth) and dates to *c* 1660–1730. For a discussion of this vessel type see **46**, above.
Delft 203 (D102); Y4 10; Phase 7

52 A fragment of the handle of a porringer. Buff clay with a white glaze. The piece is probably English (from Lambeth) and dates to *c* 1670–90. For a discussion of this vessel type see **46**, above.
Delft 103 (D151); X14 5; Phase 5

53 A fragment of the handle of a porringer. Buff clay with a white glaze. The piece is probably English (from Lambeth) and dates to *c* 1670–90. For a discussion of this vessel type see **46**, above.
Delft 105 (D151); X14 5; Phase 5

54 A fragment of the handle of a porringer. Buff clay with a white glaze. The piece is probably English (from Lambeth) and dates to *c* 1670–90. For a discussion of this vessel type see **46**, above.
Delft 402 (D152); Unstratified

55 A body and rim sherd with most of a handle, with an indented outline and pierced decoration, of a porringer. Buff clay with a white glaze on the exterior and interior surfaces. The piece is English (from Lambeth) and dates to *c* 1670–90.
**Delft 202 (D152); X7 7; Phase 5*

This porringer is identical to **46**, with the exception of the handle. This type with a single hole was also found at the Norfolk House pottery site[56] and by Garner.[57] It occurs on pieces dated 1673 and 1686[58] and on an undecorated bowl without a date.[59]

56 Handle fragment, probably from a porringer. Granular yellow buff, with a dull green-grey glaze and blue on white decoration. The piece is Netherlandish, and dates to *c* 1635–50.
**Delft 375 (D506); BH D5 1V 4; BH Phase 6*

The thickness and indented outline of this fragment shows that it most probably formed part of a porringer. Closely similar decoration can be seen on pieces found at Dover Castle[60] and Norwich.[61] A comparable but less similar example from Southwark is in the Burnett collection.[62] The Dover Castle material can be dated to the second quarter of the seventeenth century. The evidence of the painted designs and the shapes of the comparative pieces, where existing, suggest a Netherlands origin. Porringers of deep, rounded profile and with little or no lip seem not to have been made in England.

57 Handle fragment, probably from the same vessel as **56**. Granular yellow buff fabric, decorated in blue on white.
**Delft 374 (D563); BH BV V1 2; BH not phasable*

This fragment is very probably from the same porringer as **56**, although not from the same handle.

Group XIII: Painted mug

58 An almost complete mug with a strap handle pierced at the top to take a metal mount and lid(?). Buff clay with white glaze on the exterior and interior surfaces. The neck has blue and yellow bands and an orange rope pattern as decoration. The foot is decorated with blue and yellow bands. The body has blue running foliage with orange and green flower centres and orange dots. The piece is probably from the Netherlands and dates to the second half of the sixteenth century.
Delft 9 (D8); W4 II\IV 4c=G4**; Phase 4 (Plate 3)*

This mug has an almost identical but slightly larger twin in the London Museum[63] which was excavated in Lombard Street, and one of virtually the same size but with slightly different decoration, excavated in the Netherlands, now in the Prinsenhof in Delft.[64] Related foliage decoration is found on an excavated vase with ring handles[65] in the Boymans van Beuningen Museum, Rotterdam of a type made in the Netherlands throughout the sixteenth century.[66] Writing on the London Museum mug Rackham[67] points out that the shape is common in Cologne and Frechen stoneware of the middle of the sixteenth century and may be dated approximately to that period, a view that obviously applies to the Nonsuch example. The band of rope-like interlinked "S" shaped ornaments around the neck is frequently found in the second half of the sixteenth century as on a spouted drug jar illustrated by van Dam[68] and continues into the seventeenth century. From the evidence adduced it seems highly likely that the Nonsuch mug was made on the continent, probably in Antwerp or in the north at Haarlem or Amsterdam[69] in the second half of the sixteenth century. The only link it has with England is its

56. Bloice 1971, Fig 54
57. Garner 1937, 56
58. Lipski and Archer 1984, 1234, 1235 and A, 1236
59. Christies:10\12\79
60. Mynard 1969, Fig 10
61. Jennings 1981, Figs 89 and 90
62. Hume 1977, Fig XIV
63. Britton 1987, 100.A.22832
64. Lunsingh Scheurleer 1984, Pl 35
65. Lunsingh Scheurleer 1984, Pl 15
66. Hurst *et al* 1986, 119
67. Rackham 1926, 112
68. van Dam 1982–84, Pl 4
69. van Dam 1982–84, 90

find spot and theoretically it could have been made in this country. The onus of proof rests with the protagonist of such a theory. In any case the first tin-glaze potters in England were immigrants from the Netherlands and their early products on this side of the North Sea are, not surprisingly, indistinguishable from those they made on the other.

Group XIV: Mugs

59 A complete base of a mug with the traces of a handle near the base. Dark buff with white glaze on the exterior and the interior surfaces. The piece is English (from London) and dates to *c* 1650–85.
**Delft 81 (D70); X7 7; Phase 5*

The start of the handle close to the base and the thick potting suggest that this was a large mug. The type can be dated to *c* 1650–85, for example two mugs dated 1653 and 1685.[70] Fragments of such a mug were found in Southwark.[71]

60 Fragments of the rim and body of a mug. Dark buff with white glaze on the interior and exterior surfaces. The piece is English (from London) and dates to *c* 1650–85. For a discussion of this type see **59**, above.
Delft 91 (D145); Q13 (?for 14) III 5=SA G**; Phase 5*

61 A fragment of the base of a mug. Dark buff with white glaze on the exterior and interior surfaces. The piece is English (from London) and dates to *c* 1650–85. For a discussion of this type see **59**, above.
**Delft 83 (D82); R8 6; Phase 5*

62 Base sherd of a mug, with handle stub. Buff clay with a white glaze on both interior and exterior surfaces. The piece is English (from London) and dates to *c* 1650–85.
**Delft 414a (D152); Unstratified*

This vessel is similar to **59**, but is less heavily potted.

63 The complete base of a mug. Buff clay with greyish glaze on the exterior and interior surfaces. The piece is English and dates to the second quarter of the seventeenth century.
**Delft 461 (D161); SW.Tr.I 1; Phase 8*

This would appear to be the base of a bottle or a mug. Most bottles have a bigger foot, and the slight stem above it points to a mug form similar to one dated 1638 in the Birmingham Art Gallery.[72]

64 A body sherd with the remains of a handle base. Buff clay with white glaze on the interior and exterior surfaces. The piece is English and dates to the seventeenth century.
Delft 416 (D163); W5ext 2a; Phase 5

Simple handles of this type are frequently found on seventeenth century mugs from about 1630 to the end of the century.[73]

65 A body sherd with the remains of a handle base. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the seventeenth century. For a discussion of a similar fragment see **64**, above.
*Delft 417 (D163); W5ext 5=**G5**; Phase 4*

66 A body sherd with the remains of a handle base. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the seventeenth century.
Delft 415 (D163); W5ext 2a; Phase 5

This fragment formed the upper part of the upper terminal of a mug. It is similar to **64** and **65** but with the addition of a raised moulding just above the point at which they join the body. Mouldings of this kind are found on mugs dated between 1633 and 1655.[74]

67 A body sherd with the remains of a handle base. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the seventeenth century. For a discussion of a similar fragment see **66**, above.
Delft 128 (D103); W5ext 2a; Phase 5

68 A base sherd of a mug. Buff clay with white glaze on the exterior and interior surfaces. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to *c* 1645–70.
Delft 413 (D152); Unstratified

For a discussion of this vessel form see **70**, below.

Group XV: Manganese mug

69 Small mug with handle. Buff clay with speckled manganese-purple on a white glaze. The piece is English (from London), dating to *c* 1650–85.
**Delft 51 (D44); X8 2 Phase 5; S1 1, X6 1, X8 1, Y6 1; Phase 8*

Dated examples of the shape of this mug range from 1653 to 1685.[75] Fragments of simiar pieces have been found in Southwark.[76] The shape is known from excavations in Norwich.[77] The

70. Lipski and Archer 1984, 731 and 791
71. Hume 1977, Fig VI
72. 37,41. Lipski and Archer 1984, 717
73. Lipski and Archer 1984, 706 and 800
74. Lipski and Archer 1984, 711 and 734
75. Lipski and Archer 1984, 731 and 791
76. Hume 1977, Fig V1
77. Jennings 1981, Fig 97

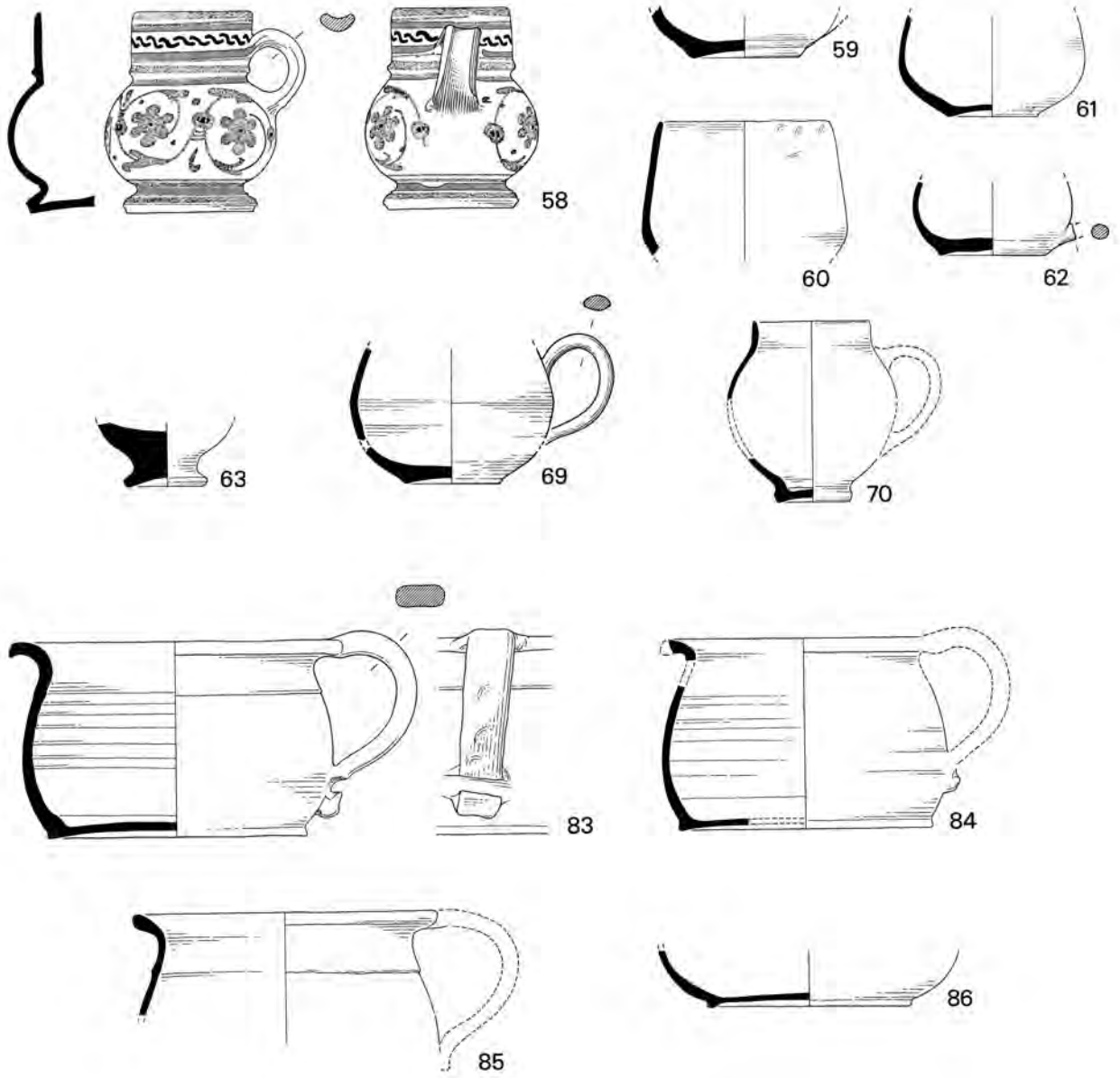


*Fig. 48 Tin-glazed ware: Group XIII, **58**; Group XIV, **59–63**; Group XV, **69**, **70**; Group XVI, **83–6** (1:4).*

speckled manganese-purple decoration first appears on a mug on one dated 1628[78] and continues as a type of decoration into the late eighteenth century. The closest parallel for this example is an undated mug inscribed "BE NOT DRUNKE" at Colonial Williamsburg.[79] Hume further illustrates two speckled mugs excavated at Radcliffe Square, Oxford[80] and discusses the general category.[81]

70 The base and rim sherds of a small mug. Buff clay with speckled manganese-purple on a white glaze. The piece is English (from London) and dates to 1645–70.
**Delft 52 (D44); W5ext 2, 2a, 2b; Phase 5*

Dated examples of the shape of this mug range from 1645 to 1667.[82] The closest parallel is a speckled manganese mug inscribed "BOYES BE MERY 1657" in the Victoria and Albert

78. Victoria and Albert Museum Catalogue No. 271–1918
79. Hume 1977, Pl 18
80. Hume 1977, Pl 23
81. Hume 1977, 20–35
82. Lipski and Archer 1984, 724 and 764

Museum.[83] A similar example was excavated in Norwich.[84] For a discussion of the decoration see **69**.

71 A base sherd of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of the decoration on this vessel see **69**, above.
Delft 55 (D44d); R2 1; Phase 8

72 A body sherd of a mug. Buff clay with speckled manganese purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of the decoration on this vessel see **69**, above.
Delft 215 (D92); W4 I/II – X4 I/II 2; Phase 5

73 A body sherd of a mug. Buff clay with speckled manganese purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of the decoration on this vessel see **69**, above.
Delft 467 (D60); X5 III/IV 10; Phase 5

74 A body sherd of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of the decoration on this vessel see **69**, above.
Delft 53 (D44b); X8 2; Phase 5

75 A fragment of a handle of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of the decoration on this vessel see **69**, above.
Delft 57 (D44e); Y6 1; Phase 8

76 A body sherd of a mug. Buff clay with manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of the decoration on this vessel see **69**, above.
Delft 93 (D504); BH D5 II 4; BH Phase 4

77 Base sherd of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of the decoration on this vessel see **69**, above.
Delft 94 (D507); BH D5 IV 5; BH Phase 4

78 A body sherd of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of this type see **70**, above.
Delft 422 (D58); Q8 2; Phase 6

79 A body sherd of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of this type see **70**, above.
Delft 468 (D59); Q8 11; Phase 5

80 Two body sherds of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70. For a discussion of this type see **70**, above.
Delft 54 (D44c); V14 3; Phase 3 (contamination)

81 A rim sherd of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70.
Delft 56 (D44); W2 5a; Phase 5

This vessel fragment is similar to **69** and **70** but is discoloured from having been buried. The slight turn out of the lip makes the closest parallel to this vessel a mug in a private collection dated 1662.[85]

82 A fragment of a handle of a mug. Buff clay with speckled manganese-purple on a white glaze. The piece is probably English (from London) and dates to *c* 1645–70.
Delft 61 (D44f); X5 III/IV 5; Phase 5

This handle is the same as that found on **69** and **70**. Handles which are triangular in section are found on mugs of the mid seventeenth century. An example dated 1660 is in the British Museum.[86]

Group XVI: Chamber pots

83 A complete chamber pot with strap handle. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the second half of the seventeenth century.
Delft 11 (D13); W2 5c=G3**; Phase 4*

Amis[87] illustrates a similar vessel, found in a seventeenth century latrine, but his piece is slightly concave and has a low foot, unlike this example, which has none.

84 Fragments of the rim and base of a chamber pot giving virtually the complete profile. Part of the handle base survives. Buff clay with white glaze on the exterior and interior surfaces. For a discussion of this vessel form see **83**, above.
Delft 282 (D144); T15 3=SA D**, T15 IV 2d=**SA D**; Phase 5. T15 IV 2; Phase 6*

83. *c* 84–1947. Lipski and Archer 1984, 736
84. Jennings 1981, 215, Fig 97, No 1526
85. Lipski and Archer 1984, 755
86. Lipski and Archer 1984, 743
87. Amis 1968, drawing 16

85 Rim fragment with a handle scar of a chamber pot. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the second half of the seventeenth century. For a discussion of this vessel form see **83**, above.
**Delft 207 (D75); W4 3, W4 II/IV 2; Phase 5*

86 The base fragment of a chamber pot. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the second half of the seventeenth century.
**Delft 208 (D75); W4 III/IV 3a; Phase 5*

Unlike **83**, above, this example of the form has a low foot.

87 The base fragment of a chamber pot. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the second half of the seventeenth century.
Delft 209 (D162); W4 II/IV 3; Phase 5
This example, unlike **83**, has a low foot.

88 A body sherd of a chamber pot. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the second half of the seventeenth century. For a discussion of this vessel form see **83**, above.
Delft 210 (D162); W4 II/IV 2; Phase 5

Group XVII: Jug

89 The base sherd of a jug. Buff clay with white glaze on the exterior and interior surfaces. The piece is English and dates to the third quarter of the seventeenth century.
**Delft 204 (D123); Q13 4; Phase 5*

The heavy potting and widely spreading foot suggest that this is part of a jug. The form can be found on examples dated 1659 and 1673.[88]

90 A base fragment of a hollow vessel (a jug or a bottle). Buff clay with white glaze on the interior and exterior surfaces. The piece is English and dates to the seventeenth century.
**Delft 82 (D71); X5 III/IV 6; Phase 5*

Group XVIII: Netherlandish Jug/Vase

91 A body sherd from a jug(?). Buff clay with pale blue glaze. This fragment is very similar to **92–5**, below, and all may form part of the same vessel. Decoration on these fragments consists of strapwork, garlands with fruit, medallions and possibly figures in yellow, manganese-purple and three shades of blue. The piece is from the Netherlands (Antwerp, possibly from the workshop of F. Frans known as Den Salm) and probably dates to 1543–63.
**Delft 84 (D41); Q1 3; Phase 5 (Plate 4)*

The form is probably a jug. A very close parallel is supplied by a large jug in the Musée du Cinquantenaire in Brussels.[89] This bears the monogram FIAB and is dated 1562. It has been attributed to the workshop of Franchois Frans at the house called Den Salm in the Cammenstraat in Antwerp. This was bought by Guido Andries for use as a pottery in 1520 and passed to F. Frans in 1543. Frans appears to have died shortly after 1562–3. Although it has been stated that the monogram cannot be that of Frans[90] and that he was not therefore responsible for these particular jugs, there can be little doubt that they were made in Antwerp, in all probability at Den Salm. The fragments are remarkably close to the Brussels jug in colouring and in sharing the same strapwork or ferronerie type of decoration as well as motifs such as medallions and bunches of fruit hanging from garlands.

92 A body sherd of a jug. Buff clay with blue glaze. Decoration consists of floral motifs in blue and manganese-purple. The piece is from the Netherlands (Antwerp, possibly the workshop of F. Frans) and dates to 1543–63. For a discussion of this fragment see **91,** above.
**Delft 85 (D41); X14 5; Phase 5 (Plate 4)*

93 A body sherd of a jug. Buff clay with pale blue glaze. Decoration consists of floral motifs in blue and yellow. The piece is from the Netherlands (Antwerp, possibly the workshop of F. Frans) and dates to 1543–63. For a discussion of this fragment see **91**, above.
**Delft 86 (D41); W12 9; Phase 5 (Plate 4)*

94 A body sherd of a jug. Buff clay with pale blue glaze. Decoration consists of strapwork in blue and yellow. The piece is from the Netherlands (Antwerp, possibly the workshop of F. Frans) and dates to 1543–63.
**Delft 87 (D41); W11 3a; Phase uncertain (Plate 4)*

95 A body sherd of a jug. Buff clay with pale blue glaze. Decoration in blue, green and yellow. The piece is from the Netherlands (Antwerp, possibly from the workshop of F. Frans) and dates to 1543–63. For a discussion of this fragment see **91,** above.
**Delft 88 (D41); X14 3; Phase 6 (Plate 4)*

88. Lipski and Archer 1984, 972 and 977
89. Dumortier 1986/5, cover and as Fig 25. Dumortier discusses the piece and the workshop of Frans
90. Dumortier 1990, 121–2

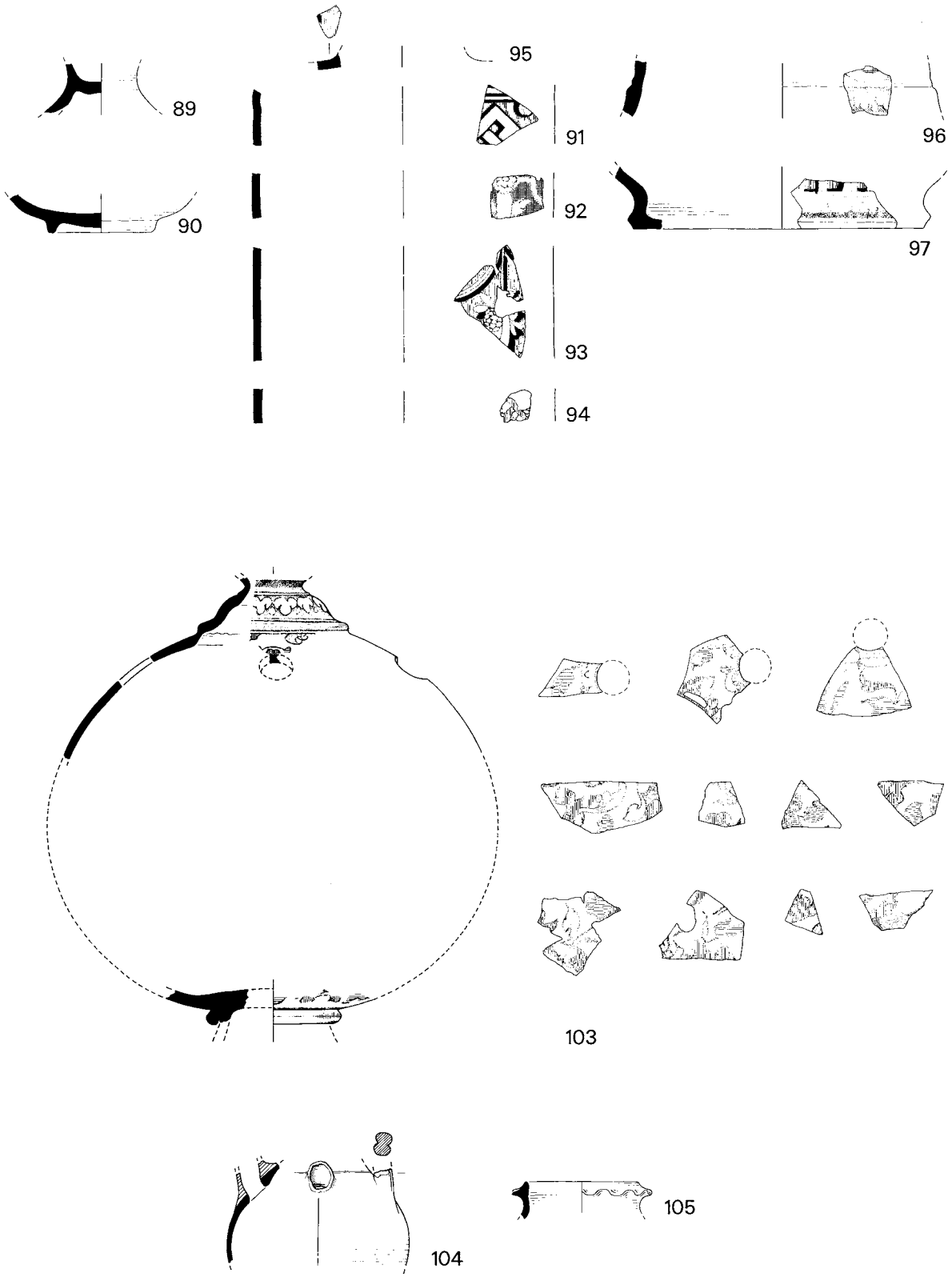


Fig. 49 Tin-glazed ware: Group XVII, ***89***, ***90****; Group XVIII,* ***91–7****; Group XIX,* ***103–5*** *(1:4).*

96 Body sherd of a jug or vase. Pinkish buff clay with pale blue glaze. Decoration consists of foliage and strapwork in yellow, orange\red, manganese-purple and two shades of blue. The interior of the vessel is blue. The piece is from the Netherlands (Antwerp, possibly from the workshop of F. Frans) and dates to 1543–63. For a discussion of this fragment see **91,** above.
**Delft 89 (D561); BH BV VI 1; BH Phase 7*

97 A fragment of the foot of a jug. Buff clay with greenish white glaze. Painted decoration on the exterior surface in blue, yellow and ochre. The piece is from the Netherlands (from Antwerp?) and dates to the third quarter of the sixteenth century.
**Delft 421 (D61); Q5 III 5; Phase uncertain*

The sharp curve above the base of this vessel suggests that it came from a large jug or jar. The yellow and ochre decoration is very similar to that found on a jug dated 1562 in the Musée du Cinquantenaire in Brussels (see **91**, above [90a]). The panels of yellow and ochre divided by the blue lines form part of a deep border of false gadrooning derived ultimately from metalwork prototypes. This was a common motif from the mid sixteenth century until at least the third quarter of the seventeenth century and was used on a wide variety of forms in the Netherlands and England. Korf outlines an approximate typology with a date range from 1525 to 1650[91] and illustrates many examples.[92] Fragments painted in this way were found at Basing House[93] and the pattern also appears on a jar in the Morgan collection,[94] an English dish in the British Museum dated 1663,[95] and on two large pharmaceutical jars dated 1647 and 1658.[96]

98 A body sherd of a jar\jug. Buff clay with greyish-white glaze on the interior surface. The exterior surface is decorated with false gadrooning(?) and lines in yellow, yellow ochre and blue. The piece is probably from the Netherlands and dates to the early seventeenth century.
Delft 442 (D55); X15 9a; Phase 6

The decoration on this fragment may be part of a band of false gadrooning similar to that on a jar in the Morgan collection.[97] The combination of colours suggests a continental rather than English origin.

99 A body sherd of a jug/jar. Buff clay with grey/blue glaze on the interior surface. The exterior surface is decorated with false gadrooning(?) in blue and brown. The piece is probably from the Netherlands and dates to the early seventeenth century. For a discussion of the decoration on this piece see **97**, above.
Delft 423 (D58); W12 9; Phase 5

100 A body sherd of a jug/jar. Buff clay with grey/blue glaze on the interior surface. The exterior surface is decorated with false gadrooning(?) in blue, yellow and ochre. The piece is probably from the Netherlands and dates to the early seventeenth century. For a discussion of the decoration on this piece see **97**, above.
*Delft 425 (D58); W13 8=**SA B**; Phase 5*

101 A body sherd of a jug/jar. Buff clay with grey/blue glaze on the interior surface. The exterior surface is decorated with false gadrooning(?) in blue, yellow and ochre. The piece is probably from the Netherlands and dates to the early seventeenth century. For a discussion of the decoration on this piece see **97**, above.
*Delft 424 (D58); X15 10=**D2**; Phase 5*

102 A body sherd of a jug/jar. Reddish buff clay with dull white glaze on the exterior surface. The interior surface is unglazed. The exterior surface is decorated with false gadrooning(?) in blue. The piece is Netherlandish or English and dates to the second half of the sixteenth or the first half of the seventeenth century. For a discussion of the decoration on this piece see **97**, above.
Delft 434 (D99); Q9 I 4; Phase 5

Group XIX: Flower vases

103 Fragments of a large closed mouth vessel. Buff clay with marked greenish glaze, painted in blue, ochre, turquoise and green, on a white background. The vessel is from the Netherlands and probably dates to the second half of the sixteenth century.
Delft 18 (D11, 12, 141); X15 10=D2**; X15 IV 3, X15 IV 5a, X15 IV 8; Phase 5 (Plate 5)*

This enigmatic object appears to have been of globular form with a series of circular holes in the body. No vessel of this exact shape appears to have survived, but two vases in the Museum of London may have some relevance here.[98] These are wide mouthed urn shaped vases on pedestal feet, with handles, and circular holes in the shoulder. They appear to have been intended

90a. Dumortier 1985/6, Fig 25
91. Korf 1981, 48
92. Korf 1981, Figs 375, 377, 382–386, 421, 423–429, 545, 546, 566, 743
93. Moorhouse 1970, Figs 20, 249 and 250
94. Archer and Morgan 1977–79, No 3
95. Lipski and Archer 1984, No 46
96. Lipski and Archer 1984, 1592 and 1594
97. Archer and Morgan 1977–79, Pl V
98. Britton 1987, Pls 52 and 55

for the display of cut flowers. Vessels of a variety of shapes intended for this purpose were made in England and Holland in the late seventeenth and in the eighteenth centuries[99], but the Nonsuch vase must have been made much earlier. The colours and foliage with which it is painted are similar to those found on a dish dated 1583 in the British Museum[100] and on Anglo-Netherlandish tiles of the late sixteenth and early seventeenth centuries.

104 Two body sherds from a flower vase. Buff clay with a white glaze on the inner and exterior surfaces. The vessel is English (from London), dating to the second half of the sixteenth century.
**Delft 414 (D163); W5ext 2a; Phase 5*

These fragments are from a hollow vessel with a nozzle and some form of handle or horn. The smallness of the nozzle aperture and its nearly vertical angle show that it belonged to a flower vase rather than a drug pot intended for liquids, the other most likely container. Such pots must have been largely if not exclusively limited to the premises of chemists and druggists and would therefore be unexpected in the context of Nonsuch. Flower vases had wide mouths and three nozzles with curling horns between them. Dated examples range from 1650 to 1683.[101] The form was found in Southwark.[102] For a discussion of the type see Archer and Morgan (1977–79).[103]

105 A "wavy" rim fragment of a flower vase. Buff clay with white glaze on the exterior and interior surfaces. The piece is English (from London) and dates to the second half of the seventeenth century.
Delft 63 (D145); Q14 III 5=SA G**; Phase 5*

The mouth of virtually all surviving flower vases is rounded but an example in the Lipski collection[104] had a vertical flange like this example. The undulating lip was common on flower vases throughout the period of their popularity. For further discussion of this vessel form see **104**, above.

106 A body sherd with a "spout" of a flower vase. Buff clay with white glaze on the exterior and interior surfaces. The piece is English (from London) and dates to the second half of the seventeenth century. For a discussion of this vessel type see **104**, above.
Delft 383 (D139); X5 III\IV 2; Phase 6

Group XX: Netherlandish/English drug jars

Introduction

One of the most characteristic products of the tin-glaze potteries were the vessels which have come to be called drug jars. They were made in large quantities for the pharmacies of religious institutions and for the shops of apothecaries. The majority were decorated, often very elaborately, and frequently with the name of their contents painted on the exterior. The were basically of two shapes, one intended for dry preparations and the other for liquids. The former were normally about ten to twelve inches high, pinched in below the mouth and above the foot. They were often made with a distinctive in-curving "waist" at the middle, presumably to make them easier to grasp. The latter had a strap handle and a tubular spout. These two shapes of drug jar were widely made in Italy and emigrant potters continued to produce them in the Netherlands and subsequently in England. Although it is sometimes difficult to disentangle Italian and Netherlandish jars of the sixteenth century, there are some[105] which can be shown to have been made in the North in the second quarter of the century, on the basis of the similarity between the pattern with which they are decorated and that on a tile pavement at the Abbey of Herckenrode. In shape, however, jars of this sort are of the distinctive waisted Italian albarello type. By the seventeenth century Italian influence began to wane and by the 1650s quite distinctive northern types of drug jar shape and decoration had evolved for which a reasonably reliable chronology can be established.

Unfortunately, this is not the case with the much simpler jars produced in parallel with the larger and more ornate specimens. These more humble vessels were made in enormous numbers

99. Archer 1976
100. Korf 1981, Fig 51
101. Lipski and Archer 1984, 1564 and 1567
102. Hume 1977, Fig V1
103. Archer and Morgan 1977–79, 66–67
104. Sotheby 10\03\1981, lot 13
105. Antwerps Plateel 1971–1972, Pls 26 and 28.

and, when decorated at all, are painted solely with comparatively simple geometric patterns in a narrow range of colours. They are normally much smaller than true drug jars, ranging in height from about seven or eight inches to little more than one inch. Frequently they are wider than they are tall, and are always cylindrical. Their lack of spouts shows that they were not intended for the storage of liquids. Although some were no doubt used for drugs there is plenty of evidence to show that they were put to other uses. A mid-seventeenth century artist's paints chest in the Rijksmuseum in Amsterdam shows that they were used to hold colours, and they can be seen similarly employed in a portrait of an old woman by Arent de Gelder (1645–1727) in the Staedel Gallery in Frankfurt. A small white jar of the same shape appears in a self portrait of about 1665 by Gabriel Metsu (1629–67), in the Royal Collection, where it is used as a water pot.

The larger jars of simple type can also be shown to have been used for a variety of purposes. A portrait by Zoffany dated 1772, also in the Royal Collection, shows John Cuff, an optician, polishing a lens in his workshop. On a shelf above his head is a row of white jars painted with bands of blue, doubtless with contents relevant to his craft. It seems likely that this whole category of so-called drug jars were much more often used for domestic storage than for housing medicines.

Besides giving a clue as to how these jars were used, the Cuff portrait also shows how simple their shape and how perfunctory their decoration had become by 1772. Fragments excavated by Garner, now in the Victoria and Albert museum, and others from the Norfolk House site, Lambeth[106] show that by the early eighteenth century, if not before, the only decorative motifs used were bands, dots, dashes, crosses, chain pattern and pyramids of straight or curved strokes, normally painted in blue but sometimes with the addition of manganese purple. The shapes of the jars had also been standardised, with straight or slightly convex sides, lightly pinched in below the mouth and above the foot or everted at the mouth only.

At the beginning of the northern tradition of drug jar manufacture, in the mid sixteenth century, jars were of much more curving outline, closely following the albarello form. The patterns used were far more complex, and besides blue and purple, a bright yellow and strong mid ochre were used. There need be little doubt about the dating of a jar to either 1600 or 1700 as the differences are considerable, not least in consistency and colour of glaze; irregular and yellowish-buff earlier, smooth and white later. However between these extremes there are very few fixed points, particularly as the simpler patterns continued to be used over a very long period of time. One of these points of reference is supplied by a jar found in Tokyo in the tomb of Tokugawa Hidetada who died in 1632.[107] It is only possible to suggest the various slow changes which took place as the seventeenth century progressed. As far as shape is concerned, the pronounced waist of the albarello becomes significantly rarer after the middle of the century, as does the sharp delicate turning of curves at mouth and foot. Hume has pointed out[108] that the proportions of the smaller ointment pots changed in the second half of the seventeenth century and instead of sharing the same profile as the larger pots, as they had done hitherto, they became as broad as they were tall. The more vertical type, which were taller than they were wide, disappeared. By the eighteenth century jars tend to become simple cylinders with few curves and the turning is altogether blunter where it takes place at all. The limited range of colours used is restricted to blue and manganese in the latter part of the seventeenth century and the painted patterns become much simpler, broader in execution, and more stereotyped as the century progresses. In general terms the more complex and carefully painted the pattern, the wider the palette and the more curvaceous and precisely turned the jar, the earlier it is likely to be, and the greater the chance that it is of continental origin.

In the following catalogue entries the accepted term 'drug jar' has been used rather than

106. Bloice 1971, Fig 58
107. Oranda 1987, Cat. No 26
108. Hume 1977, 25

'storage jar', which is probably more correct. Similarly 'ointment pots' have not been separately identified. The vessels are arranged in chronological order, and no distinction is made in the groups between those vessels manufactured in England or the Netherlands. The origin of each vessel is suggested in the discussion of each piece.

107 Three joined body sherds of a drug jar. Pale reddish clay with a white glaze on the exterior surface. The interior surface is unglazed. The exterior is decorated with foliage, fruit and abstract patterns in blue, green, yellow and blackish blue. The piece is possibly Netherlandish and probably dates to the first half of the sixteenth century.
**Delft 513; X16 2; Palace ground level*

There are some slight parallels between this fragment and a jar in the Victoria and Albert Museum[109] of continental origin. Although in a generically Italian manner, the Nonsuch piece is more likely to be Netherlandish or even French, rather than Italian.

108 A number of fragments of the rim and body of a drug jar. Red clay with buff glaze. The exterior surface is decorated in blue and ochre paint. The piece is Netherlandish (probably from Antwerp) and dates to the mid sixteenth century.
Delft 41 (D33); W5ext 2d=G5**; Phase 4. V8 5a, W5 4=**D1**, 4a=**D1**, W5ext 2a; Phase 5. W5 1; Phase 8*

A closely similar jar found at Bergen op Zoom is illustrated by Korf,[110] who dates it to the mid sixteenth century. A drug jar with comparable decoration was found in Antwerp [111] and another identical to it, perhaps the same jar, is illustrated by Korf who dates it to the second quarter of the sixteenth century.[112] The strong red colour of the body of the Nonsuch piece points to a continental origin and the pronounced concave waist and shoulder suggests an early date as does the sharp rim. The curling tendril-like lines often occur on vessels which can be attributed to the Netherlands.

109 Fragments of the rim and body of a drug jar. Buff clay with a white glaze. The exterior surface is decorated with foliage in blue. The piece is probably Netherlandish and dates to the late sixteenth to early seventeenth century.
Delft 62 (D48); S1 12=G1, S1 13=G31**; Phase 4*

The decoration on this jar and its shape have general similarities to **108**. However its buff body and whitish glaze suggest a different place of manufacture and a slightly later date.

110 A number of fragments of a virtually complete drug jar. Buff clay with a greenish white glaze. The exterior is decorated with linear patterns in blue. The piece is Netherlandish and dates to the early seventeenth century.
Delft 80 (D40, 85); T7 III 3=G26**, T7 III 4=**G26**; Phase 4. CH.XVIII 2; Phase 5. CH.XVII 2; Phase 7*

The pattern around the centre of this jar is known, with slight variations, on three narrower more vertical jars. One example was found at Basing House[113] and another is in the Rijksmuseum[114] and a third was found in the Korte Nieuwstraat, Antwerp.[115] The closest parallel, however, is a jar found in London[116] which is identical but with differing bands of pattern at the mouth and the foot and with the addition of ochre in the colour scheme. The sharp turning and pronounced waist of this example suggest an early date.

111 A complete drug jar. Buff clay with greyish glaze. The exterior surface is decorated with horizontal blue rings with a central band of manganese purple strokes and a pale yellow zig-zag. The piece is Netherlandish or English and dates to the early seventeenth century.
Delft 6 (D9); W4 II/IV 3a=G4**, W4 II/IV 4=**G4**; Phase 4. W4 II/IV 2, W4 II/IV 3; Phase 5 (Plate 3)*

The profile of this jar, particularly the pronounced waist, suggests an early seventeenth century date. The painted pattern can be compared with a jar in the Morgan collection.[117]

112 Rim sherd of a drug jar. The nature of the fabric and the glaze are uncertain because the piece has been burnt. The piece is Netherlandish or English and dates to the early seventeenth century.
**Delft 45 (D38); U14 5; Phase 5*

The profile of this fragment suggest an early seventeenth century date for this piece. The painted pattern can be compared with a jar in the Morgan collection.[118] See also **111**, above.

109. Antwerps Plateel 1971–1972, 300–1938, Fig 25
110. Korf 1981, Fig 337
111. Rackham 1926, Pl 36 c
112. Korf 1981, Fig 159
113. Moorhouse 1970, Fig 20, No 234
114. Korf 1963, Fig 80
115. Antwerps Plateel 1971–1972, cat.41
116. Britton 1987, Pl 22
117. Archer and Morgan 1977–79, 1
118. Archer and Morgan 1977–79, 1

113 A fragment of the rim of a drug jar. Buff clay with white glaze. The exterior surface has linear decoration in blue. The piece is Netherlandish or English and dates to the early seventeenth century. For a discussion of this vessel type see **111**, above.
**Delft 111 (D114); X8 2; Phase 5*

114 A complete drug jar. Buff clay with cream glaze. The exterior is decorated with yellow bands above and below foliage ornament, the rest of the design is in blue. The piece is Netherlandish and dates to the early seventeenth century.
**Delft 10 (D6); W1 5c; Phase 5 (Plate 3)*

The band of running foliage around the centre of this jar is most unusual and is painted with some care, suggesting a Netherlandish origin. Vague similarities of decoration exist between it and a jar in the British Museum[119] and one illustrated by Rackham.[120]

115 A body sherd of a drug jar. The nature of the fabric and glaze of this piece is uncertain because it has been burnt. The exterior surface is decorated in blue and ochre. The piece is Netherlandish or English and dates to the early seventeenth century.
**Delft 46 (D172); U14 5; Phase 5*

116 An almost complete drug jar from which only the rim is missing. Reddish clay with a dull white glaze. The exterior surface is decorated in blue and manganese-purple. The piece is probably Netherlandish and dates to the early seventeenth century.
Delft 481 (D10); W2 5d=G3**; Phase 4 (Plate 6)*

The colour of the body suggests a continental origin and the shape indicates an early seventeenth century date. A jar of the same size with similar decoration and colours, but with a much higher foot was found in the Schoenmarkt, Antwerp.[121]

117 The upper part of a drug jar. Buff clay with white glaze. The exterior has ochre and blue bands. The piece is Netherlandish or English and dates to the early seventeenth century.
**Delft 36 (D26); W4 II/IV 2; Phase 5 (Plate 6)*

118 A complete drug jar. Buff clay with buff glaze. The exterior surface has geometric decoration in blue and ochre. The piece is Netherlandish or English and dates to the early seventeenth century.
Delft 32 (D27); W4 II/IV 4a=G4**; Phase 4. W4 II/IV 2, W4 I/II/X4 I/III 2; Phase 5*

Virtually the same pattern of decoration can be found on three other published examples.[122]

119 A fragment of the rim (diameter *c* 80mm) of a drug jar. Buff clay with buff glaze. The exterior surface has linear decoration in blue. The piece is Netherlandish or English and dates to the early seventeenth century.
Delft 48 (D117); Y5 III/IV 1; Phase 8

For a number of parallels see **118**, above.

120 A body sherd of a drug jar. Buff clay with greyish glaze. The exterior surface has linear decoration in blue, yellow and manganese purple. The piece is Netherlandish or English and dates to the early seventeenth century.
**Delft 34 (D30); W4 I/II/X 4 I/III 2; Phase 5 (Plate 6)*

The simple interlinked zig-zag pattern on this fragment is known on a jar in a private collection in Amsterdam[123] and in the Museum of London.[124] The appearance of ochre and purple in addition to blue on such a small jar suggests a date early in the seventeenth century.

121 A body sherd of a drug jar. Buff clay with buff glaze. The exterior surface has linear decoration in blue, ochre and manganese purple. The piece is Netherlandish or English and dates to the early seventeenth century. For a discussion of this vessel type see **111**, above.
**Delft 33 (D54); Unstratified (Plate 6)*

122 A complete drug jar. Buff clay with a creamy white glaze. The exterior surface is decorated with a band of foliage between horizontal bands in blue. The piece is probably English and dates to the second quarter of the seventeenth century.
Delft 1 (D1); P/Q 15/16 16=G19**; Phase 4*

Three comparable jars have been excavated in Norwich[125] and can be dated to *c* 1625–50. A fragment showing a similar pattern to the central band was found at Basing House.[126]

123 A complete drug jar. Pinkish white glaze. The piece is probably English and dates to the second quarter of the seventeenth century.
*Delft 515 (D15); U7 8=**G9**; Phase 4

This jar is similar in shape to an example in the British Museum[127] decorated with "birds-on-rocks derived from Chinese porcelain of the Wan Li period. It is therefore likely to date to the

119. 99, 5–8, 52
120. Rackham 1926, Pl 37.a
121. Antwerps Plateel 1971–1972, cat.42
122. Antwerps Plateel 1971–1972, cat.41. Moorhouse 1970, Fig 20, No 234. Wylde 1905, Pl IV, No 27
123. Korf 1963, Fig 84
124. Britton 1987, Pl 19
125. Jennings 1981, 1458, 1480 and 1481
126. Moorhouse 1970, Fig 20, No 240
127. E.106

Fig. 50 Tin-glazed ware: drug jar ***122****, decorated with foliage between horizontal bands, probably English, second quarter 17th century (cf Fig 51).*

second quarter of the seventeenth century, but it might be earlier or later.

124 A fragment of the rim of a drug jar. Buff clay with degraded white glaze. The exterior has linear decoration in blue. The piece is Netherlandish or English and dates to the first half of the seventeenth century.
Delft 30 (D35); U7 8=G9**; Phase 4. T8 2; Phase 6*

The decoration on these fragments shares the motif of curving blue strokes diminishing in size in pyramid form with a jar in the Museum of London found in Lexington Street, Westminster.[128] This particular motif became very popular on late seventeenth and eighteenth century drug jars found in London, but the delicacy of potting and the pronounced waist of these fragments point to an early to mid seventeenth century date.

125 A number of rim and body sherds of a drug jar. Buff clay and blueish glaze. The exterior surface has decoration in blue and orange. The piece is English and dates to the first quarter of the seventeenth century.
**Delft 433 (D99); Q9 I 4; Phase 5. Q8 2; Phase 6.*

The fine quality and blueish colour of the glaze suggest a seventeenth century date for this piece. The presence of a colour other than blue and a pattern around the waist of curving strokes as well as a sharply turned mouth point to a date in the first half of the seventeenth century.

126 A fragment of the base of a drug jar. Buff clay with white glaze. The exterior surface is decorated in blue and orange. The piece is English and dates to the first half of the seventeenth century.
**Delft 38 (D28); W4 4; Phase 5*

The similarities between this fragment and **125**, above, suggests a comparable date. The pattern and profile of this fragment is similar to an example found at Basing House.[129]

127 A large fragment of the base of a drug jar. Buff clay with white glaze. The exterior surface is decorated in blue. The piece is English and dates to the first half of the seventeenth century. For a discussion of this vessel type see **126**, above.
**Delft 31 (D29); W4 I/II 4; Phase 5*

128 A fragment of the base of a drug jar. Buff clay with a white glaze. The exterior surface decoration in blue and manganese-purple. The piece is English and dates to the first half of the seventeenth century.
**Delft 430 (D53); X8 2; Phase 5*

This vessel is similar in shape to **126**.

129 The complete base of a small drug jar. Buff clay with a white glaze. The piece is English and dates to the mid-seventeenth century.
Delft 428 (D64); Q13 (?for 14) III 5=SA G**; Phase 5*

Small undecorated jars and ointment pots are very difficult to date. A chronological typology has been published by Hume[130] and this taken with his commentary suggests a mid seventeenth century date for this vessel. It is unlikely that by this date such small and insignificant pots would have been imported.

130 A complete drug jar. Buff clay with a white glaze. The piece is probably English and dates to the mid to second half of the seventeenth century.
Delft 13 (D16); T7 III 3=G26**; Phase 4*

131 A body sherd of a drug jar. Buff clay with a white glaze. The exterior has decoration in blue and manganese-purple. The piece is probably English and dates to the second half of the seventeenth century.
**Delft 418 (D56); Q3 I 3; Phase 5*

The fabric, glaze and pigments of this fragment are very similar to those on **132**, below.

132 A fragment of the base of a drug jar. Buff clay with a white glaze. The exterior surface has decoration in manganese-purple. The piece is probably English and dates to the second half of the seventeenth century.
**Delft 435 (D536); BH E6 II 6; BH Phase 3*

The fabric, glaze and pigments of this vessel are very similar to those on **131**, above.

128. Britton 1987, 24
129. Moorhouse 1970, Fig 19, No 232
130. Hume 1977, Fig IV

133 A fragment of the rim of a drug jar. Buff clay with white glaze. The exterior surface has linear decoration in blue and manganese-purple. The piece is Netherlandish or English and dates to the second quarter of the seventeenth century.
Delft 40 (D39); S1 12=G31**, S1 13=**G31**; Phase 4. S1 11; Phase 5*

The fine white glaze with a pink tinge and the rounded sides suggest a date in the second half of the seventeenth century.

134 A complete small drug jar. Buff clay with a white glaze. The piece is English and dates to the late seventeenth or early eighteenth centuries.
**Delft 12 (D18); S1 11; Phase 5*

For a comparable vessel see **135**, below.

135 A complete small drug jar. Buff clay with a white glaze. The piece is English and dates to the latter part of the seventeenth or early eighteenth centuries.
**Delft 427 (D521); BH D6 IV 12; BH Phase 3*

For a comparable vessel see **134**, above.

136 A complete drug jar. Buff clay with a white glaze. The exterior surface has decoration in blue. The piece is English and dates to the latter part of the seventeenth or early eighteenth centuries.
Delft 2 (D5); T7 III 3=G26**, T7 III 5=**G26**; Phase 4. CH XVIII 2; Phase 5*

Hume illustrates a comparable example painted in blue and purple[131] and proposes a date of *c* 1630–70. Jars with continuous chain patterns in blue only on a brilliant white glaze were made in England well into the eighteenth century. This vessel, also in blue only, but with a slightly darker glaze seems likely to be of an intermediate date.

137 A complete drug jar. Buff clay with a white glaze. The exterior surface has decoration in blue. The piece is English and dates to the latter part of the seventeenth or early eighteenth centuries.
Delft 3 (D3); T7 III 3=G26**; Phase 4*

This vessel is comparable to **136**, above.

138 A large fragment of the base of a drug jar. Buff clay with a white glaze. The piece is English and dates to the latter part of the seventeenth or early eighteenth centuries.
**Delft 431 (D65); W2ext 3; Phase 5*

The shape of this drug jar is comparable with one excavated in London which Hume[132] dates to 1700.

139 Fragmentary small drug jar. The complete profile survives on one side. Buff clay with a white glaze. The piece is English and dates to the latter part of the seventeenth or early eighteenth centuries.
Delft 37 (D32); W12/13 8=G11**; Phase 4*

For a comparable vessel see **138**, above.

140 A fragment of the base of a drug jar. Buff clay with a white glaze. The piece is English and dates to the latter part of the seventeenth or early eighteenth centuries.
Delft 136 (D111); X5 III/IVext 6a; Phase 5

Comparable to **138**, above, but of even less pronounced outline.

141 A complete small drug jar. Buff clay with a white glaze. The vessel is English and dates to the latter part of the seventeenth or early eighteenth centuries.
**Delft 426 (D66); X8 4; Phase 5*

142 A fragment of the rim of a drug jar. Buff clay with a white glaze. The exterior surface has decoration in blue and manganese-purple. The piece is English (from London) and dates to the late seventeenth or the first half of the eighteenth century.
Delft 432 (D51); Q13 (?for 14) III 5=SA G**; Phase 5*

Fragments of jars with comparable chain patterns were found on the kiln site at Norfolk House, Lambeth.[133] A complete example is illustrated by Wylde.[134] Hume has suggested[135] a late seventeenth century date for a jar from London with a comparable pattern, but acknowledges that such pieces were made well into the eighteenth century. The smooth and efficient glaze point to an eighteenth century date for this piece.

143 A body sherd of a drug jar. Buff clay with a white glaze. The exterior surface has decoration in blue and manganese-purple. The piece is English (from London) and dates to the late seventeenth or the first half of the eighteenth century.
Delft 44 (D122); Z5 I/II 2; Phase 6

Comparable decoration of lines and dots appears on fragments from Norfolk House, Lambeth.[136] The glaze and colours are comparable with **142**, above.

144 A fragment of the base of a drug jar. Buff clay with a white glaze. The exterior surface has decoration in blue. The piece is English (from London) and dates to the late seventeenth or the first half of the eighteenth century. For a discussion of this vessel type see the entries for **142** and **143** above.
**Delft 429 (D52); Q1 3; Phase 5*

131. Hume 1977, Fig V, No 7
132. Hume 1977, Fig 3, No 14
133. Bloice 1971, Fig 58
134. Wylde 1905, Pl IV, 6
135. Hume 1977, Fig V and page 66
136. Bloice 1971, Fig 58

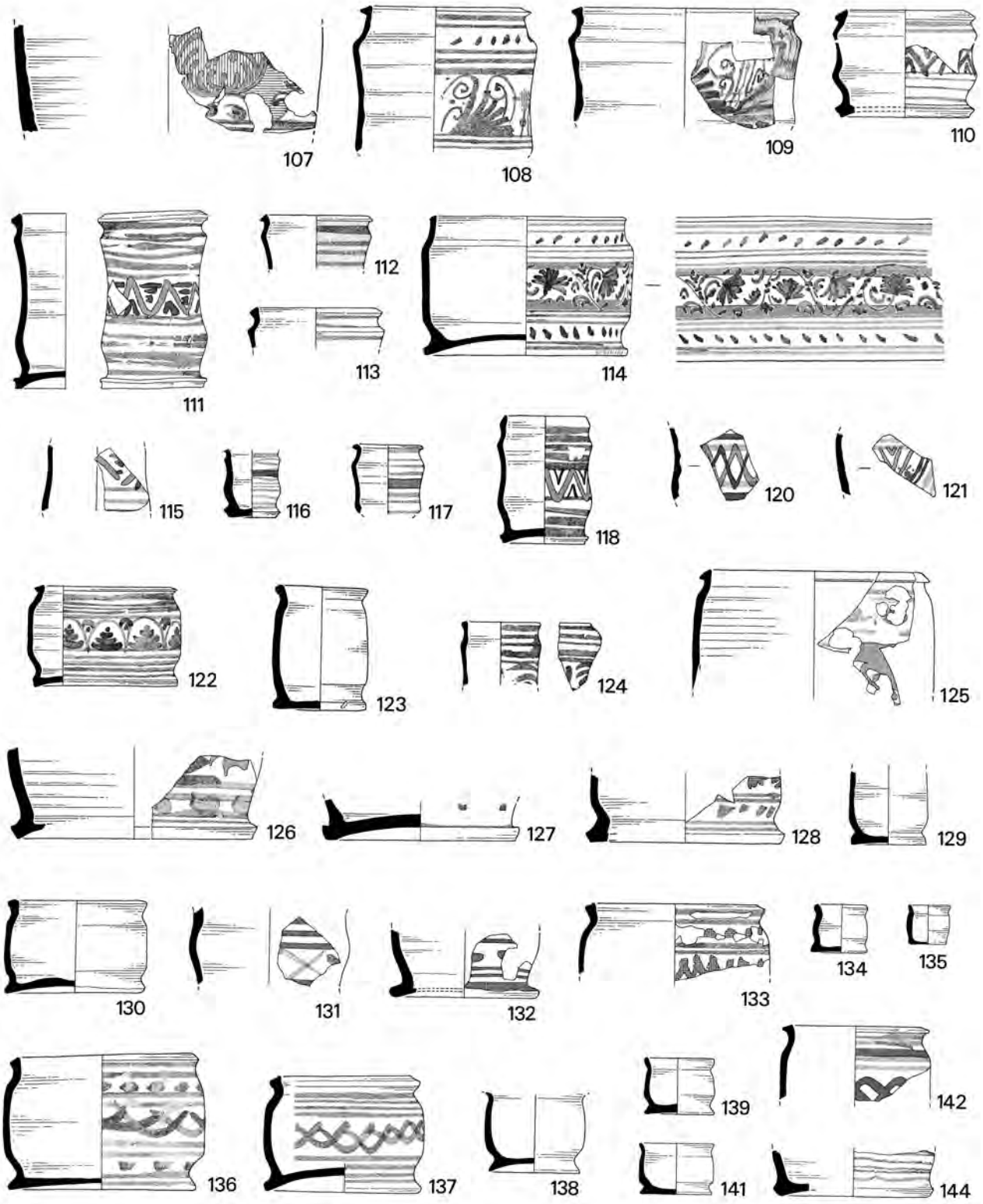


Fig. 51 Tin-glazed ware: Group XX, ***107–18***, ***120–39***, ***141–2***, ***144*** *(1:4).*

Group XXI: Storage Jars

145 Sherds giving the complete profile of a storage jar. Buff clay with a white glaze. The piece is English (from London) and dates to the latter part of the seventeenth or early eighteenth centuries.
**Delft 211 (D67); W5 2b; Phase 5*

Glazed fragments of directly comparable vessels have been found in Lambeth.[137]

146 **S**herds giving the complete profile of a storage jar. Buff clay with a greenish glaze. The piece is English (from London) and dates to the latter part of the seventeenth or early eighteenth centuries. For details of comparable material see **145**, above.
**Delft 213 (D68); W5 2b; Phase 5*

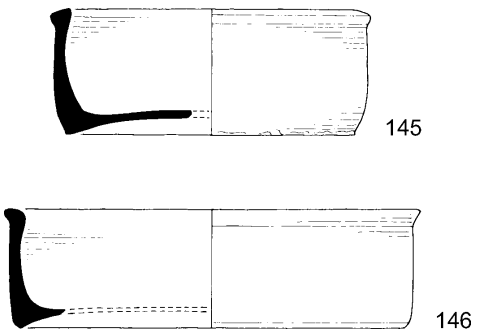


Fig. 52 Tin-glazed ware: Group XXI, ***145–6*** *(1:4).*

137. Bloice 1971, Fig 55

4

STONEWARE

by Robin J. C. Hildyard

(Plate 7; Figs 53–68)

i. Introduction

Since the period between the building and destruction of Nonsuch Palace almost exactly parallels that of the rise and decline of imported brown salt-glazed stoneware from Cologne and Frechen, it is not surprising that, apart from a few fragments of Raeren-type mugs with thumbed *Wellenfuss* bases, an armorial medallion (now lost) dated 17?? (**91**) which it is difficult to attribute, two small pieces of armorial frieze from a Raeren panel jug, and a small piece of late seventeenth century blue and grey Westerwald vessel, all the excavated pots and fragments are typical Cologne-Frechen products. A number of these pieces bear scars and dents which must categorise them as 'seconds', mentioned by the bottle dealer William Simpson in his agreement of 1594/5 as 'corse potts'.[1] Even bearing in mind the existence of a *Bartmann* with Elizabethan royal Arms in the Victoria and Albert Museum, said to have been found at Hampton Court,[2] the presence at Nonsuch of one medallion with the Stuart arms does not seem to imply that stoneware with royal armorials, or indeed stoneware of superior quality, was ordered specifically for royal households. It would seem, rather, that stoneware at Nonsuch, though present in quantity, was confined to the cellar, kitchen and servants' hall, and that any silver-mounted pieces such as the 'Eight stone Juges trijmmed with silver and guilt' recorded in the 1601 inventory at Hardwick Hall,[3] were either removed or shared the fate of all but one of the mounted stoneware 'jugges' recorded in Queen Elizabeth's inventory of 1574, which are known to have been sent to the Mint for melting down in 1600.[4]

As there is little to be said of the hundreds of plain body-sherds, only pieces large enough to provide a body shape, or pieces with decoration, have been included in the catalogue. Unhappily a box containing the most interesting medallions has been mislaid, and although the surviving drawings have been included as an appendix to the present catalogue, it is not possible to offer more than brief comments.

No reference is made to the types of Holmes (1951) and Stanbury (1974), since the stylistic development of *Bartmann* masks – a traditional decorative motif whose exact form on any

1. Gretton family archives, Leicestershire Record Office. Reproduced by Henstock 1975
2. Museum No. 457–1903. Now on loan to Hampton Court
3. Boynton 1971
4. Collins (ed) 1955, 446

Fig. 53 Stoneware: undecorated Frechen jugs (from right to left) ***2***, ***4***, ***5***, *1550–75 (cf Fig 55).*

particular pot at any particular time was always subject to the whim of the potter, the ability of the mould maker and the availability of new or old moulds – is now considered a less reliable guide to dating than the body profile. It is nonetheless possible to see the general degeneration of the *Bartmann* mask in the fragments from Nonsuch. The grave, crisply-modelled masks of the third quarter of the sixteenth century give way to the smaller, enigmatically smiling versions of the end of the sixteenth century, when they become increasingly abstract, with leonine features, ladder eyebrows and ladder mouths; and in the early seventeenth century, with palmette beards, saw-tooth eyebrows and wheels at the corners of the mouth. From at least 1613 the debased, hour-glass mouth gradually becomes standard, associated after about the middle of the seventeenth century with the paint-brush beard.

The change from the early naturalistic modelling of the *Bartmann* mask to the later linear types with sharp, jagged features, may perhaps reflect the change from fired clay moulds, produced from a sand-stone master-mould, to the use of plaster of Paris moulds which Göbels[5] has suggested took place around 1570. Plaster moulds for the later types of mask may even have been carved directly.

Medallions follow the same decline in quality: the large, round armorials with crest and supporters reducing gradually to smaller, schematic versions in the seventeenth century, which are often no more than collections of meaningless heraldic elements, and ultimately to the oval medallions containing one bold motif such as a rosette, crowned heart, lion rampant, or fleur-de-lys. The medallions at Nonsuch include examples of common, identifiable types, such as the arms of Amsterdam and Cologne, but the majority are probably decorative inventions.

The vessels, consisting wholly of drinking mugs and storage bottles, are unremarkable. Frequent cleaning of the garderobes may account for the comparatively few fragments of mid sixteenth century date or earlier (a body sherd, now lost, of a small Cologne jug with applied trailing rose, and a small sherd with one oak leaf, also lost,[6] may be dated 1500–1550). It would be hazardous to draw conclusions from the survival of particular pots. For example, a number of large capacity *Bartmänn*er, with three medallions around the belly, have all been completely broken, whereas several earlier mugs, smaller and more robust, have survived intact.

5. Göbels 1980, 17–18

6. Q5 I 2; Phase 5 (not drawn)

Amongst the plain fragments were pieces of typical eighteenth century London storage bottles, found on the site of the Banqueting House and outlying buildings. These have been included in the catalogue, whereas the few pieces of early nineteenth century English stoneware, such as the fragments of marked blacking bottles which may have been dumped on the site have been omitted. As there were no English stonewares which could pre-date the demolition of Nonsuch, and as there was but one small fragment (not catalogued) of the blue and grey Westerwald mugs and jugs which were common in the last quarter of the century, it would seem that little, if any, stoneware was acquired during the final phase of the palace occupation.

The catalogue, representing a small part of the total of almost one thousand sherds or vessels recovered from the palace or Banqueting House, has been divided into three main groups, according to the place of manufacture: Frechen, Cologne and England. These are further subdivided by date, and are arranged in trench and layer order, with the plain separated from the decorated wares.

Since the completion of this chapter in 1994, David Gaimster has published the first monograph in the English language on the subject of German stoneware.[6a] Although the decoration and masks of *Bartmänner* are not singled out for special study, there are many illustrations and line drawings, while the trade in Rhineland stoneware from Holland to England is extensively explored. More recently, Ivor Noël Hume has included discussion of stoneware bottles, both German and English, in his recent book on British household pottery.[6b]

ii. CATALOGUE: FRECHEN VESSELS

Group I: 1550–1575
Undecorated fabrics

1 A number of joined fragments of a substantially complete small jug with a strap handle, collar neck, grooved rim and a cordon at the base of the neck.
Grey buff fabric. The exterior surface has a freckled yellow brown glaze. Buff surface below the dip line. The surface is heavily salted, but is lightly glazed on the interior. There are wire marks on the base.
Similar vessels have been found at Frechen[7] and Norwich.[8]
Stoneware 4 (S101/B 158); U8 3=Great cellar,** W4 II/IV 4a=**G4**; Phase 4*

2 A number of joined fragments of a substantially complete jug with a deformed handle, collar neck, grooved rim and a cordon at the base of the neck.
Grey fabric. The exterior has a generally brown glaze freckled in places. The interior is unglazed and pinkish. There is a large scar on the front and wire marks on a concave base.
For a list of comparable material see **1**, above.
Stoneware 5 (S85/B 158); W1 5a=G2,** W1 5d=**G2;** Phase 4*

*Fig. 54 Stoneware: undecorated Frechen jug **8**, 1550–1600 (cf Fig 55).*

3 A number of fragments of an almost complete small jug with a collar neck, grooved rim and cordon at the base of the neck.

6a. Gaimster 1997
6b. Hume 2001

7. Hurst *et al* 1986, 216–217, No 332, Fig 106
8. Jennings 1981, 119–120, No 801, Fig 49

Grey fabric. The exterior surface has a patchy brown freckled "tiger" and grey glaze with a dip line near the base. The interior is grey glazed. There are body scars and the rim is distorted. Wire and circular "stacking" marks are visible on the base.
A similar jug in the Museum of London[9] is even more distorted than this example. For a list of further comparanda see **1**, above.
Stoneware 3 (S104/B 116); W4 II/IV=G4**; Phase 4*

4 A complete small strap handle jug with collar neck, grooved rim and cordon at the base of the neck.
Grey fabric. The exterior surface has a freckled brown glaze with a lighter patch below the dip line. Heavily salted surface. The interior is brown glazed. There are small scars on the body. Wire and "stacking" marks are visible on the base. The base edges of the vessel show signs of having been ground to remove excess glaze.
For a list of comparable material, see **1**, above.
Stoneware 6 (S106/B 158); W5ext 2d=G5**; Phase 4*

5 A complete strap handle jug with a grooved rim with a cordon below.
Grey fabric. The exterior surface has a speckled olive brown glaze with a faint dip line near the base. The interior is unglazed. Wire and square "stacking" marks are visible on the base.
This vessel is unusual in that jugs with a similar form are usually decorated. The Museum of London has a jug with a similar form.[10] An example was also found at Norwich.[11]
Stoneware 1 (S107/B 116); W4 II/IV 4=G4**; Phase 4*

6 A complete strap handle jug with three thumb indentations on the lower terminal, and a grooved rim with a cordon below.
Grey fabric. The exterior surface has a speckled olive brown glaze with a faint dip line near the base. The interior surface is unglazed. Wire and square "stacking" marks are visible on the base.
This vessel is unusual in that jugs with a similar form are usually decorated. For a list of comparable material see **5**, above.
Stoneware 2 (S173); W4 II/IV 4=G4**; Phase 4*

Group II: 1550–1600
Undecorated wares

7 The lower portion of a large strap handle jug.
Grey fabric with a pink chip on the base. The exterior has a pale orange brown glaze streaked by dribbles from the dipping. The interior is sparsely glazed and is generally pinkish. Wire and "stacking" marks are visible on the grey base.
This vessel is a larger version of **1-4** in Group I. By analogy with the *Bartmann* bottles with turned foot rims, this example may date from later in the sixteenth century.
Stoneware 8 (S1/A); W1 5d=G2**; Phase 4. V4 I/II 1; Phase 8*

8 A substantially complete large strap handle jug with a collar neck, grooved rim and a cordon at the base of the neck.
Grey fabric. The exterior surface has a generally speckled brown glaze with a lighter patch below the dip line. The interior surface is unglazed and pinkish. There is a large scar on the body. Wire and square "stacking" marks are visible on the base, which shows signs of much wear.
For a comment on the date of this vessel see **7**, above.
Stoneware 7 (S3/A); W1 5a=G2**, W1 5d=**G2**; Phase 4*

Bartmann vessels

9 A fragment of the upper shoulder of a vessel with a small part of a *Bartmann* mask remaining.
Light grey fabric. The exterior surface has a brown freckled and "tiger" glaze. The interior surface has a buff glaze.
This is apparently part of a wide-bellied *Bartmann* jug. The interior glazing suggests that it had a wide mouth. The glaze is very similar to that on **12** (Group III), below.
Stoneware 48 (S13); Q5 III 3; Phase 5

10 A fragment of the upper shoulder of a vessel with a small part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a brown freckle glaze. The interior surface is pinkish.
This fragment is probably from the same vessel type as *9*, above, and is probably also from a wide mouthed jug.
Stoneware 54 (S2/C) ; W8 7=Great cellar**; Phase 4*

Group III: 1575–1600
Bartmann vessels

11 A fragment of the neck and rim with a small part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a brown freckled glaze and is heavily salted. The interior surface is unglazed and grey.
A mask similar to that found on this fragment was on the wreck of the *Batavia* (1629).[12] The

9. Museum No. A 4318
10. Museum No. A15,257
11. Jennings 1981, 120–121, No 814, Fig 49
12. BAT 2165

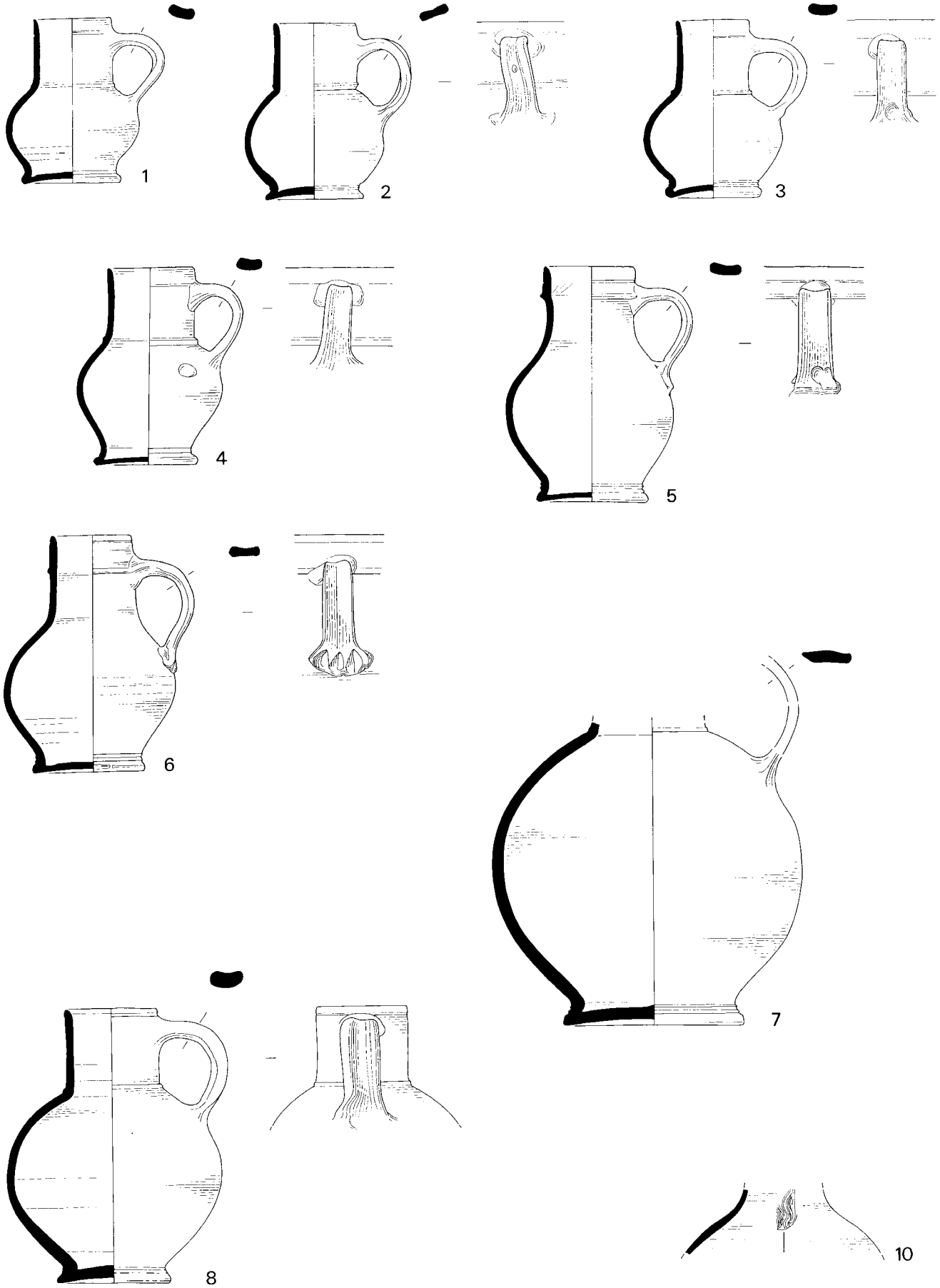


Fig. 55 Stoneware: undecorated Frechen jugs and a Bartmann, *(**10**), Group I, **1–6**; Group II, **7**, **8**, **10** (1:4).*

mask is a *Bartmann* type with an inscribed waistband, medallions and acanthus leaves and dates to the mid sixteenth century. A similar fragment appears below (**68**, Group XIV). The lighter potting, the freckle glaze and the smaller neck diameter of this example suggest that it has a slightly later date.
**Stoneware 50 (S16/C); Q1 3; Phase 5*

12 A fragment of a neck with part of a *Bartmann* mask remaining.
Light grey fabric. The exterior surface has a brown freckled glaze. The interior surface is light pinky brown. A *Bartmann* vessel with a mask similar to this is held in the Fitzwilliam Museum in Cambridge dated 1585, and another in the Ashmolean Museum in Oxford is dated 1586.[13] There is also an example in the Victoria and Albert Museum, London, dated 1593, and two in the British Museum dated 1599.[14]
**Stoneware 41 (S28/C); BH (?) III 5; Phase uncertain*

13 A neck and rim fragment of a vessel with the right hand side of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a brown freckle glaze and is heavily salted. The interior surface is brown glazed.
This mask type with distinctive "ladder" eyebrows is found on examples in the Museum of London[15] and the British Museum[16] dated 1597, 1602 and 1594 respectively. A further example illustrated by Hurst[17] has a waistband and is dated to 1550–1600.
**Stoneware 51 (S14); Unstratified*

Group IV: 1600–1625
Bartmann vessels

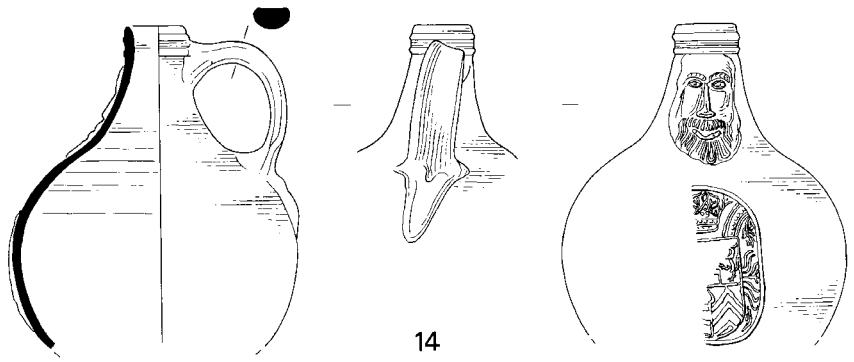
14 A fragment of the rim, neck and body of a vessel with a strap handle.Decorated with *Bartmann* mask and an armorial (probably fictitious) medallion.
Grey fabric. The exterior has a brown freckled glaze. The interior is grey and unglazed.
The medallion is similar to that found on a *Bartmann* jug in the Museum of London,[18] which has a more ovoid shape, and which is dated to 1625–1650. The squat, globular body and strap handle suggest that this piece is early seventeenth century in date.
Stoneware 22 (S4/D); U8 3=Great cellar**, W8 7=**Great cellar**; Phase 4*

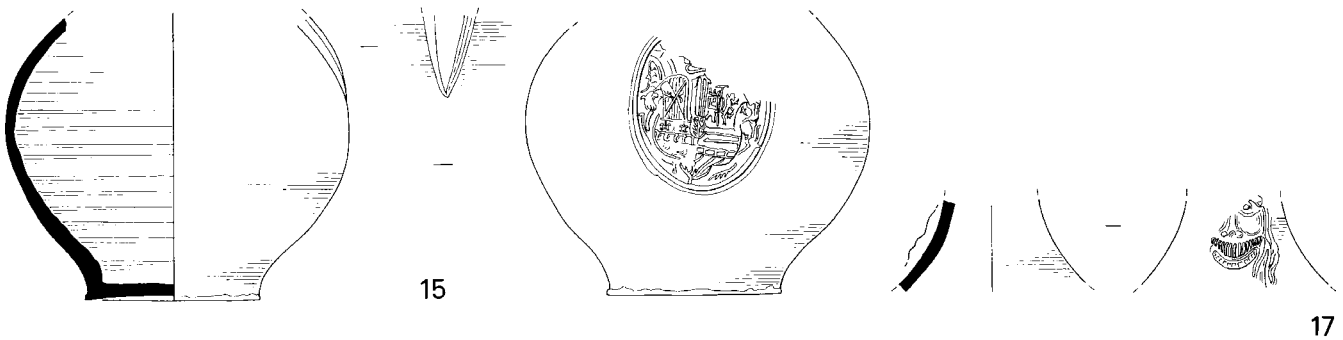
Fig. 56 Stoneware Group IV, Frechen Bartmann *vessel* ***16****, 1600–25 (cf Fig 57).*

15 The lower part of a vessel with a large globular body. The *Bartmann* mask is missing but a medallion with probably fictitious armorials does survive.
Grey fabric. The exterior has a brown freckled glaze with drips from the drip line at the base. The interior is grey and unglazed. Wire and square "stacking" marks are visible on the base. The medallion shares elements of the armorial design with an example in the Museum of London.[19] A similar bottle, dated 1608 and 1609, also in the Museum of London, is discussed by Thwaite.[20]
Stoneware 14 (S7/A); W4 II\IV 4=G4**; Phase 4. W4 II/IV 2; Phase 5*

16 The base and body part of a globular vessel. There is part of a largely lost *Bartmann* mask with three identical medallions, consisting of a portrait head in a circle, framed by a lozenge and an outer oval.
Grey fabric. The exterior surface has a brown freckled glaze with a "stacking" scar on the shoulder. The interior surface is grey and unglazed. Wire and square "stacking" marks are visible on the base.
A *Bartmann* vessel with a similar form, dated on the basis of the armorials to *c* 1600, is illustrated by van Bock.[21] A vessel with a similar shape and with three portrait medallions and dated 1613 is

13. Thwaite 1973, 256–7, Figs 3, 4
14. Museum Nos C 906–1925, 1910–12–51–1, 54–3–3–2
15. Museum Nos A 716, B 176
16. Museum No. 89–7–2–7
17. Hurst *et al* 1986, 219, Pl 42
18. Museum No 6408
19. Museum No 10570
20. Thwaite 1973, Fig 6
21. Reineking-von Bock 1971, Cat. No 325





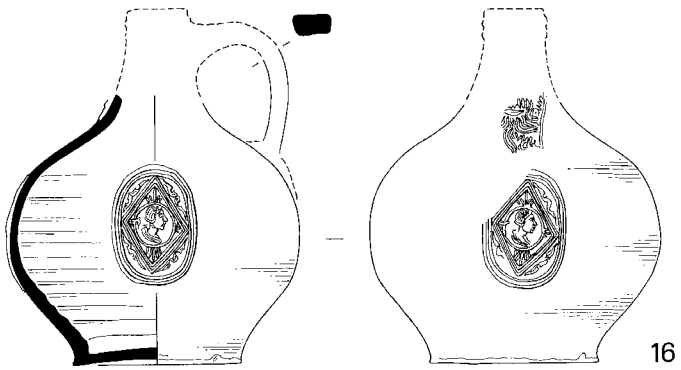


Fig. 57 Stoneware: Frechen Bartmann *Vessels, Group III,* ***11–13****; Group IV,* ***14–17*** *(1:4).*

Fig. 58 Stoneware: Group V, Frechen Bartmann *vessel* ***18****, 1600–50 (cf Fig 59).*

in the Metropolitan Museum of Art, New York.[22] Gaimster[23] dates a double handled jug with similar medallions to the mid sixteenth century, suggesting either an early date for the form or a long period of use.
**Stoneware 20 (S2/D); W4 II\IV 2, X4 3, X4 4; Phase 5*

17 A fragment of a neck with part of a *Bartmann* mask.
Grey fabric. The exterior surface has a brown freckled glaze with cobalt blue patches on the mask. The interior surface is unglazed and brown.
Similar *Bartmann* jugs dated 1594 and 1608\1609 are illustrated by Thwaite.[24] A further comparison may be made with a jug with a twisted handle and pewter mount found on the *Batavia*[25], sunk in 1629. A *Bartmann* with a twisted handle and with cobalt painting is illustrated by Reineking-von Bock.[26]
Stoneware 38 (S20/C); W4 II\IV 4a=G4**; Phase 4*

Group V: 1600–1650
Bartmann vessels

18 A bottle with a globular body, stump base and rat-tail handle terminal. The rim and most of the neck are missing.On the neck there is a *Bartmann* mask. On the body there is an incorrect rendering of the arms of Amsterdam with only two saltires above a stylized star.
Grey fabric. The exterior surface has a freckled "tiger" glaze with drips from a dip-line to the base. The interior is grey and unglazed. "Stacking" marks are visible on the base.
Examples of this mask type were found on the *Batavia* (1629) (Stanbury type F) and also on the *Vergulde Draeck* (1656)
Stoneware 10 (S4/A); P\Q 15\16 16=G19**; Phase 4*

19 A fragment of a vessel neck with the upper part of a *Bartmann* mask.
Grey fabric. The exterior surface has a brown freckled glaze. The interior is pinky grey.
A similar mask with a "wheel" or "rosette" moustache ends, dated to 1606, is in the Museum of London.[27] A similar type was found on the *Batavia* (1629).[28]
Stoneware 43 (S10/C); W8 7=Great cellar**; Phase 4*

20 A body sherd composed almost entirely of an armorial medallion consisting of a shield with two facing lions rampant in the upper quarter below a crown.
Grey fabric. The exterior has a brown freckled glaze. The interior is grey.
This fragment is part of a large *Bartmann* with firing cracks across the medallion. Many examples of similar quartered lion armorials are in the Museum of London (though none are identical) on globular *Bartmann*s.
Stoneware 209; W8 7=Great cellar**; Phase 4*

21 A body sherd composed almost entirely of part of a *Bartmann* mask and most of a rosette (rosette only illustrated).
Grey fabric. The exterior surface has a brown freckled glaze. The interior is pinky grey.
The medallion, with a bud in the centre and leaf points at the edges, is more naturalistic than that on **39**, below. Example were also found on the *Batavia* (1629). [29]
Stoneware 206; X14 4a=D2**, X15 10a=**D2**; Phase 5*

Group VI: 1625–1650
Bartmann vessels

22 A portion of the neck and body of a large vessel. On the neck there is a *Bartmann* mask, and on the body a stylized armorial, with two chevrons, medallion.

22. Thwaite 1973, Fig 7
23. Gaimster 1987, Fig 8
24. Thwaite 1973, Figs 5 and 6
25. BAT 2234
26. Reineking-von Bock 1971, Cat. No 324
27. Museum No A.4319
28. For example BAT 2885
29. BAT 2006, 2245

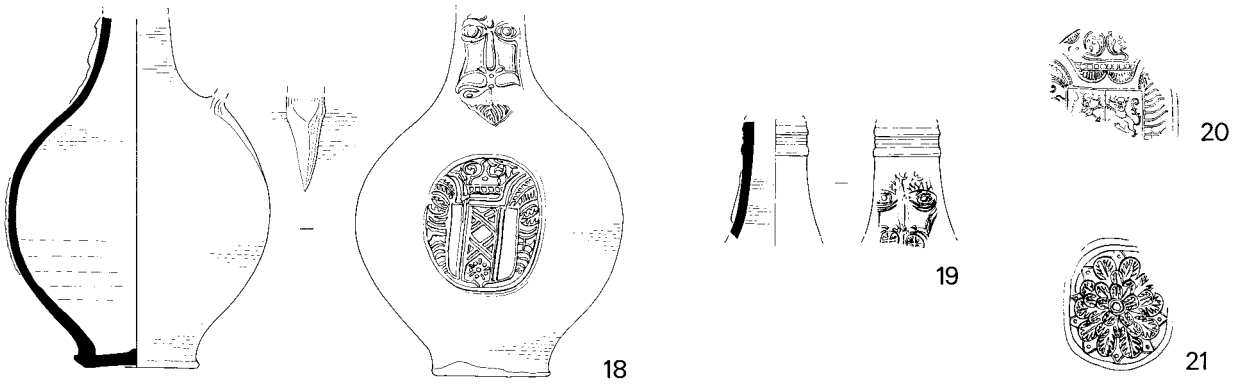


Fig. 59 Stoneware: Frechen Bartmann *vessels, Group V,* ***18–21*** *(1:4).*

Buff fabric. The exterior has a pale green brown freckled glaze. The interior surface is unglazed and buff. This vessel is apparently underfired, as is 27, below. It should be noted, however, that **27** and **22** are extra large bottles, possibly using modified clay bodies.

Similar armorial medallions may be seen on a *Bartmann* in the Museum of London[30] and from the *Vergulde Draeck*.[31] An apparently identical medallion occurs on a sherd in the Museum of London.[32] Cruder versions are found on vessels in the Museum of London and elsewhere.

Stoneware 25 (S1/D); S1 12=G31**, S1 13=**G31**; Phase 4. S1 11; Phase 5*

23 A number of body sherds of a vessel. Part of a *Bartmann* mask survives together with portions of three, probably fictitious, armorials.

Grey fabric. The exterior surface has a pale brown and grey glaze. The interior surface is grey\cream.

The medallions on this vessel are similar to that on a large *Bartmann* of mid-seventeenth century date, illustrated by von Bock,[33] which is 410mm high. A similar medallion was found on a bottle on the *Batavia* (1629).[34] See also **28** below.

Stoneware 28 (S9/B); U8 3=Great cellar**, W8 7=**Great cellar**, Y4 32=**Well**; Phase 4. X7 2, X7 6; Phase 5*

24 The body and neck of a small-medium globular vessel with a strap handle and part of a *Bartmann* mask and a rosette medallion.

Grey fabric. The exterior surface has a "tiger" freckled glaze with "stacking" scars on the body. The interior surface is grey and unglazed.

The design of the medallion on this vessel is of a type used over a long period, for example on a mug with a silver mount and similar rosette sold at Sotheby's,[35] hall marked 1570, and on *Bartmann* jugs on the *Batavia* (1629)[36] and the *Vergulde Draeck* (1656).[37]

Stoneware 26 (S3/D); U8 3=Great cellar**, W8 7=**Great cellar**, Y4 32=**Well**; Phase 4*

25 Part of the body and neck of a vessel with the scar of a handle base. Part of a *Bartmann* mask and a stylized armorial medallion remain.

Grey fabric. The exterior surface has a brown freckled glaze. The interior surface is buff/cream.

For a discussion of the medallion see **22**, above.

**Stoneware 27 (S6/B); U8 4; Phase 3 (contamination). V8 3, W8 3; Phase 5*

26 A number of fragments giving almost the complete profile of a vessel with a globular body and round handle. Part of a *Bartmann* mask and the small part of a rosette medallion remain.

Grey fabric. The exterior surface has a brown freckled glaze with drips from the dip line to the base. The interior is pinkish and partly glazed. Wire marks are visible on the base.

This mask type was found on the *Vergulde Draeck* (1656)[38] and *Batavia* (1629) (Stanbury Type D). A vessel with a similar form is illustrated by Hurst.[39]

Stoneware 17 (S5/B); W8 7=Great cellar**, Y4 32=**Well**; Phase 4. W8 3; Phase 5. V7 3; Phase 6*

30. Museum No 6425
31. No GT 004 A
32. Museum No 25,168
33. Reineking-von Bock 1971, Cat. No 329 A
34. BAT 2372
35. Sotheby's 14–15. 09. 1982
36. BAT 527
37. GT 870
38. GT 836
39. Hurst *et al* 1986, 220, Pl 44 centre

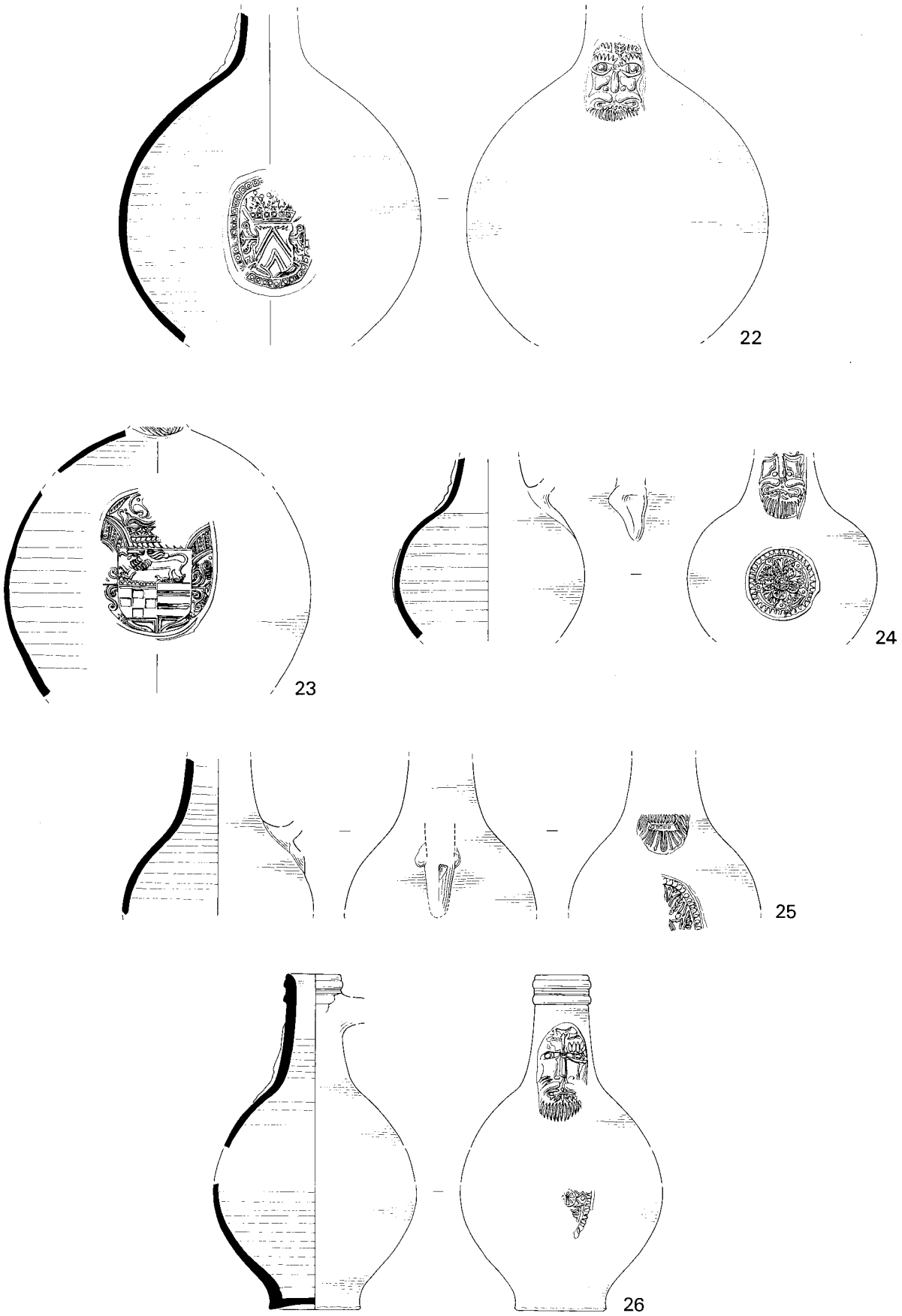


Fig. 60 Stoneware: Frechen Bartmann *vessels, Group VI,* ***22–6*** *(1:4).*

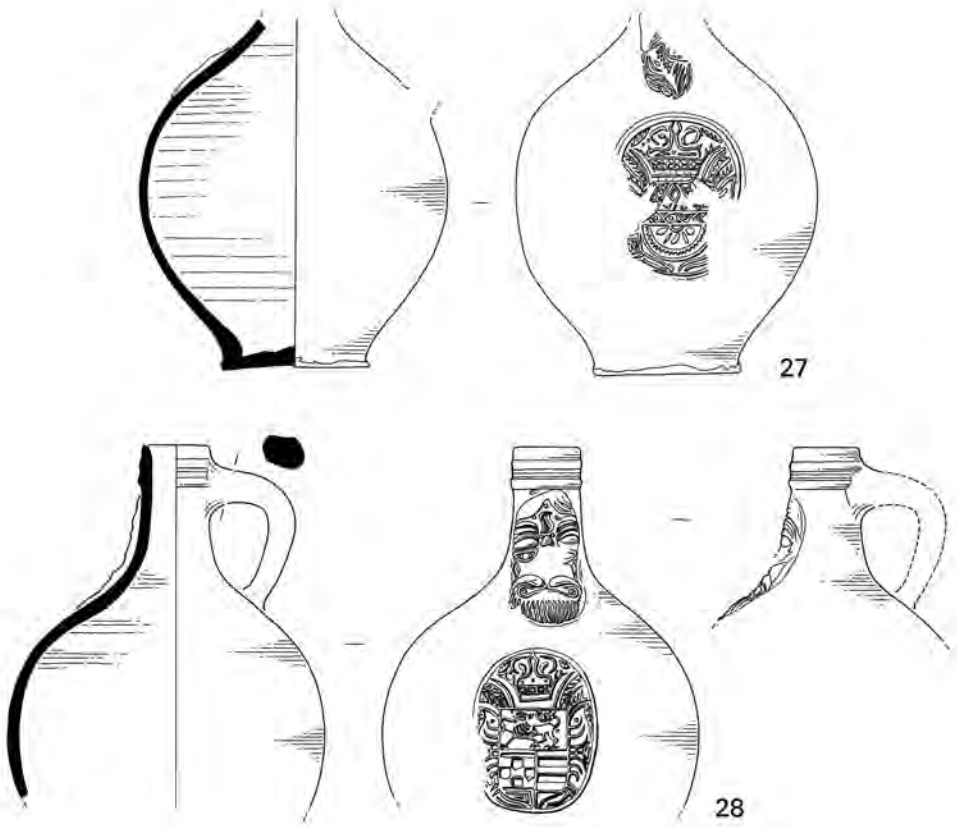


Fig. 61 Stoneware: Frechen Bartmann *vessels, Group VI continued,* ***27–8*** *(1:4).*

27 A number of fragments of the lower portion of a vessel with a pear shaped body with a small part of a *Bartmann* mask and an armorial medallion composed of geometric elements beneath a crown.
Grey fabric. The exterior surface has a brown freckled glaze, "tiger" in parts, with drip lines from the dip-line to the base. Wire and square "stacking" marks are visible on the base.
Somewhat similar medallions, with little attempt to represent actual armorials, were found on the *Batavia* (1629).[40] A vessel with a similar form is illustrated by Hurst.[41]
Stoneware 15 (S6/A); X15 10a=D2**; Phase 5*

28 A number of fragments of the neck of a vessel with a round handle and part of a *Bartmann* mask and a medallion with probably fictitious armorials.
Buff fabric. The exterior surface has a pale green-buff freckled glaze. The interior is buff and pink at the neck.
The vessel is apparently under-fired. For a discussion of the medallion on this vessel see the entry for **23**, above.
Stoneware 24 (S1/B); X15 10a=D2**; Phase 5*

Group VII: Sixteenth/seventeenth century Bartmann vessel

29 A body sherd with a small part remaining of a medallion with an elaborate border.
Light grey fabric. The exterior has a brown freckled glaze. The interior is grey.
Stoneware 212; X4 11; Phase 5

Group VIII: 1625–1675 Bartmann vessels

30 A fragment of the neck and rim of a vessel with the upper part of a *Bartmann* mask remaining.
Grey fabric. The exterior has a brown freckled glaze. The interior is brown from dipping.
Masks with multiple eyebrows, like this example,

40. BAT 2325 and 353

41. Hurst *et al* 1986, 220, Pl 44 centre

were found on the *Batavia* (1629)[42] but not on the *Vergulde Draeck* (1656).
**Stoneware 45 (S11/C); Q7 III 2; Phase 6*

31 A fragment of the neck and rim of a vessel with a handle stub and a small part of a *Bartmann* mask remaining.
Grey fabric. The exterior has a brown/grey, patchy glaze which has degenerated. The interior surface is brown.
**Stoneware 36 (S7/C); Q9 I 4; Phase 5*

32 A fragment of the neck and rim of a vessel with a handle stub and the upper part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a grey glaze with brown patches. The interior is grey with specks of buff grit and brown 'runs' from dipping. A square, sharp 'tang' indentation in the handle top suggests this was intended to have a pewter mount.
Several masks with fern-like growth between the eyebrows, similar to this example, were found on the *Vergulde Draeck* (1656).[43]
**Stoneware 52 (S17/C); W8 3; Phase 5*

33 A fragment of the neck and rim of a vessel with a handle stub and the upper part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a brown freckled 'tiger' glaze,with stacking masks visible on the rim. The interior surface is darker with 'runs' from dipping.
For a discussion of this mask type see **32**, above.
**Stoneware 39 (S21/C); W8 3; Phase 5*

34 A fragment of the neck and shoulder of a vessel with virtually an entire *Bartmann* mask remaining.
Grey fabric. The exterior has a brown freckled glaze. The interior surface is buff/grey with a brown stripe from dipping.
This example belongs to one of the commonest types: the hour-glass mouth appears on a dated *Bartmann* vessel (1613) in the Metropolitan Museum of Art, New York,[44] and was found in large numbers on the *Vergulde Draeck* (1656) with a few examples on the *Batavia* (1629) (Stanbury Type D).
**Stoneware 31 (S24/C); X7 7; Phase 5*

35 A fragment of the neck and rim of a vessel with a handle stub and the upper part of a *Bartmann* mask remaining.
Grey fabric. The exterior has a brown freckled glaze. The interior is orange with brown from dipping.
The mask is poorly moulded, with 'wipe' marks across the face. For further remarks on the mask see **34**, above.
Stoneware 53 (S18/C); X15 10a=D2**; Phase 5*

36 A fragment of the neck and rim of vessel with a handle stub and the upper part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a brown freckled glaze,with 'stacking' marks on the rim.
Stoneware 40 (S25/C); X15 10a=D2**; Phase 5*

37 A fragment of the neck and rim of a vessel with a small part of a *Bartmann* mask remaining.
Grey fabric. The exterior has a brown freckled 'tiger' glaze. The interior is pink/brown.
**Stoneware 33 (S4/C); Y7 2; Phase 5*

38 A fragment of the neck and rim of a vessel with a handle stub and a small part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a brown/grey freckled glaze with a 'stacking' scar visible on the base. The interior surface is buff with brown drips from the dipping.
**Stoneware 37 (S19/C); Y9 4; Phase 6*

39 A fragment of a neck and rim of a vessel with a handle stub and with a small part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface is glazed partly in grey and freckled brown. The interior surface is pinkish with brown 'runs' from dipping.
For a discussion of this mask type see **32**, above.
**Stoneware 42 (S8/C); Unstratified*

40 Two large body sherds of a vessel with a stylized rosette and the border of one other medallion remaining (complete rosette only illustrated).
Grey fabric. The exterior surface has a grey/green glaze with brown freckled patches with 'stacking' scars visible. The interior is buff and unglazed.
The medallion found on this example is one of the commonest types. One example, a mug with similar medallions, bears a mount with hall mark of 1570.[45] A further example was found on the *Vergulde Draeck* (1656).[46]
These sherds may be associated with **38**, above, a neck of similar large size and colour both inside and out.
**Stoneware 204; Unstratified*

42. For example BAT 2563 and 538
43. For example GT 78, GT 784A
44. Thwaite 1973, Fig 7
45. Sotheby's 14–15. 09. 1982
46. GT 870

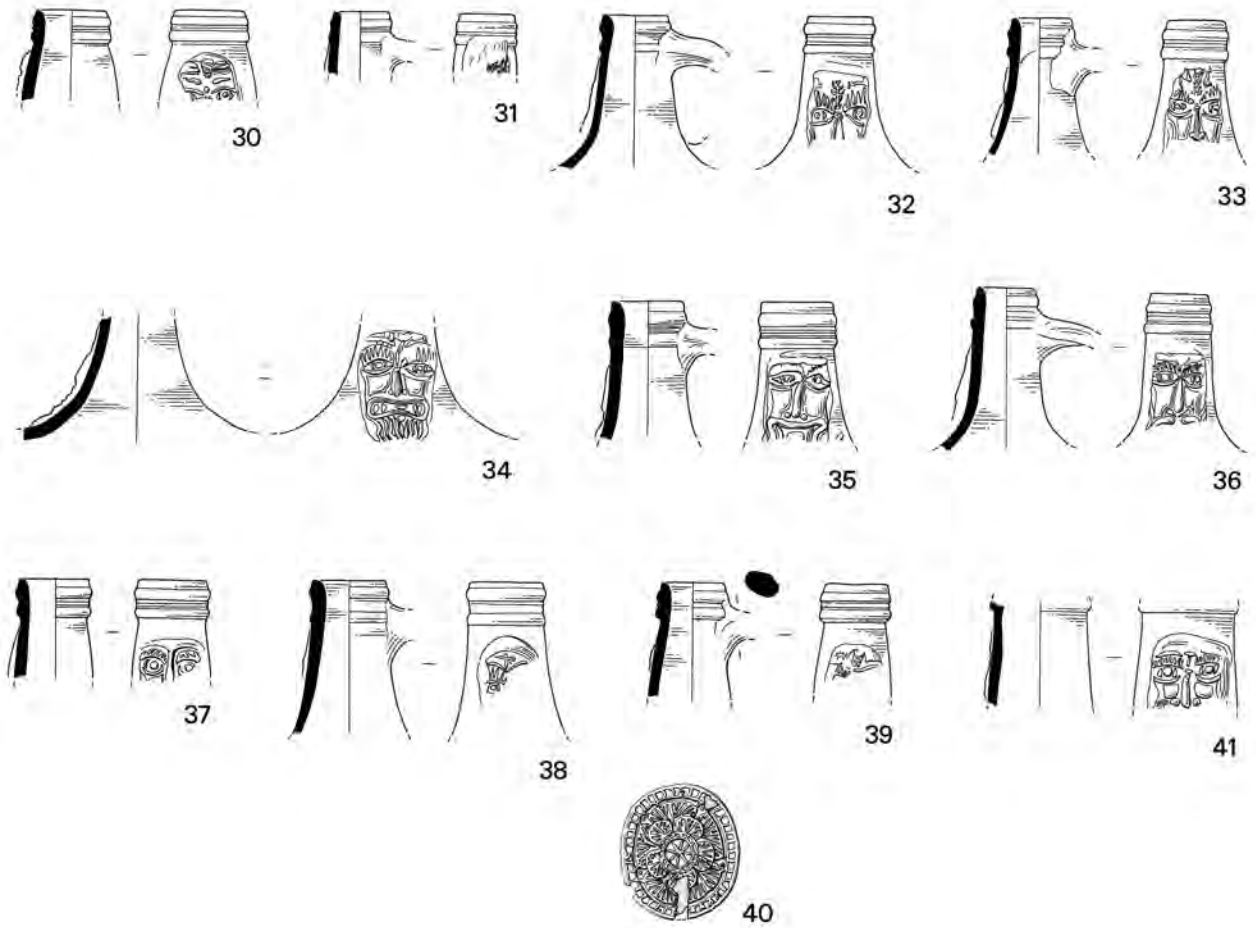


Fig. 62 Stoneware Frechen Bartmann *vessels, Group VIII,* ***30–41*** *(1:4).*

41 A fragment of a neck of a vessel with the upper part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a 'tiger' glaze and is heavily salted. The interior is light grey.
For a discussion of this mask type see **38**, above and **56** (Group X), below.
**Stoneware 55 (S3); BH D6 III 6; BH Phase uncertain*

Group IX: Mid seventeenth century Bartmann vessels

42 The lower part of a vessel with a globular body with a medallion depicting the arms of Amsterdam enclosed within a rosette. The *Bartmann* mask is missing.
Grey fabric. The exterior surface has a brown freckled glaze with drips near the base and a 'stacking' scar on the body. The interior is pinkish and on the base a square 'stacking' mark is visible.
A similar medallion may be seen on a *Bartmann* in the Museum of London.[47]
Stoneware 21 (S2/B); W2 5c=G3**; Phase 4*

43 A number of fragments of the body, neck and rim of a vessel with a *Bartmann* mask on the neck and a stylized rendering of the arms of Amsterdam on the body.
Grey fabric. The exterior surface has a brown freckled glaze. The interior is grey and unglazed. The much debased rendering of the armorials, with scrolls substituted for lion supports and stars for the saltires, suggests a date in the mid seventeenth century for this vessel.
Stoneware 23 (S7/B); P/Q 15/16 16=G19**; Phase 4*

47. Museum No 68.11/30

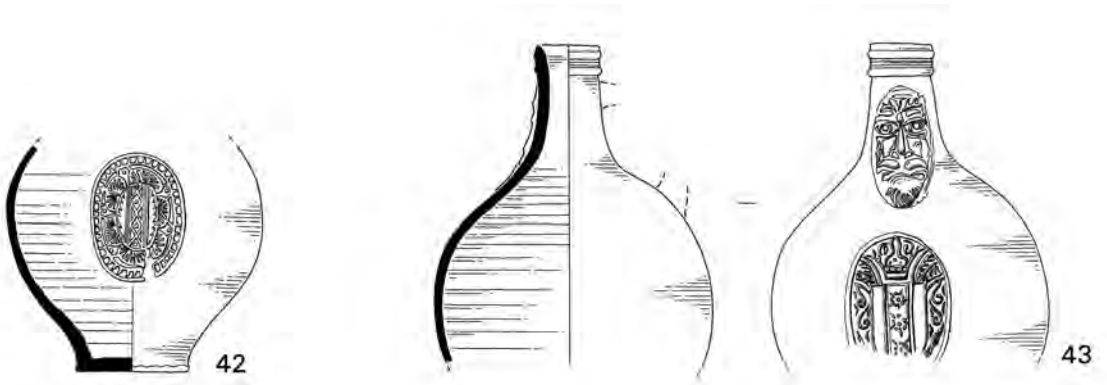


Fig. 63 Stoneware: Frechen Bartmann *vessels, Group IX,* ***42–3*** *(1:4).*

Group X: 1650–1675
Bartmann vessels

44 A mug with a globular body,collar rim and neck. A medallion depicting a crowned heart on the body.
Grey fabric. The exterior surface has a brown freckled glaze with a 'stacking' scar on the rim. The interior surface is buff and partially glazed. Wire and square 'stacking' marks are visible on the base.
Many examples of this medallion type were found on the *Vergulde Draeck* (1656) and other examples are in the Museum of London, the Victoria and Albert Museum and elsewhere. A similar mug is in the Museum of London.[48] The experimental mugs with medallions made by John Dwight of Fulham in the 1670's were of this form.
Stoneware 16 (S5/A); S1 12=G31**, S1 13=**G31**; Phase 4. S1 11; Phase 5*

45 A fragment of the neck and rim of a vessel with the upper part of a *Bartmann* mask remaining.
Buff fabric. The exterior surface has a patchy brown freckled glaze. The interior surface is pinky with brown 'runs' from dipping.
A mask similar to that found on this piece may be seen on **56**, below.
**Stoneware 49 (S15/C); Q1 3; Phase 5*

46 A fragment of the neck and rim of a vessel with a handle stub and a small part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a brown freckled glaze, with 'stacking' marks on the rim. The interior surface is buff.
**Stoneware 32 (S23/C); U1 1; Phase 8*

47 An almost complete bottle with a round handle and a stump base. There is a *Bartmann* mask on the neck. The missing body fragments almost certainly bore a medallion.
Grey fabric. The exterior surface has a freckled brown glaze with 'drips' from the dip line to the base. The interior surface is grey/buff and unglazed. The glaze on part of the surface of the vessel is entirely missing, apparently destroyed by acids in the soil.
The mask on this vessel is similar, but not identical, to an example found on the *Vergulde Draeck* (1656), dated 1654.[49] Vessels with a similar shape to this bottle are illustrated by Hurst.[50]
Stoneware 11 (S8/A); U8 4; Phase 3 (contamination). W8 7=Great cellar**, W8 8=**Great cellar**; Phase 4*

48 A substantial portion of a bottle with a stump base. A small part of a *Bartmann* mask on the neck and part of a medallion depicting a crowned heart.
Grey fabric. The exterior surface has a brown 'tiger' glaze, with 'stacking' scars and drip lines from the dip-line to the base. The interior is grey/buff and unglazed. Wire and 'stacking' marks are visible on the base, which is gritty.
For a discussion of the medallion see **44**, above.
Stoneware 13 (S2/A); W8 7=Great cellar**; Phase 4. W8 3; Phase 5. W8 4; Phase 6*

49 An almost complete bottle with trace of a handle scar. Part of a *Bartmann* mask on the neck and a medallion on the body depicting a crowned heart.
Grey fabric. The exterior surface has a brown freckled glaze with drips from the dip-line to the base. The interior is grey, brown at the neck. Wire

48. Museum No 18,717
49. GT 380
50. Hurst *et al* 1986, 220, Pl 44, left and right

Plate 1. Tin-glazed ware: Dutch or English dish ***17****; p. 75, Fig. 42 (1:2)*

Plate 2. Tin-glazed ware: Dutch dish ***24*** *and English (probably London) dishes* ***27*** *and* ***28****;*
p. 77–8, Fig. 43 (about 1:3)

*Plate3. Tin-glazed ware: Netherlands dish **31**, mug **58**, and drug jar **114**, and Netherlands or English drug jar **111**; p. 79, 84–5, 93–4, Figs. 46, 48, 51 (about 1:3)*

Plate 4. Tin-glazed ware: Netherlandish jug/vase fragments ***91–5****; p. 88, Fig. 49 (1.3:1)*

Plate 5. Tin-glazed ware: Netherlandish flower vase ***103****; p. 90–1, Fig. 49 (1:2)*

Plate 6. Tin-glazed ware: Netherlandish or English drug jars ***116–17*** *and* ***120–1****; p. 94, Fig. 51 (1.4:1)*

Plate 7. Stoneware: Cologne Bartmann *jug* **62***; p. 115, Fig. 67 (1:1)*

Plate 8. Fine vessel glass: Venetian (?) goblet/vase ***4****; p. 240, Fig 110 (1:1)*

Plate 9. Fine vessel glass: pair of Venetian (?) side-handles ***67****; p. 249, Fig. 117 (1.6:1)*

Plate 10. Fine vessel glass: pair of Venetian (?) or perhaps English side-handles ***68****; p. 249, Fig. 117 (1.2:1)*

Plate 11. Fine vessel glass: Venetian (?) bowl ***72****; p. 249, Fig. 117 (1.4:1)*

Fig. 64 Stoneware: Group X, Frechen Bartmann *vessel* ***48****, 1650–75 (cf Fig. 65).*

and square 'stacking' marks are visible on the base.
For a discussion of the mask see **44**, above.
**Stoneware 18 (S8/B); W8 3; Phase 5*

50 A body sherd composed almost entirely of a conjoined stylized fleur-de-lys.
Grey fabric. The exterior surface has a brown freckled glaze. The interior surface is grey.
Three examples of ovoid *Bartmänner*, similar to this vessel, are in the Museum of London.[51]
Stoneware 210; W8 7=Great cellar**; Phase 4*

51 A body sherd on which much of a medallion depicting a stylized rosette with concoidal petals between lozenges.
Grey fabric. The exterior has a brown freckled glaze.
The concoidal petal rosette medallion is associated with late seventeenth century sites, for example Woolwich Ferry[52] and Vauxhall Pottery. This type was not found amongst the rosette medallions found at Basing House (demolished 1645),[53] but a similar type was found on the *Vergulde Draeck* (1656).[54] An example found in Frechen is dated by Hurst to 1650–75.[55]
Stoneware 208; W8 7=Great cellar**; Phase 4*

52 A fragment from the upper neck area of a vessel on which part of a *Bartmann* mask remains.
Grey fabric. The exterior surface has a 'tiger' brown freckle glaze. The interior surface is pinky with brown 'runs' from dipping.
Stoneware 47 (S12/C); W8 7=Great cellar**; Phase 4*

53 A fragment of a neck and rim with a handle stub and part of a *Bartmann* mask.
Grey fabric. The exterior surface has partly a green/grey, and partly brown freckled glaze with a 'stacking' scar. The surface is heavily salted. The interior is brown.
For a discussion of the mask and the greenish, heavily salted glaze, see **56**, below.
Stoneware 44 (S9/C); W8 7=Great cellar**; Phase 4*

54 A substantially complete bottle with round handle. A *Bartmann* mask on the neck and a medallion depicting a crowned heart on the body.
Grey fabric. The exterior surface has a brown freckled glaze. The interior surface is grey/buff and unglazed. Wire and square 'stacking' marks are visible on the base.
For a discussion of the medallion see **44**, above. One example excavated at Woolwich[56] is almost certainly an import. For a vessel with a similar shape, see Hurst.[57]
Stoneware 12 (S9/A); W8 7=Great cellar**; Phase 4*

55 A fragment of the neck of a vessel with part of a *Bartmann* mask.
Buff fabric. The exterior surface has a brown glaze. The interior is buff.
A similar mask may be seen on **46**, above.
Stoneware 34 (S6/C); W8 7=Great cellar**; Phase 4*

56 A fragment of a neck and rim with part of a handle and a small part of a *Bartmann* mask.
Grey fabric. The exterior has a 'tiger' freckle, heavily salted glaze,with greenish 'runs'. 'Stacking' marks on the rim. The interior surface is brown.
Similar, very uneven glazing has been noted elsewhere especially on late, ovoid *Bartmann* jugs.
**Stoneware 30 (S22/C); Unstratified*

57 The base and body of a globular vessel. Part of a medallion with geometric symbols: possibly a Hausmark.
Grey fabric. The exterior surface has a brown freckled glaze, with drips from a high dip-line to the base. The interior is pinkish. 'Stacking' marks are visible on the base.

51. Museum Nos 6395; 16,129, and a fragment 11,968
52. Pryor and Blockley 1978, Fig 21, No 116
53. Moorhouse 1970, 73–82
54. GT 32
55. Hurst *et al* 1986, 220, Pl 44, left
56. Blockley 1978, medallion type V
57. Hurst *et al* 1986, 220, Pl 44, right

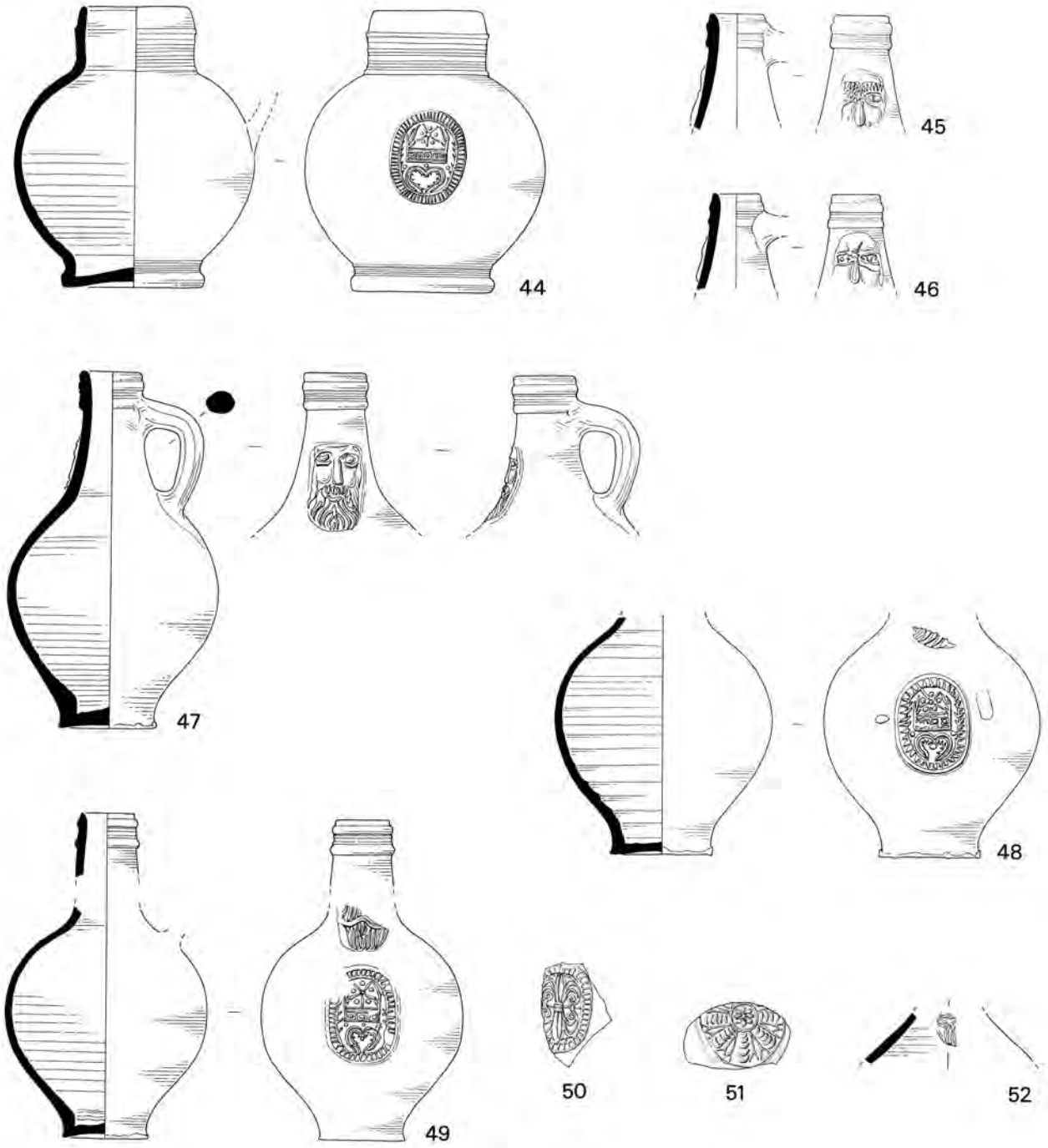


Fig. 65 Stoneware: Frechen Bartmann *vessels, Group X,* ***44–52*** *(1:4).*

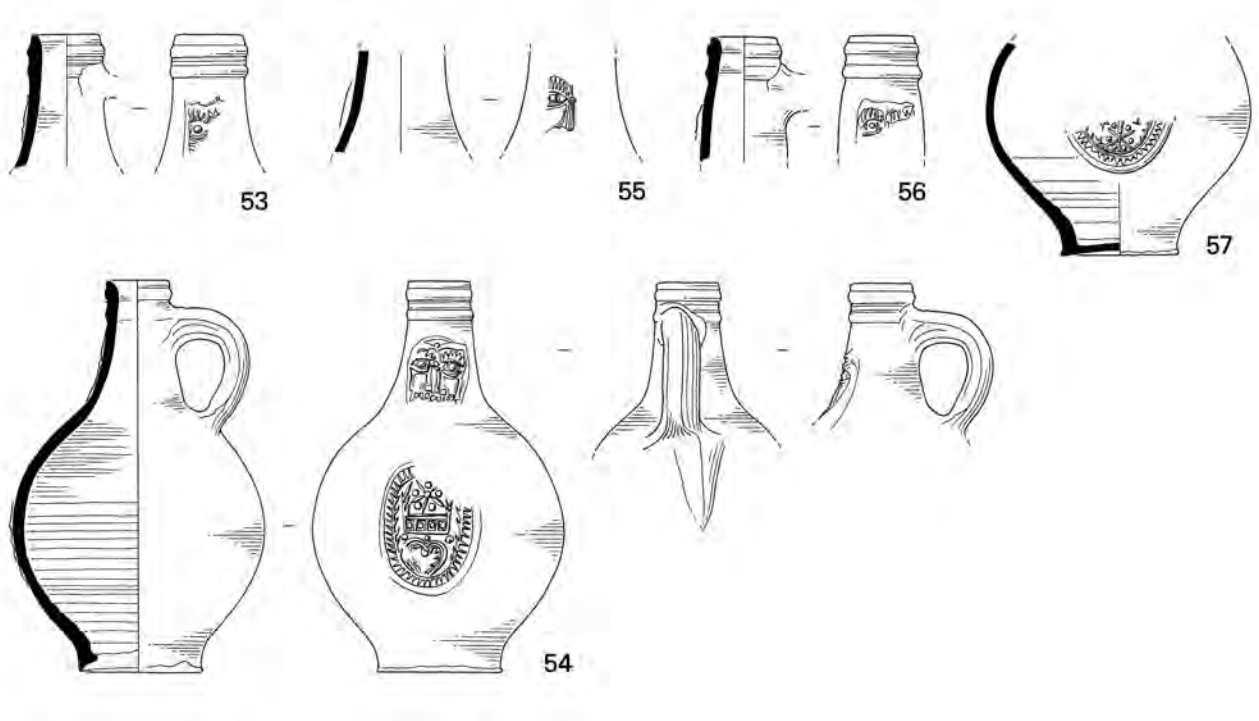


Fig. 66 Stoneware: Frechen Bartmann *vessels, Group X continued,* ***53–7*** *(1:4).*

The medallion on this vessel seems to be identical to that on a *Bartmann* in the Museum of London.[58]
**Stoneware 19 (S4/B); BH D5 II 4; BH Phase 4*

Group XI: Seventeenth century Bartmann vessels

58 A small body sherd with a small part of a medallion.
Grey fabric.
Stoneware 219; V7 1; Phase 8

59 A body sherd with part of a *Bartmann* mask.
Grey fabric.
*Stoneware 220; W8 7=**Great cellar**; Phase 4*

60 A body sherd with part of the border of a medallion.
Grey fabric.
Stoneware 216; X4 1; Phase 8

61 A body sherd with part of the border of a medallion.
Grey fabric.
Stoneware 217; X8 4; Phase 5

CATALOGUE: COLOGNE VESSELS

Group XII: 1525–1550

62 A complete pear shaped *Bartmann* with a strap handle. The vessel has a series of decorative elements including a bearded face on the neck, a band of leaves and tendrils around the circumference of the body with pendant leaves, and with helmeted portrait medallions above and below.
Grey fabric.

This piece is very similar to an example in the Kunstgewerbemuseum, Cologne,[59] and another in the Museum of London.[60] For a discussion of *Bartmann* jugs with foliate waist bands see Hurst.[61]
This vessel was made in Cologne, probably in the Maximinenstrasse workshop.
Stoneware 9; W4 II/IV=G4**; Phase 4 (Plate 7)*

58. Museum No A 1761
59. Reineking-von Bock (1971) Cat. No 283. This vessel is also illustrated by von Bock 1966, Abb. 9 where it is attributed to Komodienstrasse
60. Gaimster 1987, Fig 6. Museum No 28.112/2
61. Hurst *et al* 1986, 210–212. Compare Pl 38, a waster from Maximinenstrasse, Cologne

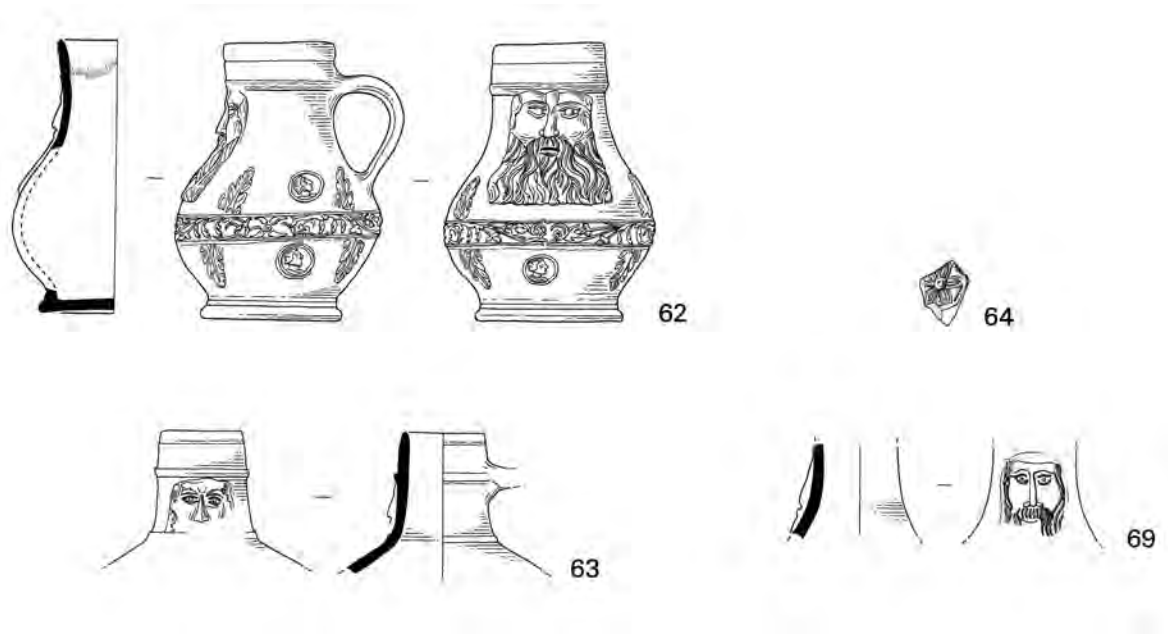


Fig. 67 Stoneware: Cologne vessels, Group XII, ***62****, Group XIII,* ***63****, Cologne/Frechen vessels, Group XIV,* ***64****,* ***69*** *(1:4).*

Group XIII: Mid sixteenth century

63 A fragment of the neck and rim of a large vessel with the spur of a handle and part of a *Bartmann* mask.
Grey fabric. The exterior has a brown freckled glaze.
This is probably a vessel of the type with a globular body and waist band.[62]
**Stoneware 29 (S3/B); Unstratified*

CATALOGUE: COLOGNE/FRECHEN VESSELS

Group XIV: 1550–1575
Bartmann vessels

64 A body sherd with part of a medallion depicting a daisy like rosette.
The exterior surface has a light brown freckled glaze. The interior is buff.
The medallion on this piece is similar, but not identical, to the small rosettes on a *Bartmann* dated 1558.[63] The rosette is identical to **66**, below, though it is of dissimilar colour.
**Stoneware 211; W5ext 2a; Phase 5*

65 A small body sherd with part of a medallion.
Grey fabric. The exterior surface has a patchy brown freckled glaze with a surface sheen. The interior surface is grey/buff.
The wide belly and the colour of the glaze, and the medallion, which would appear to be part of a portrait medallion, suggest that this fragment is from a *Bartmann* vessel with a waistband, see **62** (Group XII), above.
Stoneware 207; W8 3; Phase 5

66 A small body sherd with part of a medallion depicting a daisy like rosette.
Grey fabric. The exterior surface has a brown freckled glaze. The interior is pinky.
For a discussion of the medallion see **64**, above.
Stoneware 215; X5 III/IV 8; Phase 5

67 A small body sherd with part of a portrait medallion remaining.
Grey fabric. The exterior surface has a brown freckled glaze and a surface sheen. The interior is pinky.

62. See the discussion in Hurst *et al* 1986, 213, Fig 104.330. Also Reineking-von Bock 1971, Nos 286 and 289

63. Reineking-von Bock 1971, Cat. No 271

The portrait medallion on this piece suggests that it is part of a *Bartmann* vessel with a waistband, see **62** (Group XII), above.
*Stoneware 213; Y4 32=**Well**; Phase 4*

68 A small body sherd with part of an acanthus leaf in relief.
Grey fabric. The exterior surface has a brown freckled glaze and a surface sheen.
This sherd is probably from the same vessel as **67**, above, which may be part of a *Bartmann* vessel with waistband.
*Stoneware 214; Y4 32=**Well**; Phase 4*

69 A fragment of the neck of a vessel with part of a *Bartmann* mask remaining.
Grey fabric. The exterior surface has a brown glaze. The interior surface is pale, purply brown with 'runs' from dipping.
A similar mask may be seen on **63** (Group XIII), above. For a more detailed discussion see **11** (Group III), above. The absence of freckle in the glaze and the naturalistic rendering of the mask suggest a sixteenth century date for this piece.
**Stoneware 35 (S5); BH ?6 III 7; BH Phase uncertain*

CATALOGUE: ENGLISH STONEWARE VESSELS

Group XV: Seventeenth/eighteenth century, London

70 A curved body sherd with a cream/brown glaze on the exterior surface.
Stoneware 381; BH BC6 4; BH Phase 2

71 A body sherd with a grey/cream glaze on the exterior surface.
Stoneware 382; BH BC6 4; Phase 2

72 A body sherd from the upper shoulder area of a vessel. A horizontal cordon and a dark brown glaze on the exterior.
Stoneware 379; BH D5 3; BH Phase 4

73 A body sherd with a grey/cream glaze with small black flecks on the exterior surface.
Stoneware 380; BH D5 III 2; BH Phase 5

74 A curved body sherd with a light brown glaze on the exterior surface.
Stoneware 384; BH D5 IV 5; Phase BH 4

75 A curved body sherd, with a dark brown glaze.
Stoneware 389; BH D5 IV 5; BH Phase 4

76 A curved body sherd with a grey glaze with light brown flecks.
Stoneware 390; BH D5 IV 5; BH Phase 4

77 A base sherd with an orange glaze.
Stoneware 370; BH E5 III 1; BH Phase 7

78 A base sherd with an orange glaze and a finely striated lower face.
Stoneware 343; BH E5 III 2; BH Phase 6

79 A curved body sherd with a dark brown, speckled glaze on the exterior surface.
Stoneware 354; BH E5 III 2; BH Phase 6

80 A body sherd with a sandy brown glaze on the exterior surface.
Stoneware 355; BH E5 III 2; BH Phase 6

81 A thick body sherd with a cream glaze with small dark flecks on the exterior surface.
Stoneware 373; BH E6 I 5; BH Phase 3

82 A curved body sherd with a grey/cream glaze on the exterior surface.
Stoneware 404; BH E6 III 4; BH Phase 5

83 A curved body sherd with a brown/cream glaze with fine black specks on the exterior surface.
Stoneware 408; BH BV III 1; BH Phase 7

84 A curved body sherd with a grey glaze with black and brown flecks on the exterior surface.
Stoneware 334; BH BV IV 1; BH Phase 7

85 A curved body sherd with a light brown glaze on the exterior surface.
Stoneware 315; BH BV IVext1 7; BH not phasable

86 A curved body sherd with a sandy brown glaze on the exterior surface.
Stoneware 333; BH BV VI 2; BH not phasable

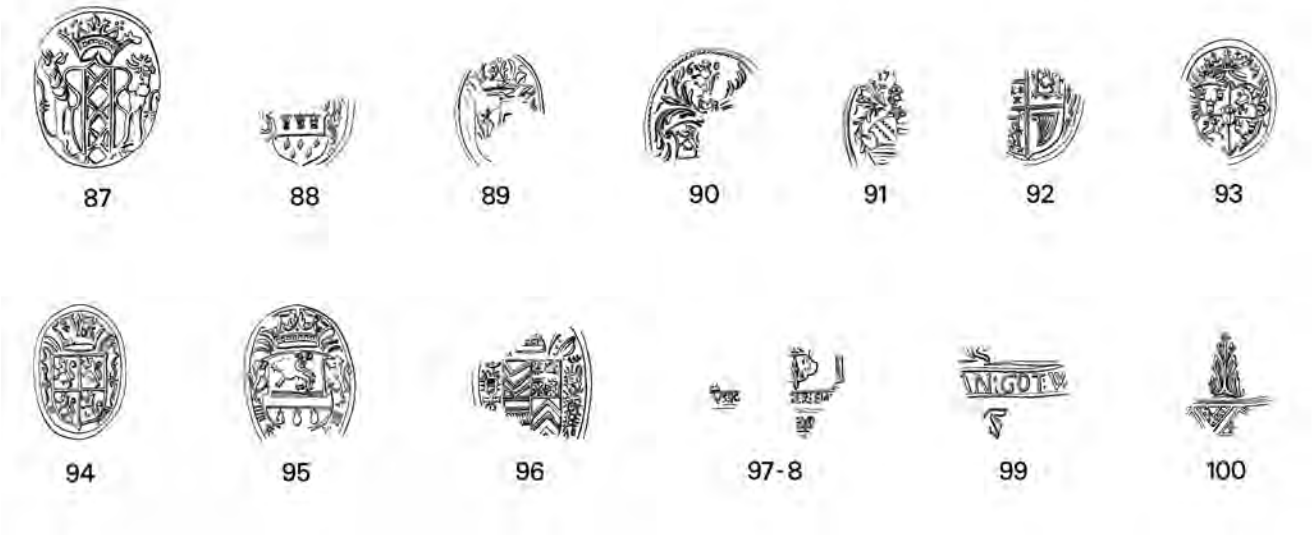


Fig. 68 Stoneware: Medallions, ***87–100*** *(1:4).*

APPENDIX

Decorated fragments, now lost

87 Fragment of a Frechen *Bartmann* with arms of Amsterdam. This type of medallion was used from the later 16th to the mid 17th century, with noticeable coarsening. An example from the *Vergulde Draeck* (1656), dated 1654, is much simplified.[64] Several examples on the *Batavia* (1629), in the Museum of London,[65] and elsewhere.[66] See also Hurst *et al* (1986).[67]
**Unstratified*

88 Fragment of a Frechen *Bartmann* with arms of Cologne. Examples are mostly datable to the late 16th – early 17th century. A roughly similar version is illustrated in Steinzeug.[68] Others occurred on the *Batavia* (1629), and another, dated 1599, is in the British Museum.[69]
**Q2 3; Phase 3 (contamination)*

89 Fragment of a Frechen *Bartmann* with unidentified arms, apparently the same as those on a *Bartmann* in the Museum of London,[70] and another in the British Museum,[71] dated 1599.
W8 7=Great cellar**; Phase 4*

90 Fragment of a Frechen *Bartmann* with unidentified arms, dated 160? Somewhat similar to those on a *Bartmann* in the Museum of London,[72] the shape of which is datable 1600–1625.
W8 7=Great cellar**; Phase 4*

91 Two fragments with unidentified arms, dated 17??, possibly from two medallions rather than one. As the style of the armorials is typical of the early 17th century, the apparently 18th century date makes attribution hazardous. Originally catalogued as a brown Westerwald type.
**X15 10=D2; Phase 5*

92 Fragment of a *Bartmann* with the arms of Great Britain. Similar to a fragment in the British Museum[73] which, however, has the 3rd and 4th quarters reversed. These arms are presumably intended to represent those borne by the Kings of England 1603–1688, but they omit France and repeat Scotland instead.
**Q5 III 3; Phase 5*

64. GT 380
65. Very similar medallions are to be seen on 22,692, 6352, 25640, 68.11/31, 15,248, 26,717, 37.194/27, 6370
66. For example, V & A Museum, 940, 905–1925
67. Hurst *et al* 1986, Pl 44, centre
68. Reineking-von Bock 1971, Cat. No 329b
69. 56–7–1–1619
70. A43047
71. 54–3–3–2
72. A5561
73. 96–2–1–73

93 Fragment of a Frechen *Bartmann* with the arms of Sweden. Similar to a *Bartmann* in the Museum of London,[74] the shape of which is datable 1600–1625.
**Unstratified*

94 Fragment of a Frechen *Bartmann* with unidentified arms, probably fictitious.
**X4 I/III/W4 I/II 2 (Baulk); Phase 6*

95 Fragment of a Frechen *Bartmann* with unidentified arms.
**W8 3; Phase 5*

96 Fragment of a Frechen *Bartmann* with unidentified arms, probably fictitious.
U8 3=Great cellar**; Phase 4*

97–98 Two fragments from a Raeren armorial panel jug, with inscribed band. Datable to about 1600–1610.
**X8 4; Phase 5*

99 Fragment of Frechen *Bartmann*, with inscribed band originally reading: WAN GOT WILT SO IST MEIN ZEILT (variously spelt). Datable to 1550–1600.
**X8 4; Phase 5*

100 Fragment of Cologne/Frechen *Bartmann*, with geometric band. Datable to 1525–1575.
**V14 2; Phase 5*

74. A4268

5

EARTHENWARE

by Martin Biddle

(Figs 69–104; Tables 7–14)

i. Introduction

The study of the Nonsuch earthenwares

Work began on typing the pots, reconstructing the forms, and describing fabrics soon after the end of the excavation in 1959. By the summer of 1961, when work stopped due to other commitments, the forms had all been typed and the individual vessels and sherds had been fully described on cards. These descriptions form the basis for the individual entries which follow, and this work resulted in an interim account of the coarse pottery published in 1961.[1]

During 1982–5 the pots were drawn at the Museum of London by John Pearson and in checking the drawings the opportunity was taken to revise and correct the type descriptions. In 1989 Clive Orton went through the entire material to identify the fabrics in terms of his Museum of London classification, thus ensuring that the present publication would be consistent with the work in the London region.[2]

Meanwhile Tim Claydon and subsequently Jane Webster searched the literature for relevant material and in 1991–2 I used this to produce the discussions which preface each group of types. The contextual evidence was checked and recorded on a database by Jane Webster,[3] who compiled the fabric descriptions, produced the accompanying tables (A-D), and has contributed greatly to definition and discussion of the problems discussed in the remainder of this introduction.

The principal deposits containing earthenware

Most of the earthenware vessels (in common with the other ceramics and glass) came from a restricted number of large deposits. Tables 10–12 show in differing ways the occurrence of the earthenware vessel forms (each consisting of several types) in the garderobes and other deposits, and reveal the following pattern:

1. Biddle 1961, 14–20
2. Orton 1988
3. See above, p 70

Large deposits (7 or more vessel forms)
Garderobes 2, 4, 5, 9, 26
Dump 1 (probably derived from Garderobe 5)
Demolition (ie Phase 5, less Dumps 1 and 2)

Medium-sized deposits (4 to 6 vessel forms)
Garderobes 3, 6, 11, 19, 31
Well
Great cellar
Dump 2

Small deposits (1 to 3 vessel forms)
Garderobes 1, 7, 8, 15

The interrelationships of forms and fabrics in these deposits, especially in the larger ones, provide an important part of the evidence to be considered.

Hypothesis on the date of the deposits

In 1961 the Interim Report put forward the hypothesis that the finds in the garderobe pits were deposited during the period 1650/65–1688.[4] This date can probably now be refined to *c* 1670–1682/8.[5] This hypothesis is tested above on the basis of the dating of the tin-glazed ware, stoneware, fine vessel glass and other datable artefacts, and the evidence is set out in detail, deposit by deposit, in Concordance I which lists the contents of the major groups.[6]

Clearly, there is some scope for variation in date from garderobe to garderobe, depending upon the length of time the apartments they served remained in occupation. Thus, although the fills of the garderobe pits lying beneath the rubble from the demolition of 1682/90 have all been placed in Phase 4 (with a terminal date of 1688), the latest objects in these fills may date (on the hypothesis put forward) from any time between *c* 1670 and 1682/8, for the garderobes remained open and usable until that year. The Great Cellar also apparently continued in use, as the objects on its floor suggest.[7]

The demolition of 1682/90 produced by far the largest bulk of the soil and rubble excavated in 1959, and from this came types of fine vessel glass,[8] bottle glass,[9] and tin-glazed ware,[10] which range in date down to the 1680s and show that the palace continued to be occupied on some basis down to the end. The scale of this occupation remains, however, very uncertain.

Following the demolition, the site seems to have lain open as a ruin field for many years, and a part remained standing well into the eighteenth century.[11] Garderobe 1 in the Outer Gatehouse seems not to have been filled until after 1760.[12] About this date the site was levelled with sandy loam (Phase 6), and subsequently cultivated (Phases 7 and 8). As might be expected, there are few finds later than the demolition of 1682/90.[13]

The hypothesis to be tested by the study of the earthenware is therefore that, apart from residual pieces, the pottery dates to the period *c* 1670–1682/8.

4. Biddle 1961, 14
5. See above, p 67–8
6. See above, p 70
7. See below, Concordance I
8. For late 17th-century glass vessels from Phase 5 and residual in subsequent phases, see Nos. **43–4**, **77–9**, and **108–10**. Glass of late 17th-century date was also found in two of the Phase 4 garderobes: **46** (G.31), **75** (G.19)
9. See below, p 266–92, Figs 136–9
10. For late 17th-century tin-glazed vessels from Phase 5 and residual in subsequent phases, see Nos. **22–3**, **25–9**, **43–5**, **48–9**, **51–5**, **134**, **136**, **138**, and **140–6**. Tin-glazed vessels of later 17th-century date were also found in some of the Phase 4 garderobes and the Great Cellar: **2** (G.3), **21** (G.31), **46–7** (G.26), **50** (Great Cellar), **136–7** (G.26), and **139** (G.11)
11. "The Ruins of None-such-House" are shown in John Talman's watercolour view of Epsom dated 23 September 1702 now in the Ashmolean Museum, Oxford. Remnants could still be seen in 1757: Cartwright (ed) 1889, ii, 171, 262. See above, p. 2, 62–3
12. See below, p 47
13. See above, p 66

Difficulties with the hypothesis

When Nonsuch was excavated and the pottery first studied, very little was known about the production and dating of red and white wares in the London region and there was nothing to gainsay the dating of the bulk of the material to the third quarter of the seventeenth century. In the intervening years, and particularly since 1970 much has been learnt, notably from excavations in London[14] and Southwark,[15] and from the excavation of production sites to the west[16] and east.[17] Three major problems remain. First, very few red- or white-ware kilns in operation between *c* 1500 and *c* 1680 have yet been found in the London region, yet alone within 20 or so miles of Nonsuch, the nearest being the Surrey-Hampshire border sites, 25 miles to the west (Fig 69). Second, few of the published groups from London are dated by independent non-ceramic evidence, and long stratified series which might provide evidence for the period of time over which the different fabrics were in use are still lacking.[18] Groups from Great Fire and pre-Fire deposits would be of particular importance in the study of the Nonsuch pottery, but those few which have been published are not helpful.[19] Third, the range of vessel forms introduced in the London region in the late fifteenth century, best seen in the output of the Kingston-upon-Thames, London, kiln,[20] remained in use until the reign of Charles II, changes to the traditional pattern first emerging only in the 1680s.[21] The lack of closely dated groups and sequences means that typological developments within these two centuries are not well understood: even in Border wares (BORD) some types seem to have been relatively unchanging.[22] This uncertainty over the detailed evolution adds to the difficulty of evaluating the date of the Nonsuch pottery.

When precise parallels can be found for the Nonsuch earthenware these are mostly datable to the middle and second half of the seventeenth century (Tables 7 and 8). For much of the pottery, however, only general parallels can be found and these are usually datable to the sixteenth century. The problem is most acute with the fabric known as 'Tudor Brown' – TUDB – in which, as Table 9 shows, a considerable number of Nonsuch vessel forms occur. The fabric known as GUYS ware provides a similar problem. The difficulty is compounded by two previously unrecognised fabrics, called here for convenience Nonsuch A and Nonsuch B – NONA and NONB – with NONA providing, like TUDB, an important range of the common vessel forms (Table 9). Together these fabrics account for 98 of the 327 vessels noted in the catalogue: TUDB occurs in 38 vessels of 32 types, GUYS 21 vessels of 12 types, NONA 31 vessels of 22 types, and NONB 8 vessels of 7 types. Put another way, TUDB occurs in 23 of the 95 principal redware forms catalogued here and is one of the major components of the garderobe deposits (Tables 9, 10, and 12).

Since TUDB has been thought to decrease in the early seventeenth century in favour of the technical superiority of the 'fine post-medieval red wares' with their wider range of forms (Fig 71),[23] its appearance at Nonsuch in such a quantity and range of forms presents a problem in

14. The most important for the present study are Africa House (Broady 1975), Aldgate (Orton and Pearce 1984), and Arundel House (Haslam 1975b)
15. The most important for the present study are Guy's Hospital (Dawson 1979) and Southwark 1973–6 (Orton 1988)
16. Ash (Holling 1969) and Hampshire/Surrey borders (Holling 1971)
17. Woolwich (Pryor and Blockley 1978)
18. The Aldgate sequence of discrete groups covers the period *c*.1660 to 1750/70: Orton and Pearce 1984, 35. The Southwark material consists of a series of groups of 17th-century date (199 Borough High Street) and of flood deposits (Mark Browns Wharf): Schaaf 1988, 125–31; Hinton *et al*. 1988, 133–42
19. A listing of Great Fire and pre-Fire groups will be available in due course on-line from the London Archaeological and Archive Research Centre
20. Nelson 1981
21. Pryor and Blockley 1978, Phase 3 (Fabric E2), Figs 13–16; Orton and Pearce 1984 (Post-Medieval Redwares and Glossy Redware), Nos 51–76, Figs 20–3
22. Holling 1971, 79 (K, Costrels), 81 (N, Candlesticks; Q, money boxes; R, lids)
23. Orton 1988, 297, 299–301. In his unpublished account of the pottery from Oatlands Palace, Weybridge, Surrey, Clive Orton suggests that TUDB dates to the late fifteenth and sixteenth centuries, and assigns 'late' TUDB to *c* 1570–1600

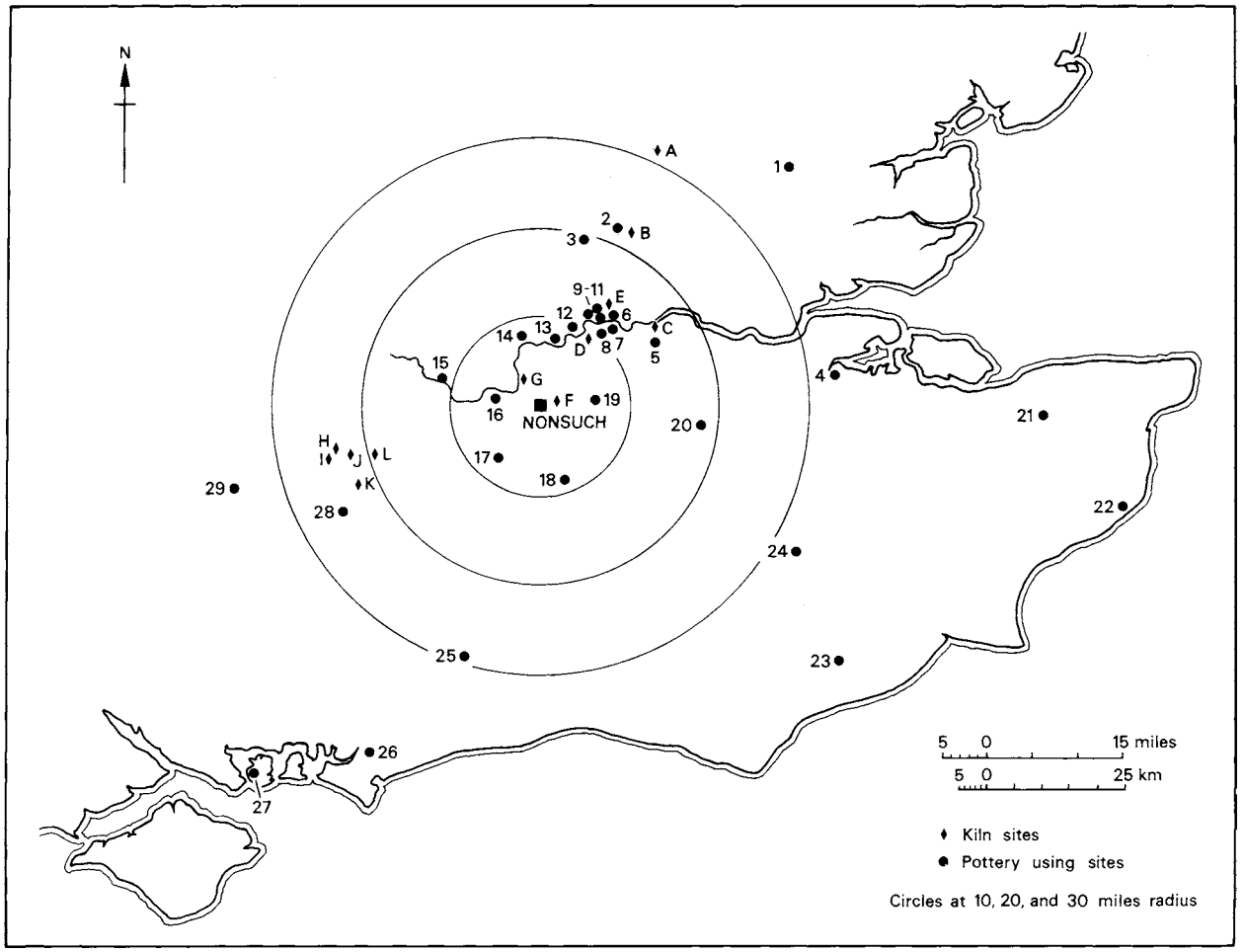


Fig. 69 The location of kiln sites and pottery-using sites mentioned in the text (all in the City or Greater London unless otherwise stated).

Kiln sites: *A, Harlow (Essex); N, Loughton (Essex); C, Woolwich; D, South Lambeth; E, Aldgate; F, Cheam; G, Kingston-upon-Thames; H, Hawley (Hants); I, Cove (Hants); J, Farnborough (Hants); K, Ash (Surrey); L, Pirbright (Surrey).*

Pottery-using sites: *1, Chelmsford (Essex); 2, Waltham Abbey (Essex); 3, Enfield; 4, Chatham (Kent); 5, Eltham; 6, Aldgate; 7, Guy's Hospital; 8, Southwark; 9, Inns of Court; 10, Lincoln's Inn; 11, Fetter Lane; 12, Westminster; 13, Fulham; 14, Brentford; 15, Staines (Surrey); 16, Oatlands (Surrey); 17, Fetcham (Surrey); 18, Reigate (Surrey); 19, Croydon; 20, Otford (Kent); 21, Canterbury (Kent); 22, Dover (Kent); 23, Battle Abbey (East Sussex); 24, Bayham Abbey (East Sussex); 25, Pulborough (West Sussex); 26, Chichester (West Sussex); 27, Portsmouth (Hants); 28, Farnham (Surrey); 29, Basing House (Hants).*

terms of the hypothesis put forward. The difficulty is emphasised by the occurrence of some of the most distinctive features of the Nonsuch pottery in two much earlier deposits, the waster group from Kingston-upon-Thames, London, assigned (on no very good evidence) to the late fifteenth to early sixteenth century,[24] and the 'Tudor cesspit group' from Arundel House, Strand, London, assigned to the middle, or third quarter, of the sixteenth century.[25] In these two groups we find the jug, pipkin, jar, storage jar, and bowl forms, together with the distinctive flanged

24. Nelson 1981, 100–1
25. Haslam 1975b, 229–31. Haslam noted that it was 'difficult to fix the group in time with any degree of certainty' (p 229)

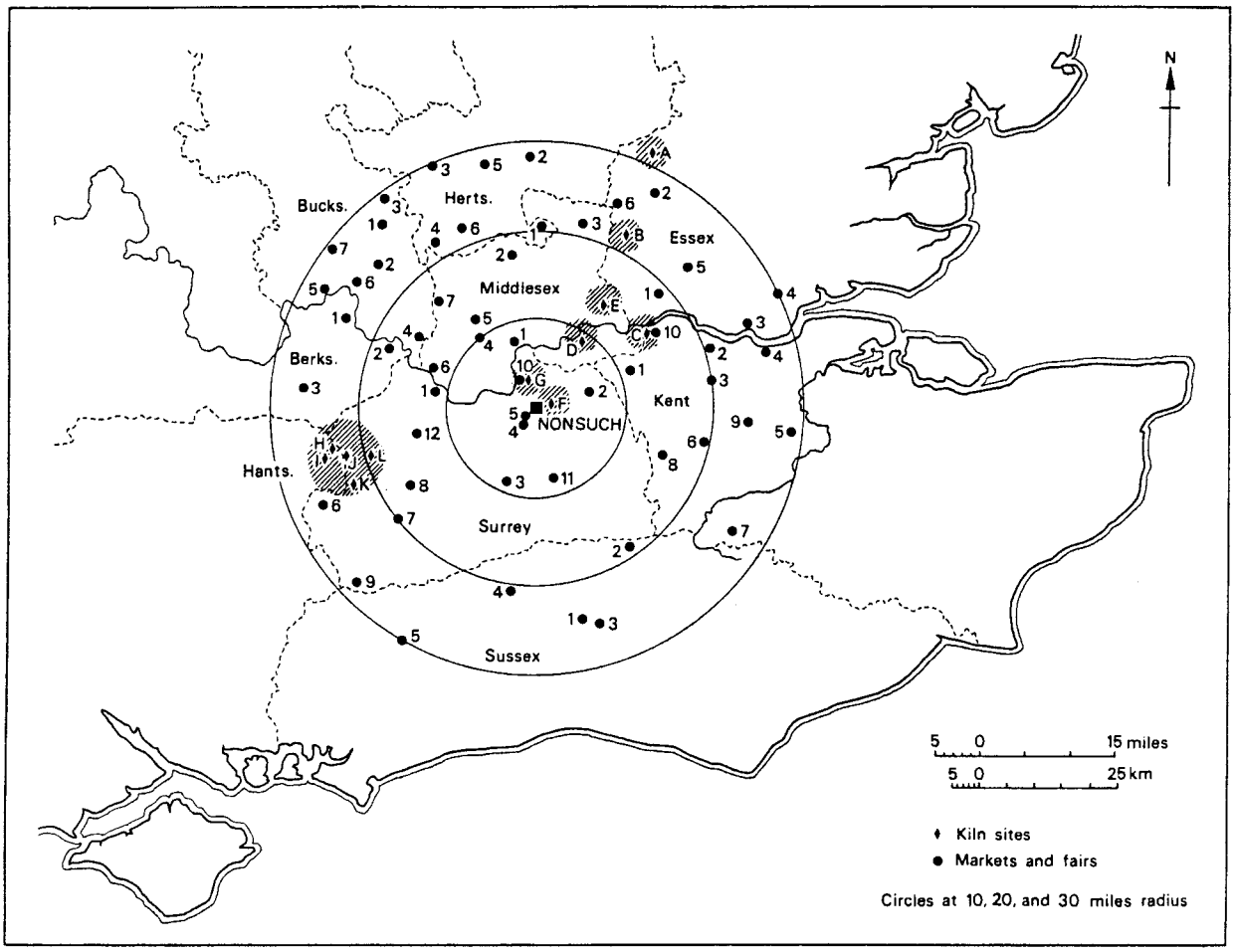


Fig. 70 The supply of earthenware to Nonsuch in the second half of the seventeenth century: markets in the Nonsuch area. Berkshire: *1, Maidenhead; 2, Windsor; 3, Wokingham.* Buckinghamshire: *1, Amersham; 2, Beaconsfield; 3, Chesham; 4, Colnbrook; 5, Marlow; 6, Wooburn; 7, Wycombe.* Essex: *1, Barking; 2, Epping; 3, Grays; 4, Hordon on the Hill; 5, Rumford; 6, Waltham Abbey.* Hertfordshire: *1, Barnet; 2, Hatfield; 3, Hempstead; 4, Rickmansworth; 5, St. Albans; 6, Watford.* Kent: *1, Bromley; 2, Dartford; 3, Farningham; 4, Gravesend; 5, Malling; 6, Sevenoaks; 7, Tonbridge; 8, Westerham; 9, Wrotham; 10, Woolwich.* Middlesex: *1, Brentford; 2, Edgeware; 3, Enfield; 4, Hounslow; 5, Southall; 6, Staines; 7, Uxbridge.* Surrey: *1, Chertsey; 2, Croydon; 3, Dorking; 4, Epsom; 5, Ewell; 6, Farnham; 7, Godalming; 8, Guildford; 9, Haslemere; 10, Kingston; 11, Reigate; 12, Woking.* Sussex: *1, Cuckfield; 2, East Grinstead; 3, Hayward's Heath; 4, Horsham; 5, Petworth.* Kiln Sites *A-L: for key to lettered kiln sites in hatched pottery-producing areas, see Fig. 69.*

feet formed by overlapping finger impressions, and the finger impressed rosettes and bands of decoration composed of wavy lines between horizontal incisions, characteristic especially of TUDB and NONA vessels at Nonsuch.

Distribution and associations of the redwares and other fabrics at Nonsuch

The problem is best addressed by looking first at the distribution of the various fabrics at Nonsuch, and their association in the different deposits. The spatial distribution of TUDB across the palace is consistent both with the overall distribution of the coarse pottery and with the narrower distribution of NONA and the other identified fabrics (Figs 31–3). Since this

distribution is both limited to discrete areas and characteristic of all the other domestic finds (Figs 28–30), TUDB appears to obey the factors governing the distribution and to be a part of it. There is no suggestion in these distributions that TUDB was in any way a separate group.

If the associations of the various fabrics within the different garderobe groups and other deposits are examined, a similar picture emerges. TUDB occurs in seven of the garderobe pits, NONA in six, frequencies exceeded only by BORD and PMFR which are found in eleven and eight respectively (Table 10). The figures for the overall relationship of forms to fabrics are even clearer: 32 forms occur in TUDB, 22 in NONA, numbers exceeded only by the 38 forms which appear in BORD (Table 9). These are not the kind of figures to suggest that TUDB or NONA are residual fabrics among material of much later date; the two fabrics seem on the contrary to be central components of the assemblage as a whole and of the individual garderobe deposits.

Something rather similar emerges when form is considered in relation to fabric in terms of function. Pipkins (cooking pots) occur in most of the garderobes (Table 11), 13 are in BORD, 8 in TUDB, and 4 in NONA, with only one in PMCR and none in PMFR. Similarly of the 21 types of two-handled jars (Table 11), 11 are in NONA, 4 in TUDB, 3 in NONB, and only one each in PMCR and PMFR. By contrast, of the 14 types of storage jar (Table 11), 5 are in PMCR, and 4 each in PMFR and TUDB. If TUDB is distinctively earlier at Nonsuch than PMCR and PMFR, we would have to believe that while PMCR and PMFR storage jars were available on the market, new cooking pots and two-handled jars were unobtainable in these (better) fabrics, and were supplied by using almost exclusively old vessels in TUDB and NONA, supplemented by BORD. This division between forms and fabrics can also be seen in Table 9 (p 00), and is powerful evidence that the fabrics are in fact contemporary.

The phasing of the palace deposits can unfortunately give little help in solving this problem.[26] Phase 4, the occupation, extends theoretically from the construction in 1538–46 to the demolition in 1682/8, but in practice with few exceptions the deposits all belong to the last twenty years of the palace's existence.[27] Within Phase 4 virtually all the material came from the garderobes, the well, and the Great Cellar. As Table 9 shows, "non-garderobe" deposits produced only one vessel type in BORD, a vivid testimony to the absence of non-garderobe deposits and thus to the thoroughness with which the palace had been kept clean or, more likely, cleaned out at intervals. The last such recorded cleansing took place in August and September 1665 following two decades of neglect and decay during the Civil War and the Interregnum, when the Office of Works took the palace in hand, fitted it up as offices for the Exchequer, and removed large quantities of rubbish.[28]

The Phase 5 demolition deposits of 1682/90 constituted the vast bulk of the material excavated in 1959. They contained pottery of every fabric found on the site (Table 10), all of which – except for vessels brought in by the workmen which cannot be distinguished from the rest – must be regarded as residual material left over from the last major phase of occupation. The richest single demolition deposit, Dump 1, was clearly the result of throwing the soil from Garderobe 5 to one side in the course of demolition, perhaps because it had got lodged high up the garderobe shaft.

The Phase 6 levelling deposits contain much less material, most of which must again be regarded as residual.

26. See above, p 12, 25–69
27. For the exceptions, see above, p 45–7
28. In August and September £455 7*s*. 1½ *d*. was spent on this work, including 'Labourers....carrying of a great quantity of rubbish out of the house' (August), and 'carrying of rubbish out of the upper Court and out of several roomes in the house' (September). See above p. 58

Table 7. Earthenware: the dating of Types 1–96 and 126–30 suggested by form parallels.

Type	fabric	suggested date
1a	MART	–
1b	MART	–
2	BEAU	–
3	NISG	1575 – 1625
4	TGWB	–
5	NHSW	–
6	METS	–
7	METS	1671
8a	STSL	*c*.1670 onwards
8b	STSL	*c*.1670 onwards
9a	CHER, NONA, TUDB	–
9b	CHER, NONA	–
9c	TUDB	–
9d	CHER	–
10	?TUDB, NONA	–
11a	TUDB	–
11b	relCHER	–
11c	TUDB	–
12	CHER	–
13	TUDB	–
14	NONA, TUDB	–
15a	TUDB, NR	1550–1600 or later
15b	?TUDB	Late C16th – early C17th or later
16a	PMFR	1600 – 1650
16b	NR	–
17.1	PMFR/PMBL	?Early C17th
17.2	PMBL	–
18	?GUYS	–
19a	relCHER	–
19b.1	relCHER	–
19b.2	relCHER	–
19b.3	relCHER	–
34a	NONA, NONB, PMFR/NONB	–
34b	NONA	–
34c	NONA	–
34d	NONA	–
35	PMCR, NR	1600 – 1650
36a	TUDB	–
36b	TUDB	–
37a	NR	1660 – 1680
37b	PMCR	1660 – 1680
37c	PMFR	?1660 – 1680
37d	PMFR	?1660 – 1680
38a	TUDB	–
38b	PMCR, PMFR	1660 – 1680
38c	PMCR	1660 – 1680
39	STBU	*c*.1660 – 1690
40	RBOR, PMCR, PMFR	–
41	TUDB	–
42	PMCR	1660 – 1680
43	NONB, NR	–
44a	PMFR	*c*.1660 – 1680
44b.1	PMFR	*c*.1660 – 1680
44b.2	PMFR	*c*.1660 – 1680
45	PMFR	–
46a.1	PMBL	Early – mid C17th
46a.2	PMBL	Early – mid C17th
46b	cfPMBL	?Mid C17th
46x	PMBL	–

type	fabric	suggested date
19c	TUDB	–
20	TUDB/CHER	–
21a	GUYS	–
21b	GUYS	–
22a.1	TUDB, TUDB/CHER GUYS, NONA	Mid C16th – early C17th
22a.2	TUDB/NONA	Mid C16th – early C17th
22b	TUDB	Mid C16th – early C17th
22c	TUDB	Mid C16th – early C17th
23	NONB/PMFR	Mid C16th – early C17th
24	NONB/PMFR	Mid C16th – early C17th
25	?RBOR	Late C16th
26	PMBL	–
27a	TUDB	–
27b	NONA	–
28a	TUDB, NONA	–
28b.1	TUDB	–
28b.2	TUDB	–
28c	NONA	–
29	PMCR	–
30a	TUDB, NONB	–
30b	TUDB	–
30c	TUDB	–
31a	NONA, TUDB	–
31b.1	NONA	–
31b.2	NONA	–
31c	NONB	–
31d	NONA	–
31e	NONA	–
31f	NONB/PMFR	–
32	TUDB, NR	1600 – 1650
33a	NONA, NONB	–
33b	NONA	–
52	TUDB	–
53	NR	–
54	PMFR	–
55	RBOR	1625 – 1650
56	NR	–
57	?PMFR	–
58	GUYS	–
59	NR	–
60	NR	–
61	NR	–
62a	RBOR	–
62b	RBOR	–
62c	RBOR	Mid – late C17th
62d	RBOR	–
63	NR	–
64	RBOR	–
65	RBOR	–
66	RBOR	Mid – late C16th
67	RBOR	–
68	RBOR	Mid – late C17th
69	NR	–
70	NR	–
71	GUYS, NONA	C16th – early C17th
72a	TUDB, NONA, NR	C16th – early C17th
72b	NONA	C16th – early C17th
73	NR	–
74	PMFR, NR	?*c*.1660 – 1680

Table 7. continued.

Type	fabric	suggested date	type	fabric	suggested date
47	PMCR	–	75	NR	–
48a	PMCR	1650 – 1720	76	NR	–
48b	?PMFR	1650 – 1720	77	PMCR	–
48c	PMCR	1650 – 1720	78	GUYS or CHER	–
49a	NR	–	79	TUDB/CHER	?C16th – early C17th
49b	PMCR	–	80	TUDB	?C16th – early C17th
50a	?PMCR	*c*.1700 – 1720	81	GUYS	?C16th – early C17th
50b	PMFR	*c*.1700 – 1720	82	NR	?C16th – early C17th
50c	PMFR	*c*.1700 – 1720	83	GUYS	–
51	RBOR	1625 – 1650	84	GUYS	–
85	GUYS	–	94a	NR	–
86a	STBU, RBOR, NR	*c*.1650 – 1675	94b	TUDB	–
86b	NONB, PMCR, PMFR	?Early C17th	95	?TUDB	–
86c	PMFR, NR	*c*.1650 – 1675	96	GUYS	–
87	NONA	–	97–125	See Table 8	
88	PMBL	–	126	BORD/CHEA	–
89	PMCR, NR	–	127	NONC	–
90	RBOR	–	128	CSTN	C15th – C16th
91	NR	–	129.1	CSTN	C15th – C16th
92	RBOR	–	129.2	CSTN	C15th – C16th
93	RBOR	–	130	CSTN	C15th – C16th

More significant at first sight must be the pottery from the Phase 3 construction deposits of 1538. Five BORD vessels, three NONA vessels and one each of GUYS ware and NONB are recorded from Phase 3 layers and one PMCR from Phase 2. With the exception of the BORD vessels, all are likely to be misplaced.

The dating of the deposits

The distributions and associations of the coarse pottery fabrics thus provide no indication that the deposits are other than broadly homogenous. Before considering possible explanations for this association of fabrics to which different dates have so far been given, the dating of the deposits themselves must be reviewed, first in the light of the dates which can be applied to the coarse pottery itself and second in relation to the dating of the other artefacts in the deposits.

Tables 7 and 8 list those earthenware types for which dates can be suggested by comparison with parallels noted elsewhere. When working through the pottery it became clear that while there were some types for which relatively precise parallels and thus dates could be suggested (these are listed in Tables 7 and 8), there were many types for which the parallels were only very general and for which no useful dating could be suggested within the period in question. These latter types include almost all those which occur in TUDB, NONA, and NONB, as well as several in BORD, CHER, GUYS, PMCR, and PMFR.

When the other datable artefacts are taken into account, it seems clear that with two or possibly three exceptions the deposits belong to the last third of the seventeenth century, ie., that that is the date of their deposition.[29] This does not mean that many of the items were not already old when they were thrown away, and this is just what the dates assigned independently to the other artefacts, eg. the glass and stoneware, suggest was in fact the case. To a certain extent this may reflect the current state of knowledge of some of the materials, but that is exactly the question to be faced in dealing with the coarse pottery. The dates which can be assigned to some of the latter (Tables 7 and 8) show that it was probably residual, provided that the dates

29. See below, Concordance I; for discussion, see p 45–7

suggested are correct and the types did not have a longer life. But residuality alone does not seem sufficient to explain the problem that on current thinking much of the coarse pottery would be dated little later that 1600.

Possible explanations and conclusions

The simplest explanation of the dating problem is to suppose that considerable quantities of domestic material, glass, stoneware, tin-glazed ware, and coarse earthenware had remained in the palace since before the Interregnum had been ignored in 1665–6 when the Exchequer officers occupied the building, but had been brought back into use during the continued occupancy of some parts of the building between *c* 1670 and 1682/8.

There are difficulties in accepting this explanation:

i. It is hard to imagine that significant quantities of high quality glass and fine pottery had really survived untouched in the palace during the twenty years of neglect and lack of proper control between the 1640s and 1665/6;
ii. although the supposition that the "problem" earthenwares, especially TUDB, might have been in the palace since the 1640s goes some way to filling the chronological gap, it does not solve the problem, for it would still be necessary to regard these wares as residual since *c* 1600;
iii. it does not explain the observation that the most important vessel types appear for the most part in different fabrics, as noted above, eg. pipkins (cooking pots) in TUDB and NONA, storage jars in PMCR and PMFR. This is not the sort of pattern which might be thought to arise through residuality alone.

An alternative explanation would suggest that the answer lies not in residuality but in the current state of knowledge of the pottery industry in the London area in the seventeenth century. The lack of known kiln sites and the imprecise dating of many of the deposits containing pottery has already been noted. The problem in the Nonsuch area is highlighted by the presence at Cheam, a mile to the east, of an important medieval and late medieval pottery industry whose products in the sixteenth and seventeenth centuries are completely unknown. The existence in or close to Nonsuch Park of clays suitable for potting was noted by Leland in the 1540s.[30] The Reading Beds, producing clay suitable for both red and white wares, occur in the Cheam area, and traverse the park itself, providing raw materials for the nineteenth-century works of the Nonsuch Pottery and Stone & Co.'s Brick Yard, 400 yards west of the palace.[31]

Fig 71a shows the presently accepted dating of the principal fabrics occurring at Nonsuch; NONA and NONB, so far recognised only at Nonsuch, do not appear. Fig 71b shows the position if the appearance of TUDB at Nonsuch is accepted as evidence for the continued production of this fabric as late as the 1660s, and NONA and NONB are accepted as contemporary products of the 1660s. The vertical bar at *c* 1670–1682/8 shows how at this date the palace might be using a range of products with very different chronological spans.

The range of fabrics found at Nonsuch is not, however, to be explained solely by a chronological hypothesis. Underpinning this pattern there must be a complex and interacting pattern of production and marketing. The markets in the Nonsuch area are shown in Fig 70. Each probably offered a range of vessels and fabrics produced in different kilns. If Nonsuch obtained most of its earthenware in the nearest markets, say Epsom, Ewell, and Sutton, it might be possible to assume that these markets were supplied by kilns each of which produced its

30. See below, Type 126, p 198

31. Holling 1971, 63; Geological Survey 1-inch Sheet 270, Surveyed 1912

Table 8. Border eartheware (BORD); the dating of Types 97–125 suggested by form parallels.

Type	parallels	dating	reference
97	Inns of Court, London	late C16th or later	Matthews and Green 1969, Fig 1, Nos 5 and 7.
98	Inns of Court, London	late C17th–early C18th	*Ibid*. Fig 2, No 14 (and cf. Nos 13, 15–19).
99	Ash, Surrey	mid–late C17th	For a lug from similar vessel, see Holling 1969, 29, Fig 7, No J.
100	Cove, Hants	early C17th	Haslam 1975a, 179, Fig 9, Nos 92–5.
101	Basing House, Hants	C17th	Moorhouse 1970, 49–56, Fig 11, No 38.
102	Arundel House, Strand, London	?mid C16th	Haslam 1975b, 223, Fig 2, No 6: a skillet.
	Basing House, Hants	?early–mid C17th	Moorhouse 1970, Fig 11, No 41.
103	Basing House, Hants	?early–mid C17th	*Ibid*. Fig 11, No 41, but the upturned flange of the Nonsuch bowl is broken off.
104	Arundel House, Strand, London	?mid C16th	Haslam 1975b, 223, Fig 7, No 6: a close parallel.
	Basing House, Hants	?early -mid C17th	Moorhouse 1970, Fig 11, No 41, which is a bowl not a skillet.
105	Hawley, Hants; Ash, Surrey	early–mid and mid–late C17th	Holling 1971, 72–4, Fig 2, Nos A2 and A3.
106	Cove, Hants;	early C17th	Haslam 1975a, Fig 9, No 103.
	Farnborough and Hawley, Hants	late C16th–mid C17th	Holling 1971, 79, Fig 4, Nos J1 and J2.
107	No parallel noted on BORD-producing sites		
108	Arundel House, Strand, London	?mid C16th	Haslam 1975b, 223, Nos 4 and 5.
	Farnborough, Hants	late C16th	Holling 1971, 79, Fig 4, Nos K1 and K2.
109	Ash, Surrey	mid–late C17th	Holling 1969, 27, Fig 6, No F4. Holling 1971, Fig 5, No Q1, illustrates a Farnborough, late C16th form, for the complete shape.
110	Basing House, Hants	C17th	Moorhouse 1970, 48, Fig 11, Nos 34–7. Note that No 36 has a strap handle, as appears to be the case with the Nonsuch vessel.
	Hawley, Hants	early–mid C17th	Holling 1971, 79, Fig 4, No K2.
	Ash, Surrey	mid–late C17th	Holling 1969, 29, Fig 7, No J.
111	Hawley, Hants	mid C17th	Holling 1971, 79–81, Fig 5, No L2b, if the Nonsuch fragment is the rim of a chamber pot.
112a	Ash, Surrey	mid C17th	*Ibid*. 76–7, Fig 3, No E3.
112b	Ash, Surrey	mid–late C17th	*Ibid*. Fig 3, No E3, a close parallel.
112c	Ash, Surrey	mid–?late C17th	*Ibid*. Fig 3, No E3, a close parallel for the form.
112d	Cove, Hants	early C17th	Haslam 1975a, 179, Fig 8, Nos 86–9.
	Ash, Surrey	mid C17th	Holling 1969, 24, Fig 5, No A3 for rim.
113	Ash, Surrey	mid C17th	Rim and profile, cf. Holling 1971, Fig 3, No E3.
114	No parallel noted on BORD-producing sites		
115	Farnborough, Hants;	late C16th	Holling 1971, 81–2, Fig 5, No R1.
	Ash, Surrey	mid–late C17th	Holling 1969, 27, Fig 6, Nos F1 and F2.
116a	Cove, Hants	early C17th	Haslam 1975a, 179, Fig 9, Nos 91–2.
116b	Ash, Surrey	mid–late C17th	Holling 1969, 24, Fig 5, Nos A5–10; cf. Holling 1971, 76–7, Fig 3, Nos E2b, E3.
116c	Cove, Hants	early C17th	Haslam 1975a, 179, Fig 9, No 91 for the squat ribbed form, Nos 92–3 for a similar but not exactly matching flanged rim.
116d	Hawley, Hants	early–mid C17th	Holling 1971, 26–7, Fig 3, No E2a.
117	Farnborough, Hants	late C16th	*Ibid*. 76–7, Fig 3, No E1a; Jones and Drayton 1984, 49, Fig 32, No 1.
118	Ash, Surrey	mid–late C17th	Holling 1969, 26, Fig 5, No C7.
119	Cove, Hants	early C17th	Haslam 1975a, 173, Fig 5, No 43.
120	Cove, Hants	early C17th	*Ibid*. 169–70, Fig 4, Nos 17–21.
	Hawley, Hants	early–mid C17th	Holling 1971, 74, Fig 2, Nos B1b to B2b.
121	Cove, Hants	early C17th	Haslam 1975a, 169–70, Fig 4, No 14.
122	Cove, Hants	early C17th	*Ibid*. Fig 4, Nos 28–33, 45 provide possible parallels.
123a	Cove, Hants	early C17th	*Ibid*. 173, Fig 6, Nos 49, 51.
123b	Cove, Hants	early C17th	*Ibid*. Fig 6, Nos 47–8.
124	No parallel noted on BORD-producing sites	–	–
125	No parallel noted on BORD-producing sites	–	–

Table 9. Earthenware: vessel forms and fabrics (omitting Types 1–8 and the rarer fabrics).

Form	BORD	RBOR	CHER	relCHER	TUDB	GUYS	PMCR	NONA	NONB	PMFR	PMBL
Jugs	97,98		9a,9b, 9d12	?11b	9c,10,11a,11c, 13,14,15a, 15b	18		9b,10, 14		16a	17.1 17.2
Plain jars				19a,19b1 19b2,19b3	19c,20	21a, 21b					
Pipkins	100,112a,112b,112c, 112d,113,114,115, 116a,116b,116c, 116d,117				22a1,22a2,22b, 22c,27a,28a 28b1,28b2	22a1	29	22a1,27b,28a,28c	23,24		26
Two-handled jars					30b,30c,31a,32		35	31a,31b1,31b2,31 d31e,33a,33b,34a 34b,34c,34d	30a,31c 33a,34a	31f	
Storage jars		40			36a,36b,38a,41		37b,38b 38c,40,42			37c,37d 38b,40	
Cups	118								43	44a,44b1,44b2	
Mugs										45	46a1,46a2 ?46b,46x
Two-handled bowls							47,48a,48c			?48b	
Plain bowls	102,103,105,119, 120,121,122,123a, 123b,126	51,55,62a, 62b,62c,62d, 64,65,66,67,68			52	58	49b,?50a			50b,5oc 54,?57	
Pans	104		?78		72a	71,?78	77	71,72a,72b		74	
Chafing dishes	106				79,80	81					
Stink pots	107					83,84,85					
Chamber pots		86a					86b		86b	86b,86c	
Miscellaneous	99,101,108,109 110,111,124,125a 125b	90,92,93			94b,?95	96	89	87			88
Total no. of types per fabric	38	16	5	5	32	11	15	22	8	18	8

Table 10. Earthenware: the occurrence of fabrics in the garderobes, other closed groups, and the demolition (Phase 5).

	G2	**G3**	**G4**	**G5**	**G6**	**G7**	**G8**	**G9**	**G11**	**G15**	**G19**	**G26**	**G31**	**Well**	**Great cellar**	**Dump 1**	**Dump 2**	**Phase 5**
BORD	X	X	X	X		X	X	X	X		X	X	X	X	X	X	X	X
RBOR		X		X			X						X	X	X	X	X	X
CHER	X		X	X												X		X
relCHER			X	X		X										X		X
TUDB	X		X	X	X				X	X			X		X	X		X
GUYS				X	X			X			X	X				X	X	X
PMCR		X		X	X				X		X		X			X	X	X
NONA	X		X	X	X						X	X		X	X	X		X
NONB		X	X	X								?	X			X	X	X
PMFR	X		X	X	X	X		X				X	X	X		X		X
PMBL					X			?X			X			X				X
Other	MART	METS	STBU					STSL			MART	MART	METS	MART			TGWB	METS BUTT CSTN NISG DUTR MART

Table 11. Earthenware: the occurrence of vessel forms in the garderobes, other closed groups and the demolition (Phase 5).

	G1	**G2**	**G3**	**G4**	**G5**	**G6**	**G7**	**G8**	**G9**	**G11**	**G15**	**G19**	**G26**	**G31**	**Well**	**Great cellar**	**Dump 1**	**Dump 2**	**Phase 5**
Jugs		X		X	X	X			X	X		X	X		X	X	X		X
Plain jars		X		X	X		X										X		X
Pipkins		X	X	X	X	X		X	X			X	X	X		X	X	X	X
Two-handled jars		X		X	X	X						X	X		X	X	X	X	X
Storage jars			X		X	X	X			X			X	X	X		X		X
Cups		X							X				X						X
Mugs									X			X			X				X
Two-handled bowls												X						X	X
Plain bowls	X		X	X	X					X		X	X	X	X		X	X	X
Pans		X		X	X				X		X		X				X	X	X
Chafing dishes					X	X										X	X		X
Stink pots					X								X			X			X
Chamber pots			X	X					X	X				X					X
Miscellaneous	X	X			X	X	X		X				X	X	X	X	X	X	X
Total no. of form-groups in group	2	7	4	7	10	6	3	1	7	4	1	6	9	5	6	6	9	6	14

Table 12. Earthenware: the occurrence of fabrics by phase.

	RBOR	BORD	CHER	related to CHER	TUDB	GUYS	PMCR	NONA	NON B	PMFR	PMBL	OTHER
Phase 7/8	X	X			X	X	X			X		NHSW/METS
Phase 6	X	X			X	X	X	X		X	X	
Phase 5	X	X	X	X	X	X	X	X	X	X	X	MART/NISG, NHSW/CSTN BUTT/METS
Dump 1	X	X	X	X	X	X	X	X	X	X		
Dump 2	X	X					X					TGWB
Phase 4 (non Garderobe)	X											
Garderobe 2		X	X		X			X	X			MART/MART2
Garderobe 3	X	X					X	X	X	X		MART/METS
Garderobe 4		X	X	X	X			X	X	X		BUTT
Garderobe 5	X	X	X	X	X	X	X	X	X	X		
Garderobe 6					X	X		X		X	X	
Garderobe 7		X		X						X		
Garderobe 8	X	X								X	X	
Garderobe 9		X				X				X		STSL
Garderobe 11	X				X		X					
Garderobe 15					X							MART
Garderobe 19	X	X					X	X				CSTN
Garderobe 26		X			X			X		X		MART
Garderobe 31	X	X			X		X		X	X		METS
Well	X							X		X	X	MART
Great Cellar		X			X			X		X		
Phase 3		X				X*		X	X*			CSTN
Phase 2							X*					

own range, pipkins in TUDB or NONA, for example, or storage jars in PMCR or PMFR. Fig 70 shows how such a model might explain the mixture of fabrics found at Nonsuch, but since the model has to be dynamic, varying through time as types and fabrics changed, an explanation of the Nonsuch pottery has to be framed in terms of Figs 70 and 71b. Only further work, with the recovery and publication of closely dated deposits will show which of these explanations is correct. In the present state of knowledge, it may be wiser to believe that the Nonsuch problem is the product of systems of production and marketing as yet only partly understood than to assume that present knowledge is sufficient to support a rather complex pattern of residuality.

The one solution which can not be adopted is to date the Nonsuch garderobe deposits to the late sixteenth or early seventeenth century. The patterning of the full and clean garderobes (Fig. 27; Table 1) is complemented by that of the finds from the demolition deposits, the two showing that only the north-east parts of the palace were in use during the final occupation (Figs 28–33). These patterns also argue against the possibility that the garderobe deposits found in position had been missed in cleansing the palace and thus represent one of more earlier dates – for why then would the material in the demolition deposits show the same distribution as that in the garderobes?

The dates of the latest material illustrated in Figs 34–6 and listed in Tables 2–6 provide a further indication that the garderobe deposits are unlikely to be much earlier that the last stage in the occupation of the palace. These archaeological arguments are consistent with the evidence

of the written sources.[31a] The latter indicate that a large part, perhaps the whole, of the palace was occupied by the officers of the Exchequer in 1665–6, including those areas where the garderobes were found clean and empty. The only hypothesis which makes sense of the written evidence is to suppose that the palace was cleaned after 1665–6 and that only some parts, principally the Inner Gatehouse and the east range of the Outer Court, were subsequently re-occupied.

Postcript. The Museum of London's volume on *Border Wares*[32] appeared too late to be taken into detailed consideration, but fully confirms, for both RBOR and BORD vessels, the dating proposed in the present work. *Border Wares* suggests that comparables for the flanged dishes and bowls which comprise the majority of Nonsuch RBOR vessels date to the seventeenth century. On parallels from *Border Wares* for Nonsuch BORD vessels, see above p 126 and Table 8 and below, p 188–90.

ii. THE FABRICS

Fabric codes

With the exception of the three fabric types at present unique to Nonsuch (NONA, NONB, and NONC), the fabric codes employed here follow the classification developed by Clive Orton for the Museum of London.[33] These codes were established to bring post-medieval pottery terminology in the London area in line with that used elsewhere in the Museum of London, and hence to facilitate comparison of London assemblages.[34] Whilst the coding system represents a break with earlier usage, it seems set to become the standard frame of reference for post-medieval pottery in south-east England, and is therefore used in this report. With great generosity Clive Orton identified the fabric of each of the Nonsuch vessels and the reader can thus be confident that the Southwark fabric codes have been correctly assigned.

Fabric descriptions

The fabric descriptions are taken almost verbatim from Orton (1988), cited above, and from Orton and Pearce (1984).[35]

IMPORTED WARES

Martincamp ware (MART)

Martincamp (Neufchâtel-en-Bray) is situated at the northern extremity of the Beauvais pottery production area (see BEAU, below). Examples of the three types of flasks produced at Martincamp are common on British sites of the sixteenth and seventeenth centuries.[36] Fabric varies according to flask type; see p 00 below.

Beauvais ware (BEAU)

From the seventh or eighth century to the nineteenth, Beauvais (Oise) was the centre of a major pottery industry, supplying sites in Northern France and southern and eastern England.[37] During the first half of the sixteenth century, Beauvaisis ware reached very high standards.[38] Hard, fine white to cream fabric with prominent sand inclusions. The range of forms includes small medallion jugs, tubular spouted costrels, dishes, and bowls.

31a. See above, pp 54–63
32. Pearce 1992
33. Orton 1988, 295–99
34. Orton 1988, 295
35. Orton and Pearce 1984, 34–68
36. Hurst *et al*. 1986, 102–4
37. Jennings 1981, 32–3
38. Hurst *et al*. 1986, 106–7

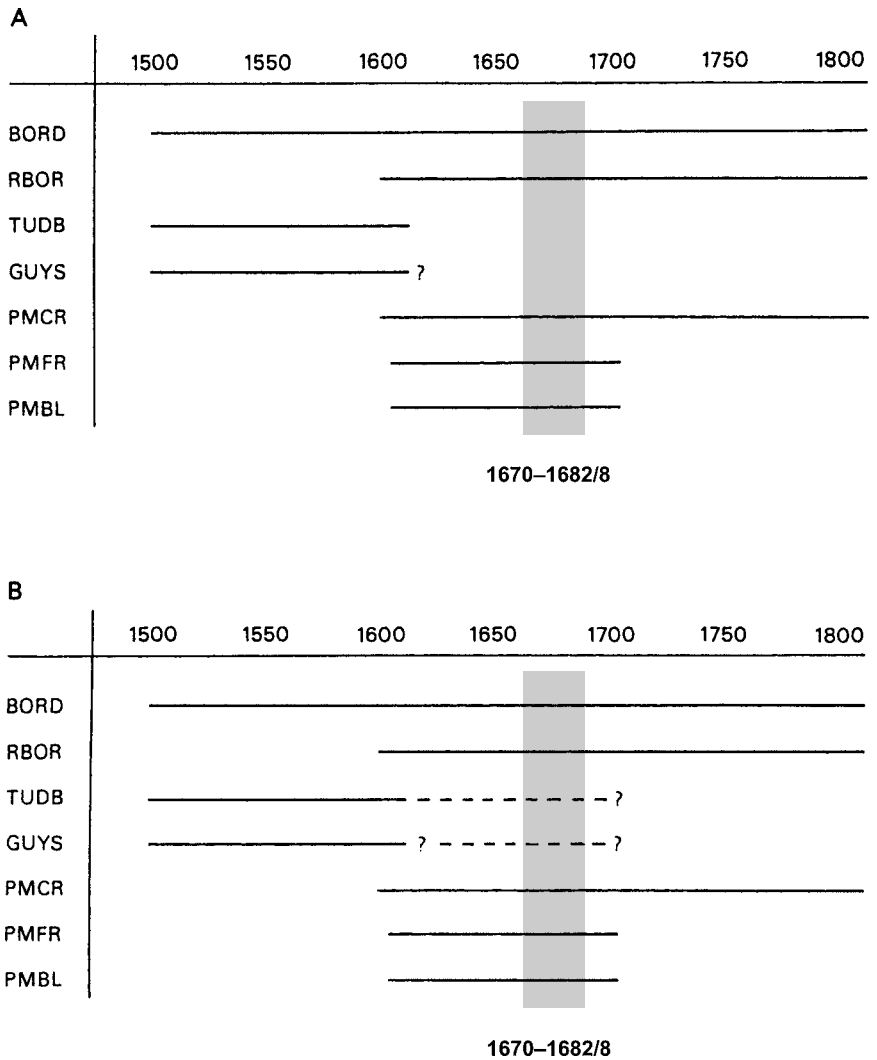


Fig. 71 The dating of post-medieval earthenware in the London region: A, *the accepted chronology;* B, *the chronology proposed in the light of the Nonsuch evidence.*

North Italian sgraffito ware (NISG)

From the fifteenth century the lead-glazed slipwares of north-west Italy, particularly Pisa, were extensively traded in northern Europe.[39] The ware (*graffita tarda*) has a fine red fabric with an inside white slip, lead glazed to produce a yellow hue. The unslipped exteriors are glossy brown. Decoration incised through the slip. Principal forms are dishes and bowls.

North Holland Slipware (NHSW)

A distinctive slipware centred on the southern part of the province of Noord Holland.[40] Common in Britain throughout the seventeenth and eighteenth centuries. A hard red-brown sandy fabric, often fired to orange, with a rich glossy light brown lead-glaze. Decoration takes the form of trailed pale yellow slip, overpainted green in places. Forms include dishes, bowls, cups, pipkins, and jugs.

39. Hurst *et al.* 1986, 30–33

40. Hurst *et al.* 1986, 154

NON-LOCAL WARES

Biscuit tin-glazed ware (TGWB?)

Tin-glazed ware in its unglazed and unfired state is generally found only on tin-glaze production sites. However, a possible example may occur at Nonsuch (see below, Type 4), possibly from Lambeth.

Staffordshire slipwares (STSL)

Staffordshire slipwares were produced at Hanley and other Stoke sites from *c.* 1670,[41] although a similar ware was in production at Bristol somewhat earlier.[42] Hard, smooth-fractured fabric, pale pink or pale yellow in colour, with grog, quartz, and iron inclusions. Decoration in trailed slip (usually on closed forms) or combed slip (usually on open forms, but on some closed ones).

Butter-pot ware (STBU)

Butter-pot ware vessels were imported to London as containers for Midlands dairy products. Found at Burslem, where they may date to *c.*1660.[43] Dated *c.*1670–90 at Hanley, near Stoke.[44] Highly-fired earthenware, approaching stoneware, with a smooth fracture. Usually a deep red/brown colour. Thick, dark glaze on interior.

Cistercian ware (CSTN)

Brown-glazed Cistercian ware drinking vessels were produced in great numbers during the fifteenth and sixteenth centuries at numerous Yorkshire and Midland potteries, exemplified by Wrenthorpe (Potovens),Wakefield.[45] In the seventeenth century, equally popular black-glazed varieties were developed. Smooth red fabric with a dark brown or black glaze.
Common forms: Mainly cups and posset cups, also chaffing dishes, costrels, and small jugs.

Coarse white ware (NONC)

A fabric of unknown source, occurring in only one vessel form at Nonsuch, and perhaps unlikely to be of local provenance. Provisionally titled Nonsuch Fabric C (NONC). White to yellow cream ware, with numerous large quartz and other inclusions. Unglazed, but bearing traces of a red or white wash. The single form noted in this fabric is a plant pot (see below, Type 127).

CHEAM WHITE WARE (CHEA)

Cheam white ware is a late medieval product from a number of kiln sites in Cheam, Surrey.[46]
Pink to very pale brown fabric with moderate quartz inclusions. Yellowish green or light green glaze, generally restricted to a small 'bib' (on jugs) or an area inside the base (cooking pots and bowls).
Common forms: jugs are by far the most common type.

COARSE RED EARTHENWARES (CHER, TUDB, GUYS, and PMCR)

Cheam red ware (CHER) is a late fifteenth-century product from Cheam, Surrey[47] (see CHEA, above). The ware first appears as an early manifestation of Tudor brown (see TUDB, below), and is datable *c.* 1480–1500.[48]
Tudor brown (TUDB) and Guys ware (GUYS) were produced at several London sites, including South Lambeth, Woolwich, and Aldgate.[49] The earliest examples of both types, from Cheam[50] and Kingston,[51] date to the late fifteenth century. Tudor brown continues to *c* 1600. By the early seventeenth century, technical developments had given rise to coarse post-medieval red ware (PMCR). Guys ware, first identified at Guy's Hospital,[52] is a distinctive component of Tudor brown with white slip beneath the glaze.

CHER

Light red fabric with a grey core, and moderate quartz inclusions. Clear glaze, generally applied to the interior of bases. Some pipkins have a rich, mottled green, exterior glaze.
Common forms: pitchers, cauldron- and pipkin-type cooking pots, small jars, dishes, and large jars.

41. Celoria and Kelley 1973, 12
42. Barton 1964, 196, 198, 205, Fig 68
43. Orton 1988, 298
44. Celoria and Kelley 1973, 5
45. Brears 1967
46. Orton 1982
47. Orton 1982
48. Orton 1982, 77
49. Ashdown 1964 (South Lambeth); Blockley 1978 (Woolwich); Richardson 1980 (Aldgate); Orton 1988, 297
50. Orton 1982
51. Nelson 1981
52. Dawson 1979

*Fig. 72 Earthenware: Martincamp flask Type **1a.2** (MART, bottom centre left); costrel Type **2** (cf BEAU, top centre left); red ware vessels, juglet Type **12** (No 253, CHER, bottom right), and mug Type **46a.2** (PMBL, top left); cream ware, jug Type **97** (BORDG, top right), costrel Type **99** (No 71, BORDG, top centre right), and pipkin Type **100** (BORDG, bottom left) (cf Figs 74, 79, 92, and 100).*

TUDB

Hard fabric, usually light or yellowish red in colour, often with grey core or surfaces. Moderate to abundant quartz inclusions. Glaze vary variable; clear or mottled green.
Common forms: fifteenth to early sixteenth century: pitchers, cauldrons, and bowls; seventeenth century: mainly storage jars, pipkins, and chamber pots.

GUYS

Fabric and glaze as Tudor brown ware, but with extensive zones of thick white slip below the clear glaze. The glaze and slip are applied internally to open vessels, externally to closed ones. The glaze appears yellow over the slip, in contrast to the brown glaze of the unslipped parts.
Common forms: as for TUDB.

PMCR

Post-medieval coarse red ware is a development from Tudor brown ware. The fabric is better glazed, and the firing more consistently oxidised, than its precedents. Fabric is hard, coarse, with a finely irregular fracture, and abundant inclusions of fine or medium quartz (0.25 – 0.5mm). Colour usually red throughout, although surface colour may differ. Clear glaze predominates, but an olive colour sometimes occurs.

NONA

This fabric, which cannot be matched with any known source, and does not occur at published contemporary sites in the London area,[53] is here provisionally titled Nonsuch Fabric A (NONA). The fabric falls half way between CHEA and CHER. Medium to hard fired reddish brown, reddish orange or buff ware, with

53. Clive Orton, personal communication

*Fig. 73 Earthenware: red ware vessels, jugs Type **9d** (CHER) and **14** (No 20, TUDB, bottom left and centre), pipkin Type **25** (?RBOR, top centre), jar Type **31b.1** (No 4A, NONA, top left), pan Type **73** (fabric not recognised, bottom right), and chamber pot Type **86a** (No 93, fabric not recognised, top right) (cf Figs 78–9, 83, 86, 97, and 99).*

moderate inclusions, giving a pimply surface. Glaze yellow-brown or yellow-green, generally applied to the base and lower walls on the interior, but more patchy on the exterior. Exterior glazing often consists of opposed patches below vessel rims.
Forms present at Nonsuch: mainly jars, also pipkins, large pans, and a jug.

NONB

A second fabric of unknown source, and apparently not present at contemporary sites in the south east.[54] Provisionally titled Nonsuch Fabric B (NONB). Buff-brown or buff-red medium to coarse ware, with abundant white inclusions up to 0.5mm in size. Glaze varies from yellow- or greenish-brown to purple-brown, applied mainly to the base and lower walls on the interior. Glazing often patchy on the exterior, sometimes appearing in patches below the rim.
Forms present at Nonsuch: mainly jars and pipkins, also a chamber pot and cup.

FINE RED EARTHENWARES (PMFR, PMBL, and METS)

Post-medieval fine red ware (PMFR) was produced at Harlow and Loughton in Essex[55] and possibly at Potterspury in Northamptonshire.[56] Black-glazed red ware (PMBL) is a black-glazed version of this ware, apparently reserved for drinking vessels.[57] Metropolitan slipware (METS) is a version with trailed slip decoration below the glaze.[58] All versions start in the early seventeenth century, but fade out quickly towards the end of that century.
Common forms: pipkins, chamber pots, plates, bowls, and drinking vessels.

PMFR

Fine fabric, with very fine quartz (0.01mm). Some open forms show evidence of knife trimming on the base. Glaze thick, glossy, crazed, and mainly clear, but olive is also common, and some dark brown or mottled

54. Clive Orton, personal communication
55. Ashdown 1970; Newton and Bibbings 1959
56. Mayes 1968
57. Orton and Pearce 1984, 48
58. Newton and Bibbings 1959

colours occur. The glaze generally covers most or all of the interior.
Common forms: pipkins, chamber pots, plates, bowls, and drinking vessels.

PMBL

Fabric as post-medieval fine red ware (PMFR), but glazed black.
Common forms: PMBL was used almost exclusively for drinking vessels.

METS

Fabric as post-medieval fine red ware (PMFR), but with trailed slip decoration beneath the glaze. Slip white, glaze clear.
Common forms: as for PMFR

BORDER WARES (BORD and RBOR)

Produced in west Surrey and north-east Hampshire.[59] The term encompasses two ranges of fabric distinguished on the basis of colour: white border ware (BORD) and red (RBOR). White border ware dates from the sixteenth to the early eighteenth century. Red border ware is not present in sixteenth-century kiln groups [60] and seems to start a little later. It is relatively more common in the seventeenth century, and outlasts white border ware into the eighteenth.

BORD

Hard fabric with colour range from pale grey to pale brown. Moderate to abundant inclusions of quartz sand, up to 0.25mm in size, sometimes with moderate reddish quartz and sparse red and/or black ironstone and white mica. Glaze green (BORDG), yellow (BORDY), yellow/olive, or mottled brown. Usually applied to the interior only.
Most common forms: plates, pipkins, skillets, chamber pots, cups, and bowls.

RBOR

Fabric light red or reddish yellow, with inclusions similar to those of BORD, although with only moderate occurrence of quartz. Glaze clear (showing as orange), olive, or brown.
Common forms: as for BORD.

iii. CATALOGUE: IMPORTED WARES

Semi-stonewares

Type 1. Martincamp flasks (MART)

These flasks are now known to have been made at Martincamp just west of Neufchâtel-en-Bray at the northern extremity of the Pays-de-Bray production area centred on Beauvais.[61] Three fabrics have been recognised, two of which occur at Nonsuch: Type II, a dark brown stoneware fabric with accidental splashes of ash glaze; and Type III, a hard orange-red fabric with a wide range of colour, merging into Type II, but often micaceous.
The basic form is globular with a long tapering neck and a plain or slightly moulded rim. The earlier Type I (not represented at Nonsuch) has a flattened profile, but Type II is more globular with one side slightly flattened and the other side mammiform with clear throwing rings and a central nipple. Type III is similar but more rounded. It seems clear that there is no absolute distinction between the fabrics and forms of Types II and III, but rather a range of variation.
Seven complete or nearly complete examples were found at Nonsuch, six of the normal size (Type 1a) and a half size (Type 1b). All come from Phase 4 garderobe fills (except No. 21, of Type 1a, recovered from a Phase 5 layer above the fill of Garderobe 2, but certainly derived from the Phase 4 deposits immediately below). Martincamp flasks are thus as distinctive a type-fossil of the Nonsuch deposits as they are said to be of 16th- and 17th-century contexts in England generally.[62] At Nonsuch there is no reason to suppose they are any different in date from the Garderobe fills in general, i.e. 1660s to 1682/8.
The neck of one example still retained some of its woven wicker binding (Type 1a.1) and it seems probable that most or all Martincamp flasks were originally wanded (cf Fig 75).[63] Another flask still retained its cork (Type 1a.4).

59. Holling 1969, 1971; Orton 1988, 297
60. Orton 1988, 295
61. Hurst *et al.* 1986, 102–4, esp.102
62. Ibid
63. A French woodblock of 1641 of a Paris tavern scene shows wanded bottles of this shape standing in a tub and one being poured into a wine glass: Hume 1956, Fig 6, but it is not possible to know whether the bottles shown were pottery or glass

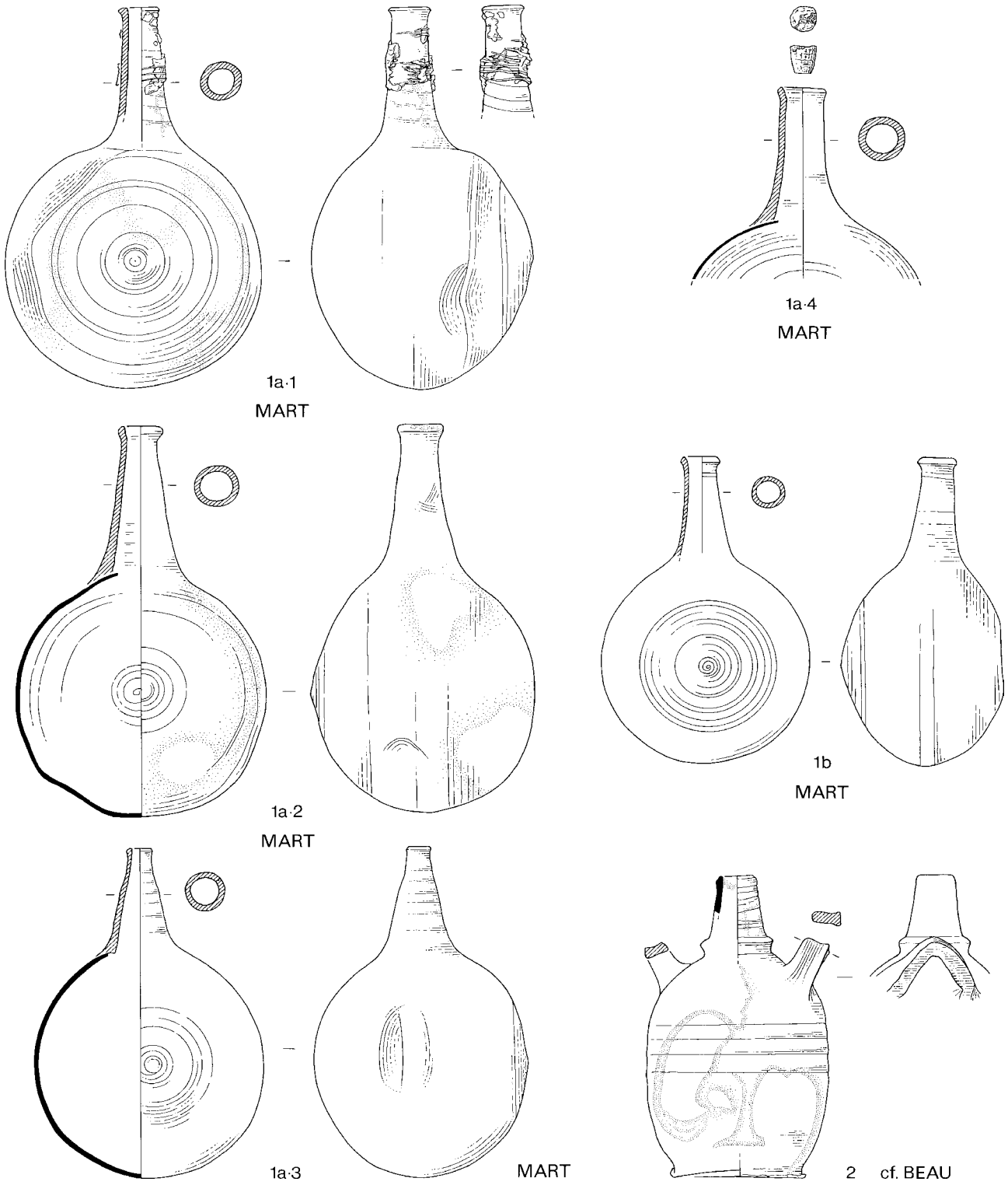


*Fig. 74 Earthenware: Semi-stonewares, Types **1**, **2** (1:4).*

Fig. 75 Paris tavern scene, 1641, showing wanded bottles (see p 139–41).

Type 1a (MART)

Martincamp flasks of the normal size with an average cubic capacity of *c* 1475 ml.,[64] slightly flattened on one side and mammiform on the other (i.e. Martincamp Type II). These flasks usually have long parallel-sided necks, tapering only slightly, but one has a shorter strongly tapering neck (Type 1a.3) and a more rounded body tending towards the Martincamp Type III form. Two fabrics are present: Fabric 1 a mica-flecked fine grey, with a darker grey core, splashed with brown glaze flecked with dark brown spots which also occur over unglazed areas (Nos. 21, 191); and Fabric 2, a brown or reddish fabric, often dull red or orange on the interior surface, but sometimes tingeing to dark grey on the exterior, without mica-flecking, but with extensive areas of rich reddish-brown glaze (Nos. 17a, 185, 227, 416). Fabric 2 seems comparable to the Martincamp Type III fabrics as they merge with the brown stonewares of Type II,[65] but the inclusion of mica in Nonsuch Fabric 1 may suggest an alternative source.

Because the MART fabrics are distinctive as to type, it was possible to make an approximate count of the total vessels present based on sherd count and distribution. Including the seven complete, or more or less complete, examples listed below, there seem to be about 24 Martincamp flasks represented, 5 (plus ?2) of the micaceous Fabric 1 and 17 of Fabric 2. As is to be expected, the more complete examples listed below come from Phase 4 garderobe deposits, whereas the sherds come mainly from Phase 5 demolition and Phase 6 post-demolition deposits. It seems clear, however, that the flasks are characteristic of the garderobe deposits and that the Phase 5 and 6 examples are residual, broken and scattered during and after the demolition.

*Type 1a.1; *No.185; Y4 33=**Well**; Y4 34=**Well**; Phase 4. Type 1a.2; *No.17a; W1 5a=**G2**; Phase 4. Type 1a.3; *No.227; T7 III 3=**G26**; Phase 4. Type 1a.4; *No.191; Y4 34=**Well**, Y4 35=**Well**; Phase 4. Type 1a. No.416; P/Q 15/16 16=**G19**; Phase 4. No.21; W1 5c; Phase 5*

Type 1b (MART)

Half-size Martincamp flask with a cubic capacity of 760ml., of Martincamp Type II form, dark grey to brown non-micaceous fabric, barely glazed.

*Type 1b; *No.47; Y4 34=**Well**; Phase 4*

Type 2. Costrel (cf. BEAU)

No exact parallel to this type has been found. The fine light grey fabric with red-brown ash-glaze is comparable to Beauvais stoneware,[66] but no example of this form appears to be known from there.

The threaded, tapering neck suggests the use of a screw-top of pottery, wood, or leather.

Two-handled screw-top bottle in very fine light grey (cf. Beauvais or 'Siegburg' stoneware), with some surface blisters (not broken out). There is faint rilling externally and the base was probably detached from the wheel with a cheese-wire which has caused lipping of excess clay up and over the base angle. The handles are very neatly luted on; the neck is well formed and tapering with a wide-spaced screw thread. Bright light brown glaze inside the lip and over the upper

64. No 17A, 1450 ml., No 185 1500 ml., were the only two vessels of Type 1A complete enough to be filled with water and measured

65. Hurst *et al*. 1986, 103

66. Ibid. 105–6

part of the body, where mostly reduced to a dark grey-brown, falling in broad swathes of bright brown over the lower part of the body to the base, but leaving large areas unglazed.
No.413; W1 5a=G2**, W2 5b=**G3**, W2 5c=**G3**; Phase 4*

North Italian sgraffito plate

Type 3. Late sgraffito plate (NISG)

The hard fine red fabric and interior white slip, lead glazed to produce a yellow hue, show that this plate is *graffita tarda* of North Italian origin, probably from Pisa. The polychrome geometric border and vertical flowering stem are typical of Pisan production between 1575 and 1625; examples are known from Plymouth in a general context of 1550–1650 and from Virginia in contexts of 1625–1650.[67]
Plate with gently curving rim, clearly defined foot ring, and kicked base. Very fine, hard fired rose ware with partly conchoidal fractures and a few incipient body blisters. Clear glaze all over the interior and exterior. Sgraffito decoration through white slip. Patches of green and brown glaze form colouring for the sgraffito pattern which comprises a central floral motif inside a series of concentric rings, the bands between which are patterned with scales and hatchings.
No.82; Q14 III 5a=SA G**; Phase 5*

Pink ware dish

Type 4. Scalloped dish (?TGWB)

The fine soft pinkish cream fabric may suggest a biscuit firing for a tin-glazed product (cf.TGWB), but this is unlikely,[68] and there seems no reason why such a 'waster' should be found at Nonsuch. Shallow, open vessel with flaring sides and out-turned scalloped rim, formed by finger impressions. Outer edge of the rim knife-trimmed. Slightly kicked base. Very fine soft fired pinkish cream ware. Unglazed and undecorated.
*No.200; X15 10a=**D2**; Phase 5

CATALOGUE: ENGLISH COARSE WARES

Slipwares: Types 5–8

Type 5. Slipware bowl (?NHSW)

The fabric of this bowl appears to be a Dutch red ware and its decoration is close to that of North Holland Slipware, but the upright rim and footring (or pinched feet) characteristic of the Dutch material are absent. A bowl similar in form and fabric from the Roman villa site at Rapsley, Ewhurst (Surrey), with a tulip-and-tree motif, was not recognised as local, but the occurrence of three fragments from three different vessels (two bowls or platters and a jug) suggested to the excavator the possibility of a local source.[69] The Nonsuch example may support this.
Fragments from the Nonsuch bowl occur in one demolition and two topsoil contexts, suggesting loss late in the life of the palace, prior to 1682/90. Shallow, open bowl with simple out-turned rim flange and a shallow moulding on the upper surface of the rim. Flat base with knife-trimmed base angle. Evenly fired medium-fine pink-orange buff ware with reddish surfaces. Clear glaze all over the interior, exterior unglazed. White-cream slip decoration over the interior showing a vase with flowers. The vase flares from a narrow foot to a broad flat rim and has opposed drooping (presumably loop) handles.
**No.386; X8 2, Y4 14; Phase 5. X7 1, X8 1; Phase 8*

Type 6. Metropolitan slipware bowl (METS)

A typical example, particularly neat and well made. From a demolition context, and probably of that date, i.e. 1682/90.
Bowl with steeply rising sides and sharply out-turned, thickened and overhanging rim flange. Internal bead at the junction of rim and wall. Medium-hard fired medium coarse ware, dull reddish-brown with a smooth purple-brown exterior surface. Clear yellow glaze all over the interior and top of rim. Wash only on exterior. White slip decoration over interior, the pattern comprising stylised fleurs-de-lys with interlocking semi-circles on the top of the rim. Glaze appears yellow over the slip, brown over the ware.
**No.127; W12 6, W12/13 6; Phase 5*

67. Ibid. 30–3
68. I am grateful to Michael Archer for examining this piece
69. Barton 1968, 62–4, Fig 27. In a comment on the Rapsley slipwares F.W. Holling noted the production of a small amount of slip-decorated red ware at a group of 17th-century potteries on the Surrey-Hampshire borders, north-east of Farnham, but did not relate the tulip-decorated platter (Group H) or the similar sherds (Groups A and G) to this source: ibid. 64

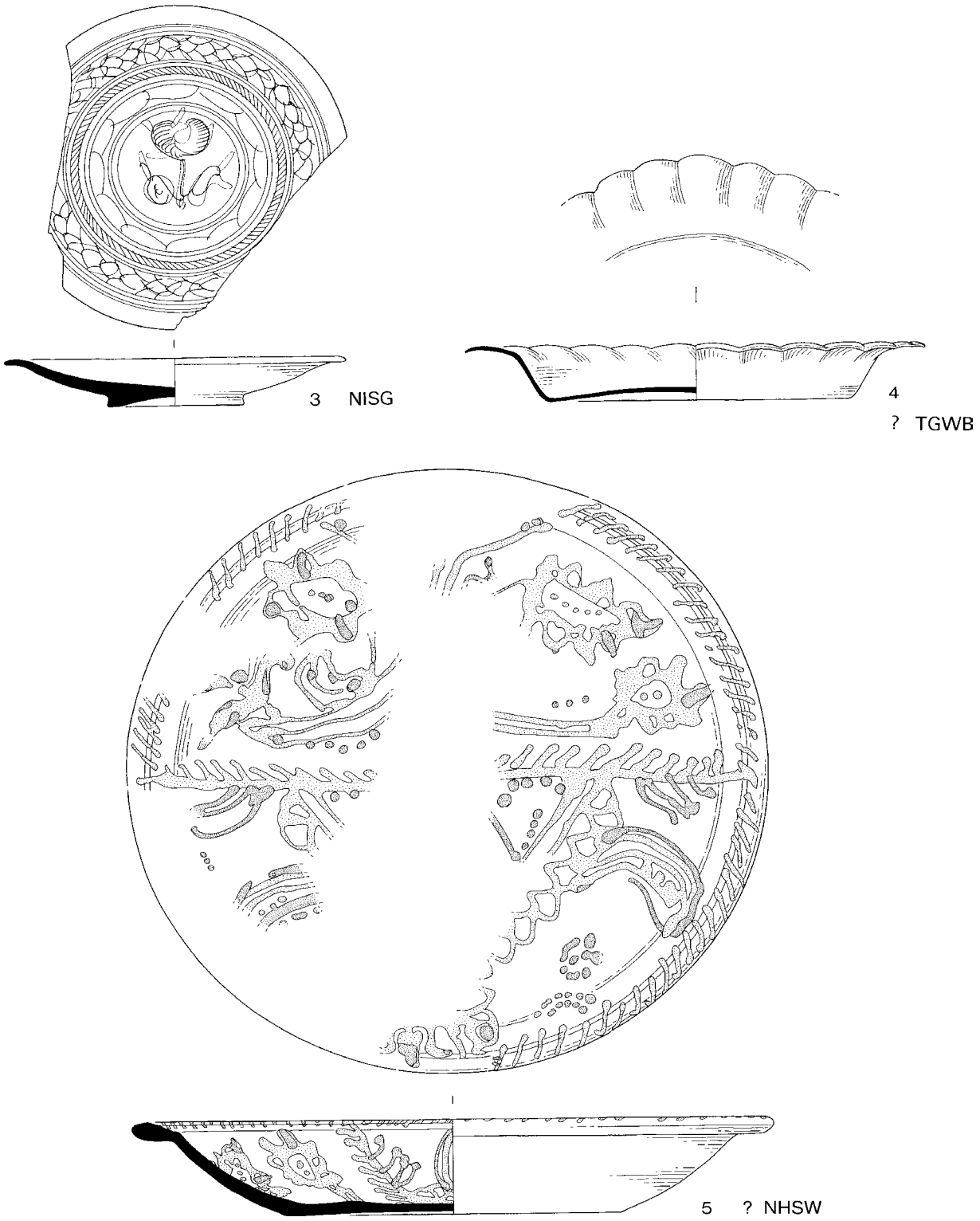


*Fig. 76 Earthenware: North Italian sgraffito, Type **3**; 'Pink ware' dish, Type **4**; North Holland slipware, Type **5** (1:4).*

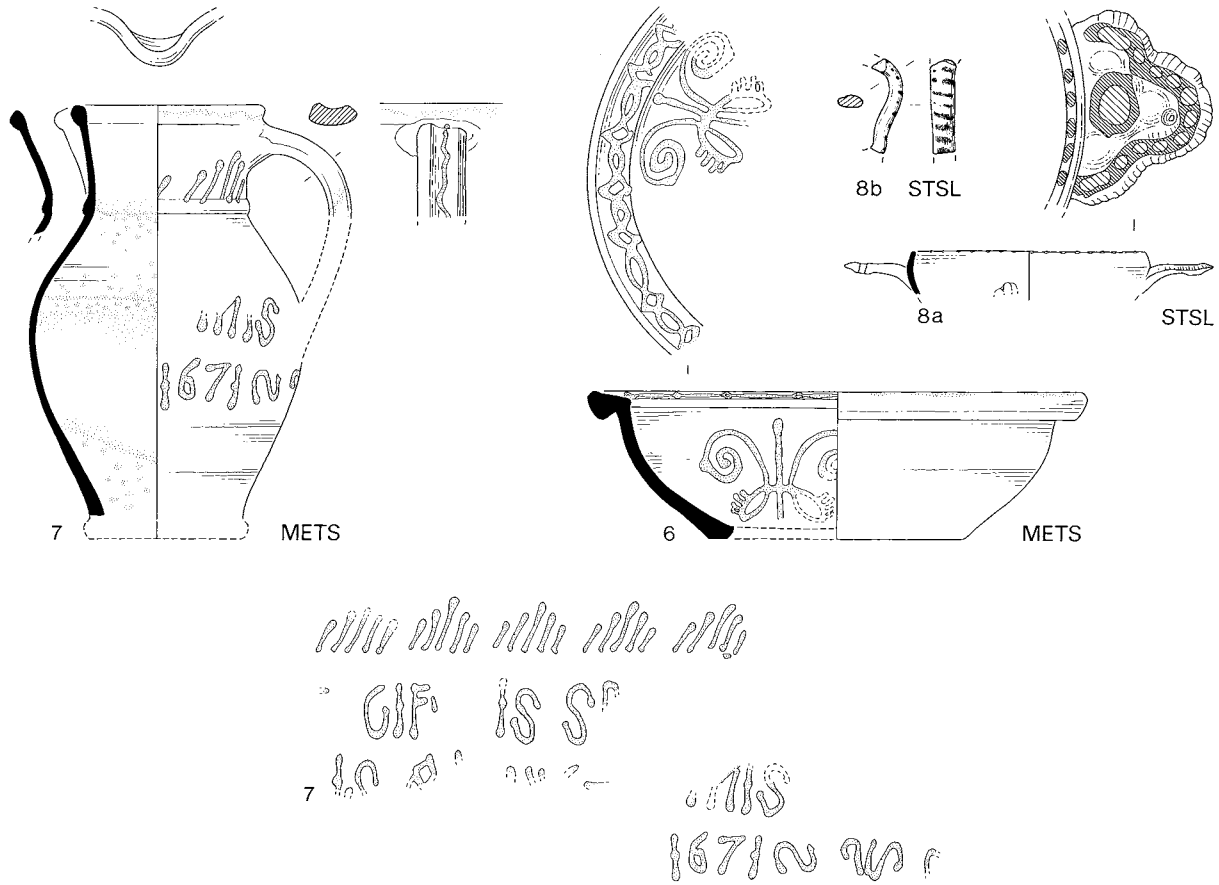


*Fig. 77 Earthenware: Metropolitan slipware, Types **6**, **7**; Staffordshire slipware Type **8** (1:4).*

Type 7. Metropolitan slipware jug (METS)

A typical Harlow slipware jug, almost precisely paralleled by a 17th-century example from a mid 18th-century pit at Burlington Road, Fulham.[70] The Nonsuch jug is dated 1671 and carries an incomplete and now indecipherable inscription.

Tall jug with gently curving body and tall, straight neck, simple folded over rim and strap handle. Cordon at the base of the neck. Base missing. Medium fired, fine to medium sandy ware. Pinkish red interior surface, purple-brown exterior. Decorated with white slip lines, including an inscription and the date 1671. Clear glaze, giving a bright orange brown colour over the exterior, and on the interior on the collar of the rim, and appearing lemon yellow when over the slip.

No.236; S1 12=G31**, S1 13=**G31**, S1 14=**G31**; Phase 4. Q8 17; Phase 5*

Several other small fragments of ?Metropolitan Slipware vessels were found: No.394 is a flake from the flat top of the rim of a large shallow bowl with a zig-zag pattern in white slip.
*No.394; W2 5c=**G3**; Phase 4.*

Other slipware sherds
X7 6; Phase 5. CH XV 1; Phase 8. X8 7; Phase uncertain

Type 8. Staffordshire slipware bowl and cup (STSL)

This bowl and a strap handle with similar decoration from a two-handled cup (No.431) are the only fragments of STSL from the palace. Both come from Garderobe 9. They thus pre-date the demolition of the palace, and provide an early

70. Blackmore 1984, 106, Fig 6, No 16

context for a production said to have started *c* 1670.[71]

Type 8a

Rim and ledge handle of a small bowl with a simple upright slightly incurved rim. The surviving handle is irregular in section and pierced with a small hole. Fine, hard-fired cream ware. Two-tone slip decoration on the upper surface of the handle, the pattern comprising spots on bands of a contrasting shade. A tiny fragment of slip decoration also survives on the interior of the bowl. Clear glaze inside and out, cream-yellow over the body, dark and light brown over the slip.
No.136; U7 8=G9**; Phase 4*

Type 8b

A strap handle with decoration similar to Type 8a, above.
*No.431; U7 8=**G9**; Phase 4*

Red wares: Types 9–96

Jugs: Types 9–18

The jugs fall into two broad categories, 'indigenous' types with tall ribbed or plain necks (Types 9–14) and copies of imported stoneware forms (Types 15–17). The correlation of both categories to fabric groups is as follows:

Types 9–14
CHER 9a, 9b, 9d, ?11b, 12
NONA 9b, 10, 14
TUDB 9c, 10, 11a, 11c, 13, 14,

Types 15–17
TUDB 15a, 15b
PMFR 16a
PMFR/PMBL 17.1
PMBL 17.2
?GUYS 18

Not Recognised 16b

Published parallels for 'indigenous' jugs of Types 9–14 are restricted to Arundel House, Strand,[72] and Africa House, Leadenhall Street[73] (both in London), the former from a cess-pit group attributed to the middle of the sixteenth century. Dating is at present very insecure and might best be derived from the fabrics represented (CHER, NONA, TUDB) were these themselves datable in these forms other than via the Nonsuch contexts. The problem is compounded by the apparent longevity of both forms and fabrics following the late medieval changes defined at both Cheam[74] and Kingston.[75] The Kingston wasters, which have been assigned to the late fifteenth or early sixteenth century, show a series of features clearly ancestral to the Nonsuch pottery. In particular, the jugs with ribbed necks, handles circular in section, and flanged feet, are close to Nonsuch Type 10.[76] The relationships between the Nonsuch and the Kingston red wares are discussed in greater detail above: in general, despite the similarities, the Kingston forms and fabric are different both in detail and overall character, displaying many traits more medieval in character than those of the Nonsuch pottery. A similar relationship can perhaps be seen between the juglets of Type 12 and the early sixteenth-century red ware jugs from Bayham Abbey, East Sussex,[77] although here again the Bayham material has a distinctly earlier appearance.

Earthenware copies of German stoneware forms, represented here by Types 15 to 17, have been recorded on other sites, especially in a group of mainly unstratified material from the Inns of Court, London, where the forms copied range in date from the late 15th to the late 16th century.[78] Nonsuch Type 15a can be compared to Frechen products of 1550–1600, and is close to Group II, **8**, of the stoneware from Nonsuch.[79] Type 15b is loosely based on stoneware shapes such as the wide-mouthed bottles which presumably acted as jugs.[80] The cut flutes of the lower part derive from either the moulded reeding found occasionally on Cologne/Frechen pots of the mid 16th century (copied in turn from metalwork or woodwork), or, more likely, from the late 16th- to early 17th-century Raeren/Westerwald pots with gouged fluting. Type 15b resembles the so-called "Malling Jugs" in form, although both imitate Rhineland stoneware.

These parallels for Type 15b suggest that copies of stoneware forms continued to be made into the 17th century,[81] and this is confirmed by the copies of stoneware forms apparently produced at Cove, Hampshire, in the second quarter of the 17th century.[82] Earthenware copies of these forms may also have been made at Harlow, Essex, in black-glazed red ware (cf. PMBL) in the first half of the 17th century.[83]

Type 16a is basically a copy of a Frechen mug of the first half of the 17th century, with a typical rosette medallion and 'prunts' around the neck copying the sprig-moulded rosettes on lion masks, or the im-

71. Orton 1988, 298 (No 18)
72. Haslam 1975b, 227–9, Fig 9, Nos 35–6
73. Broady 1975, 263, Fig 5, No.76
74. Orton 1982; see further on Type 9c, below
75. Nelson 1981
76. Ibid. Figs 2, 6
77. Streeten 1983, 91–105, Fabric D, Fig 42 and cf. Fig 41, Nos 9–28 from the Cheam kilns; see also Orton 1982, Fig 16, No 512
78. Matthews and Green 1969, 8, 14, Figs 2–3, Nos 25-35
79. See above, p 102, Fig 55, No **8**
80. I am grateful to Robin Hildyard for his comments on Types 15b, 16a, and 17.1 which have been incorporated here
81. *Pace* Matthews and Green 1969, 8
82. Haslam 1975a, 167, 183–4, Fig 10, No 118
83. Newton and Bibbings 1959, 368, Fig 9

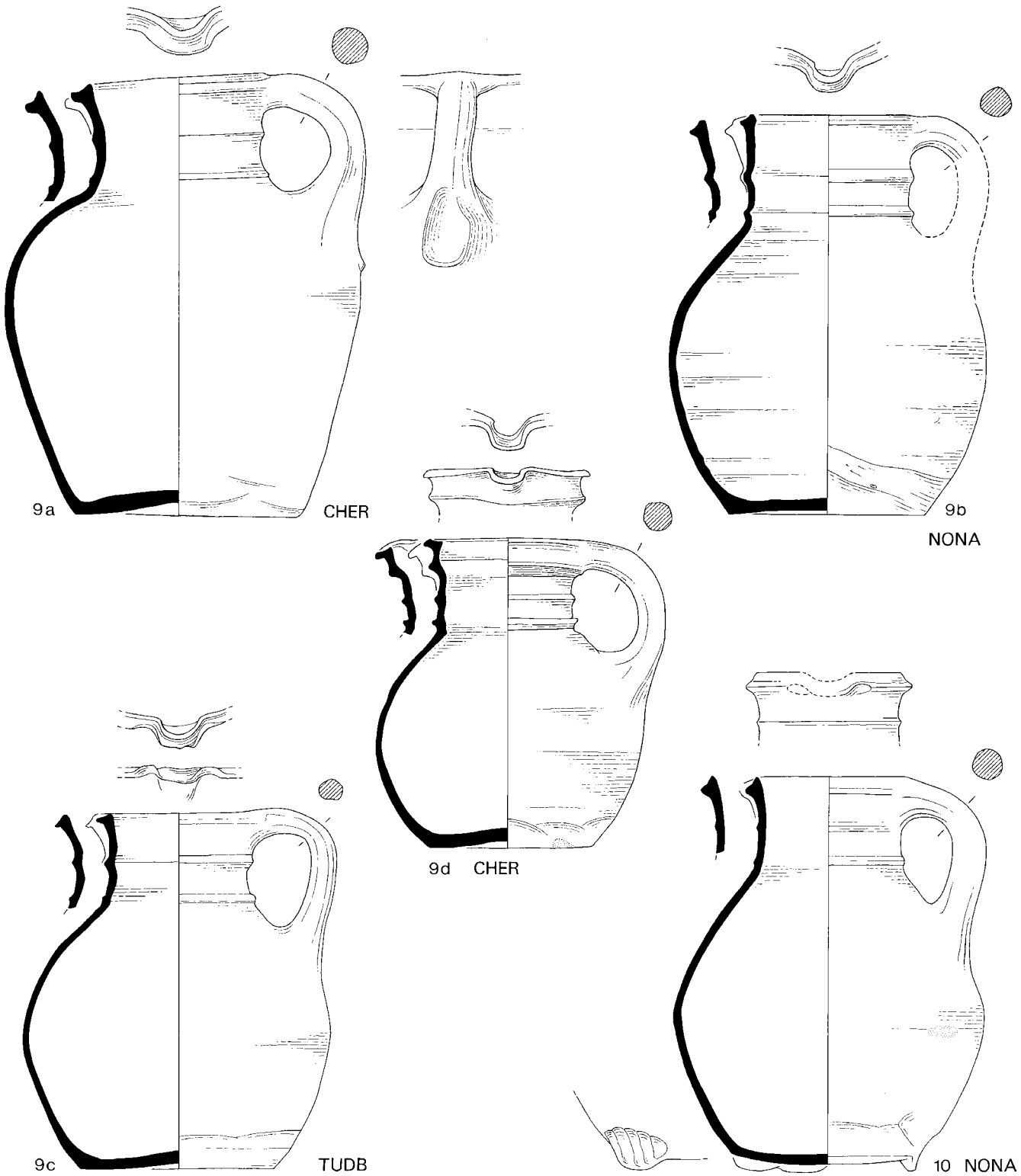


*Fig. 78 Earthenware: Red ware, Types **9**, **10** (1:4).*

pressed stylised motifs, found on late 16th- to early 17th-century Frechen mugs.[84] Such prunts are common on 17th-century German glass, where they generally serve to provide a good grip for greasy hands. The flaring base and its pinched-spouted rim, with its high-set handle designed for pouring, are not German stoneware features.

The elongated, baluster shape of Type 17.1 might suggest an early 17th-century date.

The GUYS-ware jug, Type 18, although found in a good garderobe context, might be residual, not least because the upper part of the jug is missing, the bottom perhaps having been kept as a convenient container. The white slipping of GUYS ware is said to have come to an end in the early 17th century,[85] but other GUYS ware from Nonsuch (eg. Type 21) suggests that slipping continued in one of the GUYS-ware producing kilns during the second half of the century.

Type 9. Jugs with ribbed neck and plain base (CHER, NONA, TUDB)

Medium to large jugs with globular, sagging or high-shouldered profile, tall ribbed neck, and flanged or bevelled rim. Handle circular in section, base slightly kicked. Fine to medium reddish-brown and orange ware, except for Type 9a, which has all-over grey surfaces. Generally unglazed and undecorated. The chief factor in determining the sub-types is size.

Type 9a (CHER)

Large jug with high-shouldered profile. Large thumb impression on handle spring.

** No.58; W4 II.IV 4=**G4**, W4 II/IV 4a=**G4**, W4 II/IV 4c=**G4**, W4 II/IV 7=**G4**; Phase 4. W4 II/IV; Phase 5*

Type 9b (CHER, NONA)

Medium-sized jug with rather slack profile. The base of No.111 shows much knife trimming.

*No.111 (CHER); W5ext 2c=**G5**, W5ext 2d=**G5**, W5ext 3=**G5**; Phase 4. W5 4=**D1**, W5 7; Phase 5. *No.365 (NONA); W5 3; Phase 3. W5ext 3=**G5**; Phase 4. W5 2a, W5 4=**D1**, W5 4a=**D1**, W5ext 2, W5ext 2a, W5ext 2b; Phase 5*

Type 9c (TUDB)

Medium-sized jug with globular profile. Rim has slight flange. Although the form has a more medieval appearance than the other jugs of Type 9, and would not be out of place in the late medieval/transitional Cheam red ware series,[86] apart from the ribbing on the neck, there seems no reason to suppose that this example, which comes from a typical garderobe context, is different in date from the remainder of the Nonsuch series.

** No.37; W5ext 2d=**G5**; Phase 4*

Type 9d (CHER)

Medium to small jug with sagging globular profile and flanged rim. Greenish-brown glaze on the interior below the lip and some on the rim and base. Large glazed bib below the lip on the exterior.

No.18; W1 5a=G2**; Phase 4*

Type 10. Jugs with ribbed neck and flanged feet (?TUDB, NONA)

Medium to large jug with sagging or high-shouldered profile, three flanged feet, and tall flaring neck with external ribs. Rims have slight external flange. Handles circular in section. Reddish-brown or reddish-pink ware with some grey. Small patches of glaze only. Undecorated, with the exception of some overlapped fingering on the feet. Similarities between this type and the late fifteenth- to early sixteenth-century material from Kingston are discussed above.[87]

*No.24 (?TUDB); W1 5a=**G2**, W1 5d=**G2**; Phase 4. *No.27 (NONA); W1 5a=**G2**, W1 5d=**G2**; Phase 4; X5 I/II 2 and 7; Phase 5. No.234 (NONA); P/Q 15/16 16=**G19**; Phase 4*

Type 11. Jugs with plain neck and base (?CHER, TUDB)

Medium to large jug with rather slack profile and tall, plain, usually slightly flaring neck. Lips pulled and pinched, handle circular in section. Concave or flat base. Ware and glaze differ across the group. Pimply surfaces. Decoration, on Types 11a and 11c only (both TUDB), comprises three horizontal girth grooves on the upper part of the body. The chief factors in determining sub-type are size, rim type, and ware.

Type 11a (TUDB)

Large jug with high-shouldered profile and slightly flanged rim. Fine, hard fired, bright orange-red ware with a grey core. Dark purple-brown glaze on interior of neck below lip, and on the exterior forming a large bib below the neck.

No.132; W5ext 2d=G5**; Phase 4. V8 5a, W5 4=**D1**, W5 4a=**D1**, W5ext 2, W5ext 2a; Phase 5*

Type 11b (related to CHER)

Medium-sized jug with slack profile and partly bevelled rim.

84. Schnitzer 1977
85. Orton 1982, 297, Para 12
86. Orton 1982, 77–8, 82–4, Fig 24, Group 3, Red Ware, late 15th century. I am grateful to Clive Orton for his comments on this vessel
87. See above, p 123–4

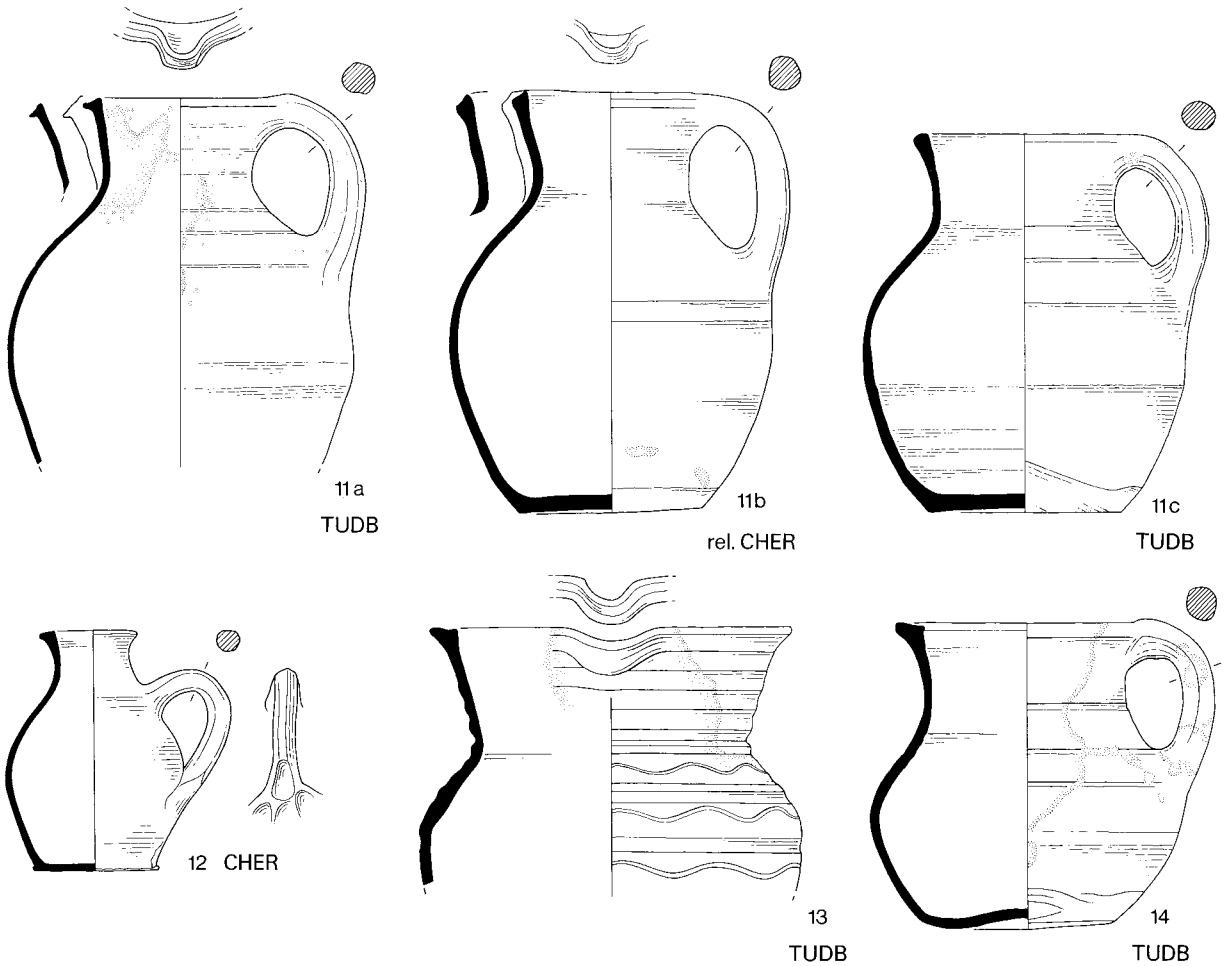


*Fig. 79 Earthenware: Red ware, Types **11–14** (1:4).*

Medium, hard fired, dark grey ware with orange streaks. Some streaks of purple glaze on the base; otherwise unglazed. Undecorated.
No.73; W5ext 2d=G5**; Phase 4*

Type 11c (TUDB)

Medium-sized jug with fairly squat profile and simple upright, partly clubbed rim. Coarse uneven reddish-brown ware. Speckles of yellow-brown glaze on the interior and forming a reddish-yellow bib on the exterior below the lip.
No.63; W4 II/IV 4=G4**, W4 II/IV 7=**G4**; Phase 4*

Type 12. Juglets with narrow neck (CHER)

Juglet with oval body profile and gently curving or flaring neck with thickened flat-topped rim and flat or slightly concave base. Handle circular in section and awkwardly set. Medium orange-red to brown ware, fairly hard fired and with pimply surfaces often smoked grey. Unglazed except for occasional spots and patches of purplish-brown glaze, mainly on the base. The illustrated example has overlapping finger-pressed decoration on the handle spring, but the others are undecorated.[88]
*No.17b; W1 5a=**G2**; Phase 4. No.43; W5ext 2d=**G5**; Phase 4. *No. 253; W5ext 2c=**G5**; Phase 4. W5 4=**D1**, W5ext 2b; Phase 5. No. 254; W5ext 2d=**G5**; Phase 4*

Type 13. Jug with wide neck and bulbous body (TUDB)

Incomplete vessel, apparently with a squat globular body and a tall flaring neck with thickened, internally beaded rim and pulled out lip. Evenly fired fine to medium buff ware containing some

88. For comparisons with jugs from Bayham Abbey (Sussex), see above, p 145

fine particles. Surfaces orange-buff in places, and pimply. A large patch of olive green to purple-brown glaze on the exterior below the lip, and on patches inside the neck. Decoration comprises ribbing on the neck and body, and on the body three wavy lines separated by grooved cordons.
**No.388; S14 III 4; Phase 5*

Type 14. Squat jug with wide mouth (NONA, TUDB)

Small squat jug with low shoulders and tall straight or gently flaring neck with clubbed and beaded rim. Handle circular in section, base slightly kicked. Base angle knife trimmed. Medium to hard fired orange-red to buff-brown or pinkish-buff ware. Patches of rich yellow or olive-green glaze on the exterior opposite the handle and inside at the top of the neck and on the rim, opposite the handle. Decoration consists only of three incised girth grooves on the body.
*No.112 (NONA); W5ext 2d=**G5**; Phase 4; W5 3, W5 10; Phase uncertain. *No.20 (TUDB); W1 5d=**G2**. No.42 (not seen); W5 3; Phase 3. W5 4=**D1**; Phase 5. W5 10; Phase uncertain*

Type 15. Coarse copies of stoneware jug forms (TUDB, and an unrecognised fabric)

Small to medium jugs with bulbous, high shoulders, tall cylindrical necks, and rounded rims. Bases virtually flat. Medium to fine orange-red ware, often fired grey, or buff-brown hard-fired ware with a slightly pimply surface. Green or yellow-green glaze on the upper part of the exterior, sometimes extending inside the length of the neck and onto the interior surface of the base. The chief factors in determining sub-type are the form of the handle and the type of decoration.

Type 15a (TUDB, and an unrecognised fabric)
Small jug with upright rim and strap handles, flat in section. Cordon at the junction of the neck and body. Decoration comprises an incised groove below the rim.
No.22 (fabric not recognised); W1 5a=G2**; Phase 4. No.129 (TUDB); W12/13 8=**G11**; Phase 4*

Type 15b (?TUDB, reduced)
Small to medium-sized jug, taller than Type 15a, with a slightly rolled out rim and a square foot ring. Strap handles, flat in section. Decoration comprises knife-cut fluting on part of the lower body.
No.1; W4 II/IV 4=G4**; Phase 4. X4 I/III / W4 I/II 2 Baulk; Phase 6*

Type 16. Fine copies of stoneware jug forms (PMFR and an unrecognised fabric)

Globular jugs with a cordon at the junction of neck and body. Cylindrical straight-sided necks, simple rims with pulled out lips, and somewhat flat-sectioned handles. The base does not survive for Type 16b, but Type 16a has a moulded, constricted foot and concave base. Ware varies across the group. Dark, rich brown glaze all over the exterior surface and on the interior of the neck, with smaller traces on the interior. The chief factor in determining sub-types is the rim form.

Type 16a (PMFR) **CHECK FABRICS**
Jug with simple upright rim, rounded over. Slight cordon at the junction of the neck and body. Fine to medium, red to pink ware. Decoration comprises applied stamped pellet rosettes on the collar (probably three such motifs originally) and applied stamped copies of stoneware shields with a leaf pattern on the body.
No.147-8; W4 II/IV 4=G4**, W4 II/IV 4a=**G4**, W4 II/IV 4b=**G4**, W8 7=**Great cellar**, W8 7=**Great cellar/G6**, Y4 32=**Well** (almost certainly the same vessel); Phase 4. U8 2a, W4 II/IV 3a, W8 3; Phase 5*

Type 16b (fabric not recognised)
Jug with a simple rounded-over rim and an external cordon below the rim. Coarse ware with red and white inclusions, and many air pockets.
**No.321; P/Q 15/16 7; Phase 6*

Type 17. Fine copies of stoneware jug forms with narrow necks

Jugs with globular bodies and tall, cylindrical, slightly flaring necks. Handle rather flat in section. Constricted foot with moulded foot ring and slightly kicked base. Fine to medium purple-brown to pink-red hard fired ware with a very slightly pimpled exterior. Dark, rich brown glaze all over the exterior, except under the foot, and on the interior of the neck. Large patches of the interior of the body and foot are also glazed. Decoration consists of an incised line below the rim and a cordon at the junction between the neck and the body.

Type 17.1 (PMFR/PMBL)
**No.317, upper part only; X7 6, X7 7; Phase 5*

Type 17.2 (PMBL)
**No.302, base only; Y7 4; Phase 5. No.432; Y4 19; Phase 5. No.433; X7 6; Phase 5*
No.302 is a base, probably from vessel No.317, or a closely similar pot.

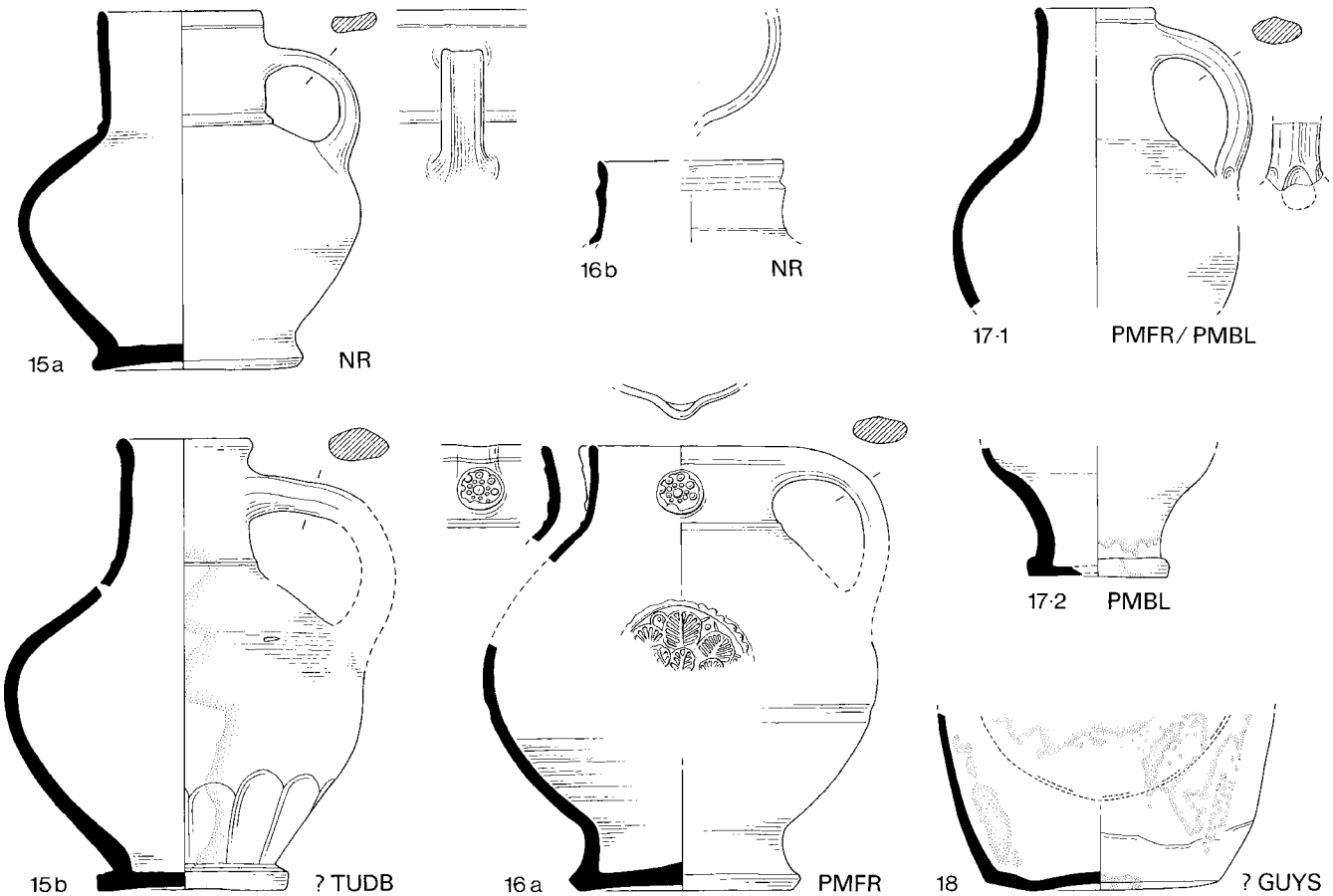


Fig. 80 Earthenware: Red ware, Types ***15–18*** *(1:4).*

Type 18. Jug with kicked base and white slip decoration (?GUYS)

Base, probably of a jug, with flaring, slightly curved body walls and a sagging base with a small central kick. Fine to medium hard fired ware with a greyish brown exterior and a light buff-brown interior with a grey tint. The core is grey. A mottled apple green glaze on the exterior. Some small patches on the interior. Decoration comprises a white slip swathe on the exterior. Glaze bright apple green over slip, darker over ware.

No.186; W8 6=G6;** Phase 4. W8 3; Phase 5. V8 2a; Phase uncertain*

Plain jars: Types 19 and 20

The Nonsuch plain jars of Type 19 are an homogenous group in form and fabric, but their source is unknown, the fabric clearly deriving from some as yet undiscovered but probably local kiln. Broad parallels to the form are, however, remote, coming from Canterbury[89] and the Bewl Valley, Kent,[90] and Bayham Abbey, East Sussex.[91] Type 20 can be paralleled at Arundel House, Strand, London.[92]

The TUBD fabric of Type 19c and the TUDB/CHER fabric of Type 20 suggest an origin in the north Surrey/south London region, and this is probably true for Types 19a and 19b.

Type 19. Plain jars with ovoid bodies and everted rims (related to CHER and TUDB)

Small, medium, and large ovoid jars with everted thickened or clubbed rims. The rims have often twisted during firing. Most have slightly kicked bases and some knife trimming at the base.

89. Late 16th to early 17th century: Frere and Stow 1983, 221, Fig 91, Nos 221–3, 226, but the rim forms differ
90. Second half of the 16th century: Crossley 1975, 52, Fig 23, No.2
91. Late 15th to early 16th century: Streeten 1983, 99, Fig 42, Nos 33, 38–42, all in Fabric D, of which No 33 has been identified as a product of the Hareplain, Kent, kiln
92. Mid to late 16th century: Haslam 1975b, 227, Fig 9, No 27

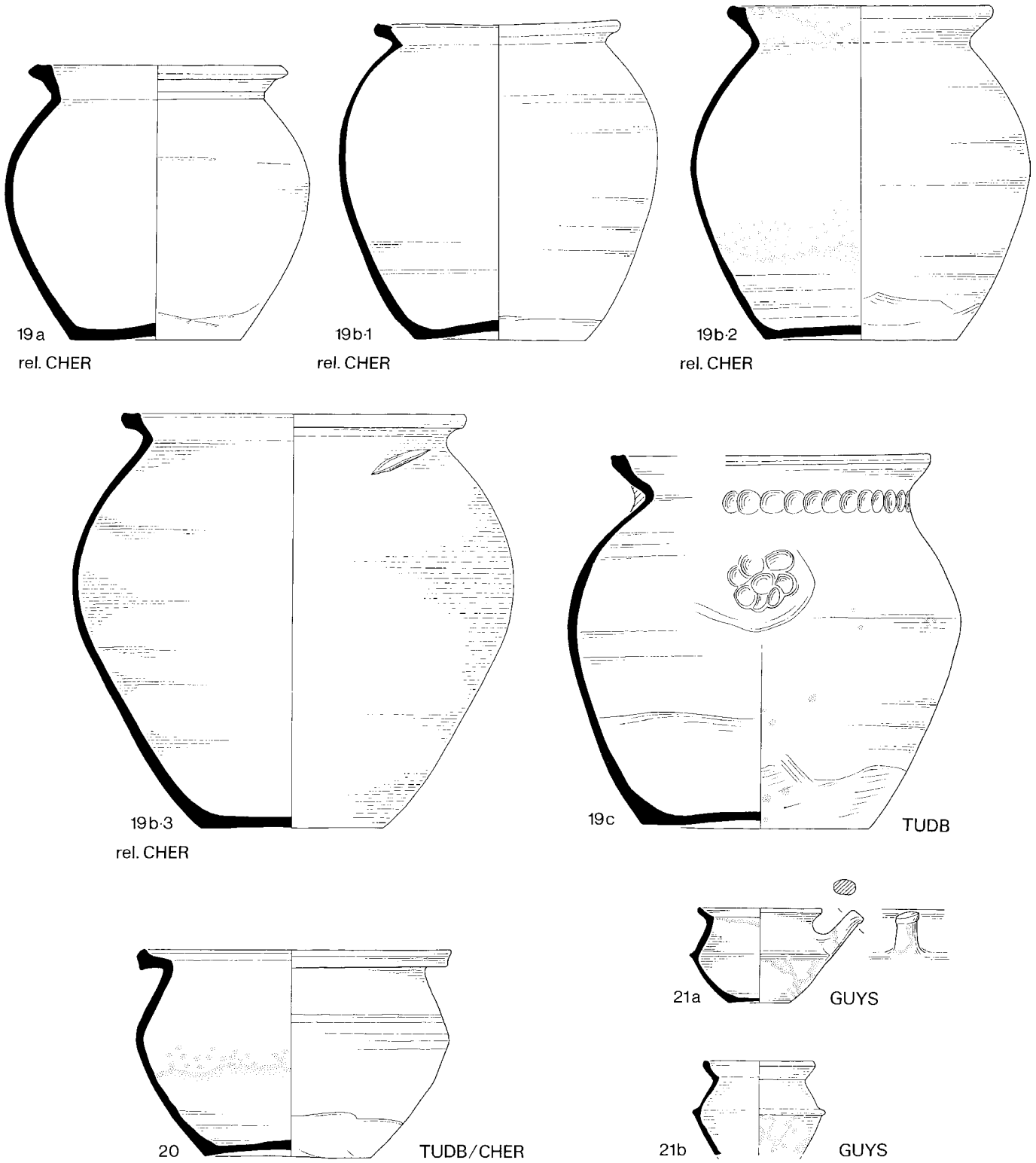


Fig. 81 Earthenware: Red ware, Types ***19–21*** *(1:4).*

Evenly fired ware with grey core and pimply exterior surface, sometimes with grey patches. The colour of the ware differs across the group. Unglazed, except for some chance patches of purple green glaze, and the green-glazed inner surface of the base of one example of Type 19b (No.113). Decoration is found only on Type 19c. The chief factors in distinguishing the sub-types are the colour of the ware, the rim forms, and decoration.

Type 19a (related to CHER)
Jars with everted thickened rims. The rim of No.13 has a slight internal bevel, while that of No.19 has angular moulding. Reddish brown ware tinged grey in places. Undecorated.
No.13; W4 II/IV 4=G4**; Phase 4. No.19; W1 5b;* Phase 5

Type 19b (related to CHER)
Medium-sized to large jars with everted clubbed rims with internal beads. Orange-brown ware. Undecorated.

Type 19b.1 (related to CHER)
No.35; W8 5=G7**; Phase 4*

Type 19b.2 (related to CHER)
No.113; W5ext 2d=G5**; Phase 4. W5 4a=**D1**, W5 6, W5ext 2a; Phase 5*

Type 19b.3 (related to CHER)
No.154; W4 II/IV 4=G4**, W4 I/IV 4c=**G4**, W4 II/IV 7=**G4**; Phase 4. W4 II/IV 2; Phase 5*

Type 19c (TUDB)
Large jar with wide everted rim with inward curve. Internal beading on rim. Decoration comprises applied fingered cordon in the angle between neck and body, and applied finger-pressed rosettes opposite each other on the widest part of the body.
No.78; W1 5a=G2**; Phase 4. W1 5c; Phase 5*

Type 20. Squat jar with angular body and flanged rim (TUDB/CHER)

Squat jar with carinated profile emphasised by a grooved line. Carefully moulded, everted flanged rim. Kicked base with extensive knife trimming. Uniform medium to hard fired orange-red ware with a pimply surface. Greenish brown glaze all over the inside of the base and partly up the walls, with patches on top of the rim. The exterior is unglazed but is covered with a purple wash. Undecorated, except for the grooved line on the shoulder.
No.118; W1 5a=G2**, W1 5d=**G2**; Phase 4. W1 5c; Phase 5*

Type 21: Small jars with bar handles

The form of these small jars in white-slipped GUYS ware does not seem to be paralleled elsewhere at present. Their contexts suggest a date comparable to the rest of the Nonsuch garderobe material, i.e. 1660s to 1682/8.

Type 21. Small jars with marked carinations and bar handles (GUYS)
Small pots with sharply carinated bodies, beaded for emphasis, and straight or hollowed everted rims. Straight bar handles. Medium-fired reddish brown ware, sometimes greyed in firing, with slightly pimply surfaces. Yellowish brown or green glaze, sometimes over a white slip, on the upper portion of the exterior surface and over and inside the rim. The interior of the base is also glazed, with small spots and patches elsewhere. Decoration is confined to the white slip on the exterior of two examples.

Type 21a (GUYS)
Small jar with everted hollowed rim. No. 256 has a handle rounded in section, No.258 has a handle with rectangular section.
No.256; W5ext 2d=G5**; Phase 4. No.258; W5ext 2d=**G5**, W5ext 6=**G5**; Phase 4. V8 5a; Phase 5. V3 ?; Phase uncertain*

Type 21b (GUYS)
Small jar with everted hollowed rim. The handle of No.70 is broken; the handles of Nos.255 and 259 are missing.
*No.70; W5ext 2d=**G5**; Phase 4. *No.255; W5 4=**D1**, W5ext 2b; Phase 5. No.259; W5ext 2d=**G5**; Phase 4. W5 4=**D1**, W5 4a=**D1**, W5 6; Phase 5. W5 ext 1; Phase 8*

Pipkins: Types 22–9

The Nonsuch pipkins fall into three basic types: those with tripod feet (Types 22–6); those with flanged feet (Type 27); and those without feet (Type 28). The 'basic' types (22, 27, and 28), several examples of each of which are present, are made in the north Surrey/south London group of fabrics (CHER, TUDB, GUYS, and NONA). The types represented by single examples (23–6 and 29) occur in the rarer fabrics, some possibly of remoter origin (NONB/PMFR, ?RBOR, PMBL, PMCR), and of these two (Types 23 and 29) occur no earlier than Phases 5 and 6 respectively. All the other pipkins are found in Phase 4 garderobe deposits.
The commonest type of pipkin at Nonsuch (Type 22) is paralleled on London and Southwark sites in contexts datable from the mid 16th to the early 17th century.[93] Types 23 and 24 are probably in the same broad grouping, with the rim form of Type 24 in particular comparable both to the rims of other

93. Type 22 parallels: mid to late 16th century (Arundel House, Strand, London), Haslam 1975b, 229, Fig 10, No 43; late 16th or very early 17th century (199 Borough High Street, Southwark), Turner and Orton 1979, 14, Fig 9, No 310; but note the form differences compared with Guy's Hospital, Dawson 1979, 36-8, Fig 7, Nos 64-9

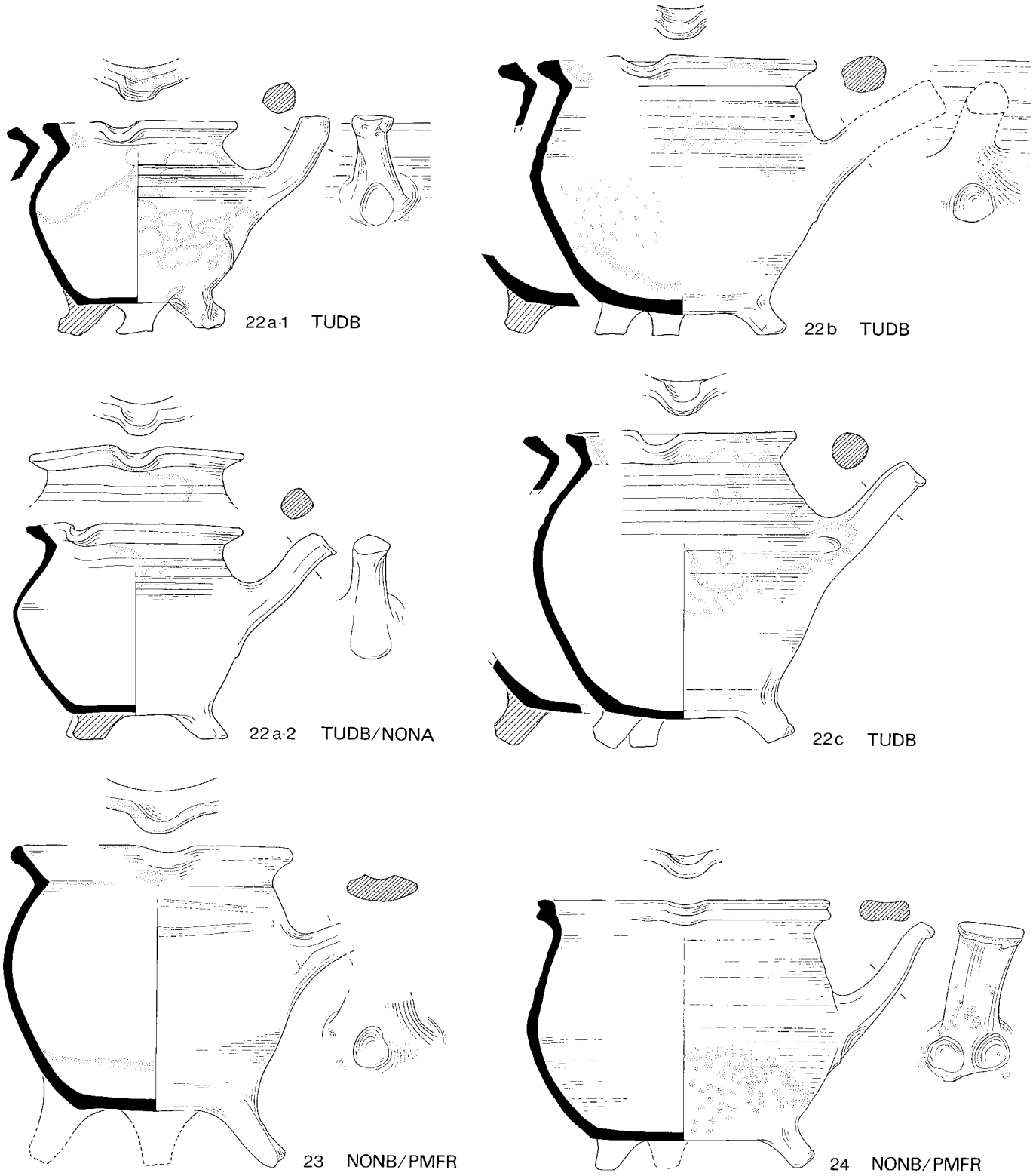


Fig. 82 Earthenware: Red ware, Types **22–4** *(1:4).*

London cooking vessels[94] and to Nonsuch pipkin Types 27b and 28c and to two-handled tripod jars of Type 30.

Type 25, which is in an ?RBOR fabric, is an obvious Hampshire-Surrey border form.[95] The greatest width is about halfway down the profile, apparently a characteristc of 17th-century ribbed pipkins, but the ribbing covers the upper half of the vessel only, a feature thought to be of late 16th- rather than 17th-century date. Ribbing has been tentatively thought to disappear in the Border pipkins after about 1640.[96] If so, the Nonsuch vessel, which comes from a Phase 4 garderobe context, would seem to be residual.

Type 26, which may not be a pipkin, is in a PMBL fabric, but is hard to parallel in published groups.

Only the flanged feet of Type 27 and the absence of feet on Type 28 distinguish them from Type 22. These features are difficult to parallel on other published pipkins, but there is no doubt that all three types are related, and their Phase 4 contexts indicate that they are contemporary.

Type 29, in a red fabric of PMCR-type, has an external seating for a lid, a feature seen in white border ware (BORD) pipkins of Types 112–14. As Clive Orton notes, the fabric of Type 29, although probably within the PMCR range, is somewhat like RBOR, again suggesting a relationship to the border industries.

Type 22. Pipkins with tripod feet, double-beaded rim and bar handles (TUDB, TUDB/CHER, TUDB/NONA, NONA, and GUYS)

Small to large, ovoid, sub-angular, and angular pipkins with rounded shoulders and three stump feet. Everted, thickened rims with internal beading. Pulled-out and pinched lips at right-angles, or more, to bar handles of sub-square or triangular section. Flat or sightly sagging bases. Coarse to medium buff to reddish brown and orange-brown ware. Well, but not hard, fired. Grey cores with pimply surfaces. Glaze on the base and lower portion of the interior surface either greenish brown-yellow or dark purple. Glaze also on the rim, below the lip, and in patches on the exterior. Decoration consists of ribbing and incised horizontal lines on the upper part of the vessels, and finger impressions at the base of the handles. The chief factor in distinguishing sub-types is size.

Type 22a.1 (TUDB; TUDB/CHER; GUYS; NONA)

Small pipkins with handles at approximately 90° to the lip. Sharp base angle. Nos. 11 and 114 show nicks in the base angle for keying the feet, where these have broken off.

No.2 (TUDB); W4 II/IV 4=G4**; Phase 4. No.11 (TUDB); W4 II/IV 4=**G4**; Phase 4. No.52 (TUDB/CHER); W4 II/IV4=**G4**, W4 II/IV 4a=**G4**; Phase 4. No.114 (GUYS); W5ext 2d=**G5**; Phase 4. No.119 (NONA); W1 5a=**G2**, W1 5d=**G2**; Phase 4. W1 5; Phase 5*

Type 22a.2 (TUDB/NONA)

Small pipkin with angular shoulders and bar handle at more than 90° to the lip.

No.49; W4 II/IV4=G4**, W4 II/IV 4c=**G4**; Phase 4*

Type 22b (TUDB)

Large pipkin with heavily rilled upper body and bar handle at more than 90° to the lip. The base angle is more rounded than Type 22a.

No.15; W4 II/IV 4=G4**; Phase 4*

Type 22c (TUDB)

Large, ovoid pipkin with heavily rilled upper body and bar handle at more than 90° to the lip.

No.26; W1 5d=G2**; Phase 4*

Type 23. Pipkin with tripod feet, everted rim, and bar handle (NONB/PMFR)

Tall ovoid pipkin with high rounded shoulder, everted thickened rim, and pinched lip at 90° to a bar handle flat in section, with a broad groove on its upper surface. Three long stump feet. Medium to coarse, soft fired orange-red ware, tinging to purple in places, with some white particles. Core grey in places. Surface blistered. Bright yellow-brown glaze on most of the interior surface and on the rim. A few spots of glaze only on the exterior. One finger impression on the base of the handle; otherwise undecorated.

**No.247; W4 II/IV 2; Phase 5*

Type 24. Pipkin with tripod feet, externally moulded upright rim, and bar handle (NONB/PMFR)

Medium-sized ovoid pipkin with double-moulded rim and pinched lip at 90° to a bar handle with flat section. Sharp base angle with some knife trimming and a flat base with three stump feet. Medium-hard fired, fine to medium pink-buff ware with a pink-buff core sandwiched between grey layers. Slightly pimply surface with some black patches. Greenish brown to purple glaze over most of the interior surface and on the inside of the rim. A large orange-brown area of glaze below the lip on the exterior. The remaining upper part of the exterior has a green-brown glaze. Undecorated, except for two finger impressions at the base of the handle.

No.133; S1 12=G31**; Phase 4*

94. Haslam 1975b, 229, No 46
95. Holling 1971, 76–7, Fig 3, E1-E2
96. Ibid. 76–7

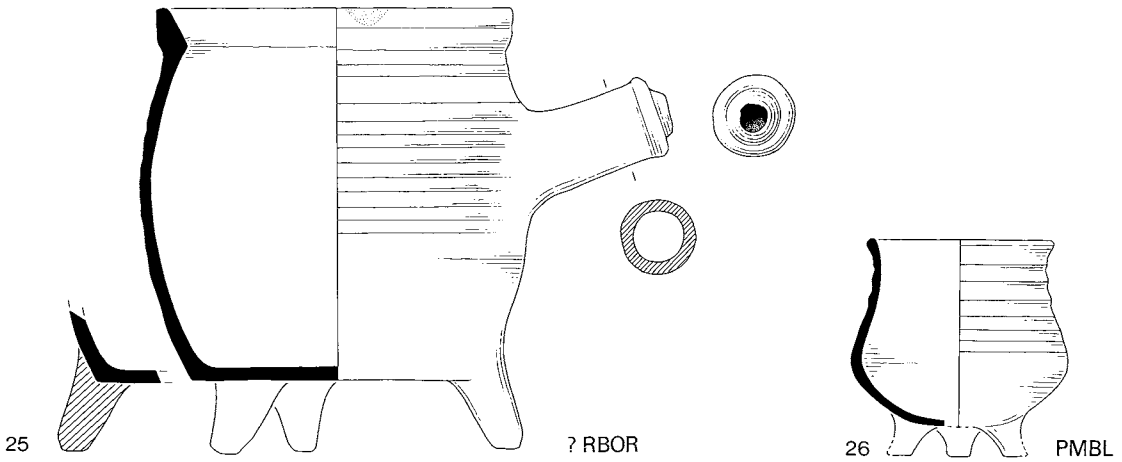


*Fig. 83 Earthenware: Red ware, Types **25–6** (1:4).*

Type 25. Pipkin with tripod feet, upright thickened rim, and hollow handle (?RBOR)

Tall ovoid pipkin with an upright collar-like rim, thickened internally. No lip. Hollow handle, circular in section. Sharp base angle, and flat base with three tapering feet. Pale brown to buff ware with grey patches, a pink to orange core, and a slightly pimply surface. Dark greenish, olive-brown glaze on most of the interior surface. Only spots of glaze on the outer surface. Decoration consists of horizontal ribbing on the upper half of the vessel.
No.75; V7 6a=G8**, W5ext 2d=**G5**; Phase 4*

Type 26. ?Pipkin with everted rim and tripod feet (PMBL)

Small globular ?pipkin with a simple, slightly everted rim and short stump feet, one of which survives. No lip. No handle survives. A curved base, with no base angle. Medium-hard fired, medium to coarse, pink-red ware containing some particles. Purple to black-brown glaze over most of the interior and all the exterior. Decoration consists of horizontal ribbing on the upper part of the body.
No.164; W8 6=G6**; Phase 4*

Type 27. Pipkins with everted rim, lip, and flanged tripod feet

Small pipkins with rounded shoulders, everted rims, and pulled and pinched lips at 90° to bar handles of circular section. Sharp, knife-trimmed base angles with slightly sagging bases and three flanged feet. Soft to medium fired reddish brown to buff-brown ware with a grey core and a pimply surface. Yellowish brown and greenish yellow-brown glaze on the interior surfaces and the rims, with some patches on the exterior. Decoration consists of horizontal ribbing on the upper part of the vessels and a single finger impression at the base of the handles. The chief factors determining the sub-types are size and rim form.

Type 27a (TUDB)
Small pipkin with everted clubbed rim.
No.59; W4 II/IV 4=G4**; Phase 4. No.196; W4 II/IV 3a=**G4**, W4 II/IV 4a=**G4**; Phase 4. W4 II/IV 3, X4 4; Phase 5*

Type 27b (NONA)
Medium-sized pipkin with everted double-moulded rim.
No.95; W4 II/IV 4=G4**, W4 II/IV 4a=**G4**, W4 II/IV 4c=**G4**, W4 II/IV 7=**G4**; Phase 4*

Type 28. Pipkins without feet

Small to large pipkins with rounded or angular shoulders and pulled out and pinched lips at 90° to bar handles of circular section. Knife-trimmed base angles (although some may have been wiped) and flat bases. Medium to hard fired, buff-brown to red ware, with grey exterior surfaces in all cases except Type 28c. Surfaces pimply. Brown, greenish brown, or purple-brown glaze covering the base and lower half of the interior, with some patches externally below the rim and lip. Small spots on the body. Decoration consists of horizontal ribbing and grooves on the shoulders of the vessels and a single finger impression at the base of the handles. The chief factors distinguishing the sub-types are size and rim form.

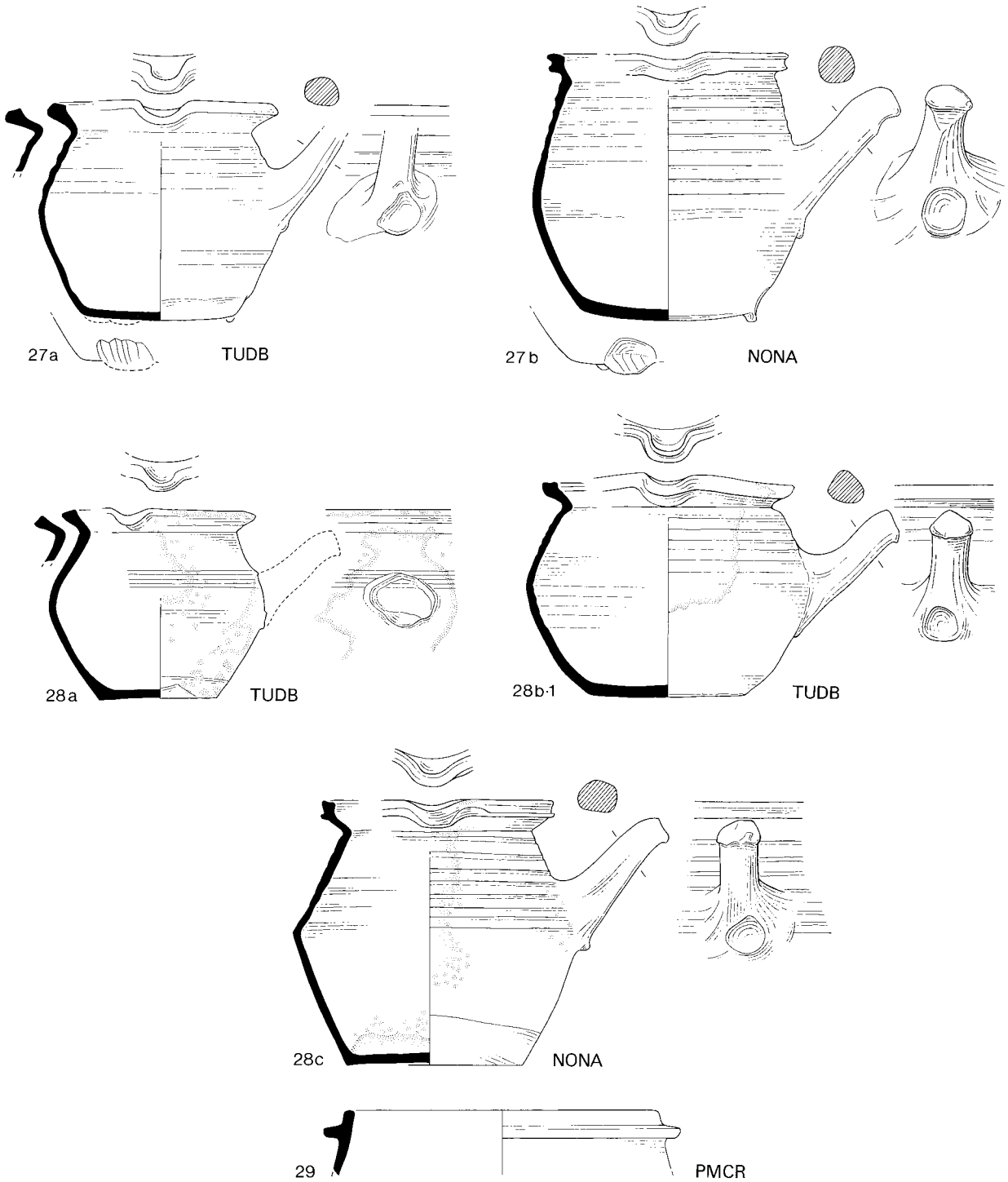


Fig. 84 Earthenware: Red ware, Types ***27–9*** *(1:4).*

Type 28a (TUDB; NONA)

Small pipkin with everted clubbed rim and rounded shoulder.

No.14 (TUDB); W4 II/IV 4=G4**; Phase 4. No.199 (NONA); W4 II/IV 4=**G4**, W4 II/IV 2, W4 II/IV 3; Phase 5*

Type 28b.1 (TUDB)

Medium-sized pipkin with everted, internally beaded, grooved rim. Well-marked shoulder.

*No.46; W8 3=**G6**; Phase 4

Type 28b.2 (TUDB)

As 28b.1, but with simpler everted and internally thickened rim and slacker profile. The ribbing shows traces of attachment to another pot during firing.

*No.76; W5ext 2c=**G5**, W5ext 2d=**G5**; Phase 4. W5 4a=**D1**, W5ext 2, W5ext 2b; Phase 5*

Type 28c (NONA)

Medium to large pipkin with elaborate everted, double-moulded and internally hollowed rim. Sharp external carination and sharp base angle.

No.98; W1 5a=G2**, W5ext 2c=**G5**; Phase 4. W1 5c; Phase 5*

Type 29. Pipkin rim with external seating for a lid (PMCR)

Rim fragment probably from a pipkin, with external seating for a lid. Pinkish-red ware, medium to soft fired, with a pinkish brown external surface. Light yellowish-brown glaze thinly applied on the interior of the rim. Glaze thicker on the exterior, but only occurs below the lid seating.

**No.423; S1 2; Phase 6*

The following typologically uncertain pipkin fragments were also recorded:

*No.131 (TUDB); W5ext 2c=**G5**, W5ext 2d=**G5**, W5ext 3=**G5**; Phase 4. W5ext 2; Phase 5. No.157 (fabric not recognised); P/Q 15/16 16=**G19**; Phase 4. No.195 (TUDB); W4 II/IV 4=**G4**, W4 II/IV 4a=**G4**; Phase 4. No.313 (fabric not recognised); X4 11; Phase 5. W8 1; Phase 8*

Jars with handles at the rim: Types 30–5

Jars with two loop handles rising to the rim (Types 30–35) are generally ovoid or squat in form by comparison with the jars having handles on the body (Types 36–42). The former narrow to the neck, the latter narrow to the base; the former are often blackened under the base, indicating use for cooking, the latter are rarely blackened and were almost certainly used for storage.

The fabrics and the forms (Table 13) suggest that Types 30, 31, 33, and 34 are of similar, or at least restricted, date and source, and the parallels indicate that these types are essentially of 'London' origin. Types 32 and 35 are different in form. Type 35 is different also in fabric, and occurs only in demolition contexts (Phases 5 and 6), while Types 30–4 are characteristic elements of the garderobe deposits.[97]

The published parallels for Types 30–5 are provided by the same small group of London-area deposits which provide comparisons for the bulk of the Nonsuch earthenware.

Types 30 and 31 are broadly paralleled by the redware vessels from Guy's Hospital,[98] but the latter have very different rim forms and lack the incised decoration seen on some of the Nonsuch pots. A comparable general parallel is seen at Cheam, but this too is distant in detail, although not perhaps in fabric (CHER).[99] Other remote parallels are published from St. Thomas Street, Southwark, but these are quite different in detail and datable to the first half of the sixteenth century.[100] This is also the case with a possible parallel from Kingston-upon-Thames, London.[101] A much closer parallel for the form of Types 30–1 comes from Arundel House, Strand.[102] The wavy line decoration seen on several of the Nonsuch jars also appears at Arundel House on jugs with flanged feet.[103] There are similarities between other Nonsuch and Arundel House vessels,[104] but there is again an apparent chronological distance, the Arundel House deposit being dated to the mid or third quarter of the sixteenth century, as is discussed elsewhere.[105] A close parallel for Type 31e comes from 16 Bell Street, Reigate, from an undated deposit assigned to the late sixteenth century.[106]

Close parallels for Type 32, in the same TUDB fabric, come from 199 Borough High Street, Southwark, Contexts 297–305, which seem on ceramic evidence to date to the first half of the seventeenth century.[107]

Remote parallels for Types 33 and 34 from Arundel House, Strand, London,[108] and St. Thomas Street, Southwark,[109] provide no clearer indication of date than do the parallels for Types 30 and 31.

97. Except for Type 30c (No 98), the single example of which occurs only in demolition (Phase 5) and later contexts
98. Dawson 1979, Fig 6, Nos 52–63
99. Orton 1982, Fig 20, No 74
100. Orton 1978, Fig 172, Nos 178, 180, Fig 173, Nos 179, 181–2
101. Nelson 1981, Fig 2, No 8. A rosette comparable to that on Type 30a also occurs at Kingston: ibid. Fig 2, No 7
102. Haslam 1975b, Fig 10, No 44
103. Ibid. Fig 9, Nos 35–6. Wavy-line decoration is also seen on a GUYS bowl from a cess-pit finally used *c* 1600–50 at Stratford, London, E15 (Redknap 1987, Fig 8, No 4) and on a few Woolwich storage jars (Pryor and Blockley 1978, 66, Fig 15, No 77) of the period *c* 1660–80
104. See above, p 145
105. Haslam 1975b, 229, and see above, p 123–4
106. Williams 1983, 75, 81, Fig 13, No 232
107. Orton 1988, 299-301, Fig 127, Nos 1203–6
108. In the sense that the flanged feet of Type 33 occur at Arundel House on jugs: see above, n.103
109. Orton 1978, Fig 172, Nos 178, 180, Fig 173, 179, 183 (if this comes from a two-handled jar rather than a pipkin)

Table 13. Earthenware jars, Types 30–42: fabrics and forms.

NONA	NONB	TUDB	PMFR/ NONB	PMCR	Other/ unrecognised
	30a	30b			
	30c				
31a	31c	31a			
31b.1					
31b.2					
31d					
31e			31f		
		32			32
33a	33a				
33b					
34a	34a				
34b					34b
34c					
34d					
				35	35
		36a			
		36b			
					37a (?)
				37b	
			37c		
			37d		
		38a			
			38b	38b	
				38c	
					39 (BUTT)
			40	40	40 (?RBOR)
		41			
				42	

The fabric of Type 35 (Nos. 345 and 407) represents very well, as Clive Orton notes, the transition from TUDB to PMCR. The form is also distinctive: the rim is related to that of Type 32 and approximate parallels can be seen in the first half seventeenth-century deposits in the 'east and west brick structures' (Contexts 297–305) at 199 Borough High Street, Southwark.[110] At Nonsuch this type occurs only in the demolition (Phase 5) and later phases and not in the garderobes (Phase 4).

Type 30. Large jars with two handles at the rim and tripod feet (NONB, TUDB)

Large jars with rounded or angled shoulders and two opposed vertical loop handles, circular in section, rising from the shoulder to the rim. The handles have three finger impressions at the base, and are sometimes pinched at the top (Types 30a, 30b). Sharp base angles, knife-trimmed in the case of Type 30a. Flat or slightly sagging bases, with three stump feet. Orange-buff and reddish brown ware, medium fired, with pimply exterior surfaces. Bases blackened through use. Yellow/green-brown glaze on the interior of the bases and over the lower parts of the inner walls. Glaze also occurs on the exterior, below the rims, and in two patches at right-angles to the handles. Decoration varies across the type; the chief factors determining the sub-types are rim form and decoration.

Type 30a (NONB)

Jar with rounded shoulders and an everted flaring rim, beaded internally. Decoration comprises three incised wavy lines on the upper part of the body, separated and bounded by pairs of incised horizontal grooves, and two rosettes, each of five finger impressions, set at 90° to the handles.

No.117; W5ext 2c=G5**, W5ext 2d=**G5**, W5 4=**D1**, W5 4a=**D1**; Phase 5. W5 6, W5 8, W5ext 2, W5ext 2b; Phase 5*

Type 30b (TUDB)

Jar with angled shoulders and everted, clubbed rim with double moulding. Decoration as Type 30a, but lacking the finger-impressed rosettes.

No.53; W4 II/IV 4=G4**, W4 II/IV 4a=**G4**, W4 II/IV 4c=**G4**; Phase 4*

Type 30c (TUDB)

Jar with angled shoulder and everted clubbed rim with double moulding. Decoration consists only of rilling on the upper part of the body. No pinch at the top of the handle.

No.96; W8 2=G7**, W8 3=**G7**, W8 4=**G7**; Phase 4. W8 1; Phase 5*

Type 31. Squat jars with two handles at the rim and tripod feet (NONA, NONB, PMFR/NONB, TUDB)

Medium-sized squat globular jars with angular or rounded shoulders and two opposed vertical loop handles, circular in section, rising from the shoulder to the rim. The handles are plain, except for Types 31c and 31f, which have finger pressings on the base of the handle. Flat or sagging bases and three stump feet. Base angles sometimes wiped (Types 31a (No.88), 31b.2 (No.3; ?No.56)), or knife-trimmed (Types 31c, 31d, 31e). Mainly reddish brown to orange wares, with some greying. Medium to hard fired, with pimply surfaces. Blackened areas on the exterior, especially on the bases. Yellow-brown, green-brown, or purple-brown glaze on the bases and the lower portions of the interior. Glaze also on the exterior, below the rim, at 90° to the handles.

110. Orton 1988, 299, 301, Figs 126–8

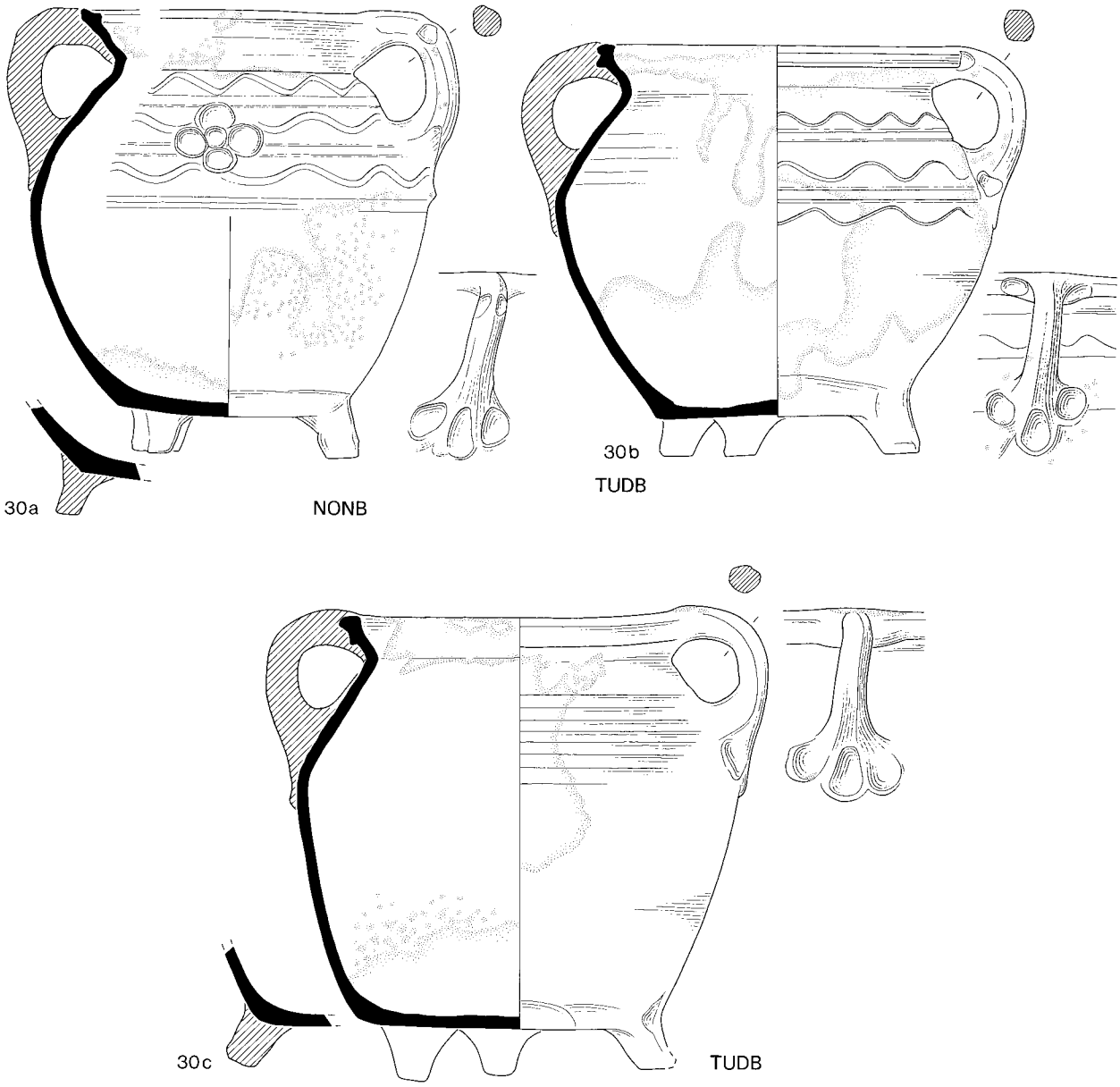


*Fig. 85 Earthware: Red ware, Type **30** (1:4).*

Decoration consists of horizontal grooves and ribbing on the upper third of the exterior, except in the case of Type 31f, where the decoration comprises incised wavy lines between horizontal grooves. The main factors determining the subtypes are the body and rim forms.

Type 31a (NONA, TUDB)
Angular shouldered jar, everted rim with slight double bead. Sharp base angle with some knife trimming.
*No.4B (NONA); W4 II/IV 4=**G4**; Phase 4. *No.88 (TUDB); T8 2, W8 2; Phase 6*

Type 31b.1 (NONA)
Squatter than Type 31a, with everted clubbed rim with internal bead. Marked base angle, sagging base.
No.4A; W4 II/IV 4=G4**; Phase 4. No.181; T7 III 3=**G26**, T7 III 4=**G26**; Phase 4*

Type 31b.2 (NONA)
Squat rounded jar, with everted thickened rim. Weak base angle, sagging base.
*No.3; W4 II/IV 4=**G4**; Phase 4. *No.56; W4 II/IV 4=**G4**, W4 II/IV 4c=**G4**; Phase 4*

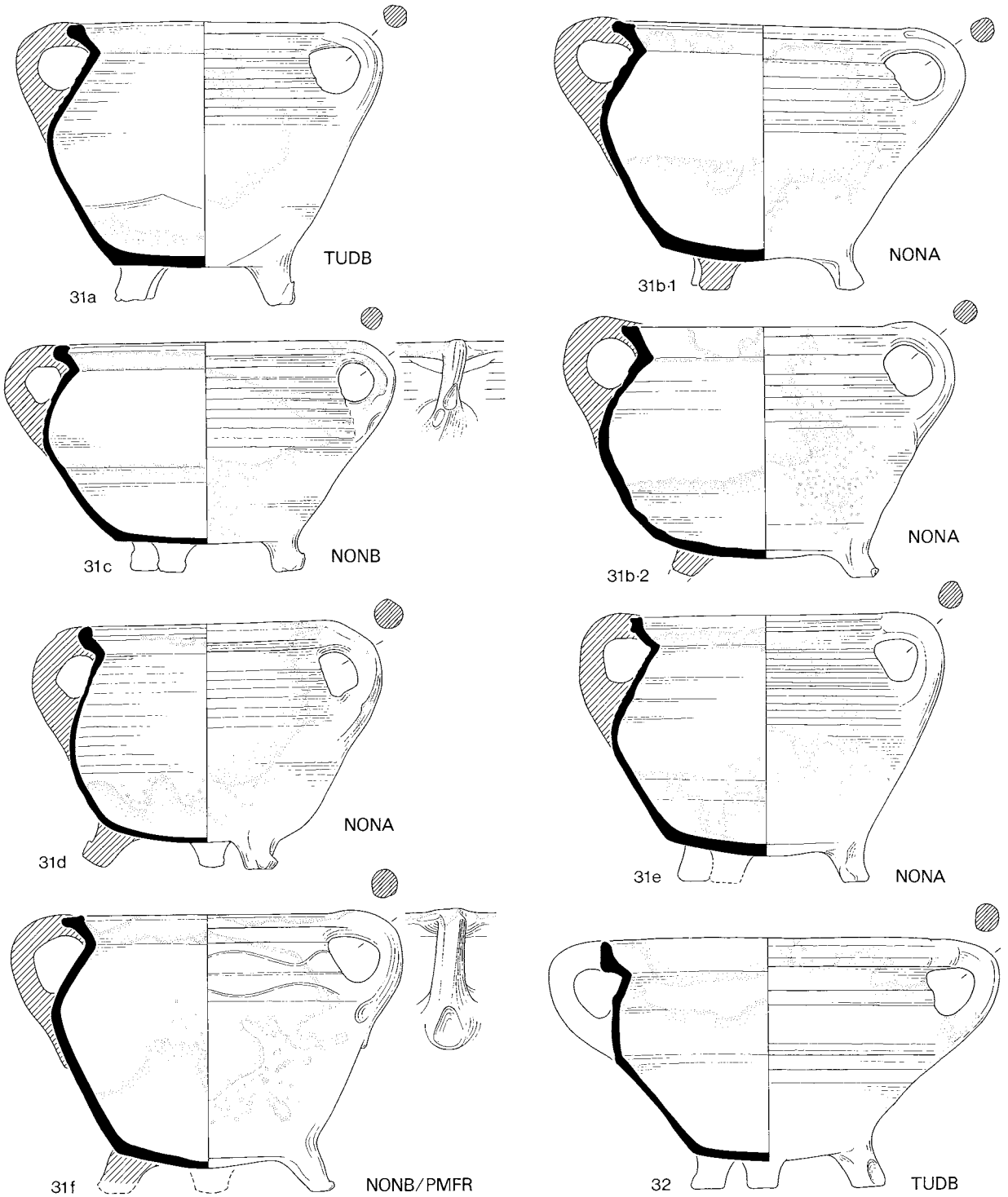


Fig. 86 Earthenware: Red ware, Types ***31–2*** *(1:4).*

Type 31c (NONB)

Squat, angular jar, with everted rolled-in rim. Finger pressings on the base of the handle.

No 50; W4 II/IV 4=G4**, W4 II/IV 4c=**G4**; Phase 4. W4 II/IV 2; Phase 5*

Type 31d (NONA)

Globular jar, with everted rolled-in rim.

No.100; W8 6=G6**; Phase 4. No.152; W1 5a=**G2**, W1 5d=**G2**; Phase 4*

Type 31e (NONA)

Taller jar with marked carination, and everted double-moulded rim. Body incisions grooved rather than rilled.

No.51; W4 2; Phase 3 (contamination); W4 II/IV 4=G4**; Phase 4. W4 II/IV 3, W4 II/IV 3a; Phase 5. W4 II/IV 2, Phase 6*

Type 31f (NONB/PMFR)

Form similar to Type 31b, but decoration comprising two bands of wavy lines, separated by horizontal incisions, around the upper part of the body. Thumb impressions at the base of the handle.

No.103; W5ext 2c=G5**; Phase 4. W5 4=**D1**, W5ext 2; Phase 5*

Type 32. Squat jar with two handles at the rim, carinations, and tripod feet (TUDB, and an unrecognised fabric)

Squat open jar with sharply carinated body and thick upright flanged rim, the interior hollowed, perhaps to seat a lid (cf. Type 35). Two opposed vertical loop handles, circular in section, rising from the carinations to the rim. Marked or rounded base angle and sagging base. Three stump feet. Hard-fired reddish brown or grey ware with a grey exterior surface. Yellow-brown or dark olive-green (No.179) glaze on the entire interior surface and much of the exterior, except for parts of the rim and the underside of the base.

No.62 (TUDB); W4 II/IV 4=G4**; Phase 4. X8 2; Phase 5. No.179 (fabric not recognised); W5ext 2d=**G5**, W5ext 3=**G5**; Phase 4. W5ext 2, W5ext 2a; Phase 5*

Type 33. Jars with two handles at the rim and three flanged feet (NONA, NONB)

Large or medium-sized ovoid jars with everted, clubbed, double-moulded rims. Two opposed loop handles, circular in section, rise from the upper zone of the vessel to the rim. Sharp, knife-trimmed base angles and three flanged feet with overlapping finger pressings. Well-fired light buff-brown or pinkish ware with pimply surfaces and patches of grey on the exterior, especially at the base. Yellow-green or greenish brown glaze on the bases and in patches on the interior walls of the vessels. On the exterior, two opposed patches of glaze below the rim at right-angles to the handles. With the exception of No. 278, which has three incised grooves, decoration consists only of rilling on the upper part of the body.

Type 33a (NONB, NONA)

Large, tall jars with baggy ovoid body.

No.38 (NONB); W4 II/IV 4=G4**, W4 II/IV 4a=**G4**, W4 II/IV 4c=**G4**, W4 II/IV 7=**G4**; Phase 4. No.60 (NONA); W4 II/IV 4=**G4**, W4 II/IV 4a=**G4**, W4 II/IV 4c=**G4**, W4 II/IV 7=**G4**; Phase 4. W4 II/IV 3; Phase 5. No.278 (NONB); W5 3; Phase 3 (contamination). W5ext 2c=**G5**, W5ext 3=**G5**; Phase 4. W5 4=**D1**; Phase 5*

Type 33b (NONA)

Medium-sized jar with a more globular form than Type 33a.

No.94; W4 II/IV 4a=G4**, W4 II/IV 4c=**G4**, W4 II/IV 7=**G4**; Phase 4*

Type 34. Jars with two handles at the rim and no feet (NONA, NONB, PMFR/NONB)

Ovoid jars of various sizes with two opposed vertical loop handles, circular in section, rising from a rounded or angular shoulder to the rim. No feet. Fairly sharp knife-trimmed and/or wiped base angles and slightly sagging or slightly kicked bases. Medium to hard fired orange-buff/brown ware with pimply surfaces. Green-brown, olive-green, or orange-brown glaze on the bases and the lower parts of the interior walls, and inside the rim, and on the exterior in two opposed patches below the rim, at right-angles to the handles. Decoration consists of horizontal grooves and ribbing on the upper part of the vessels. The chief factors determining the subtypes are rim and vessel form.

Type 34a (NONA, NONB, PMFR/NONB)

Large jar with everted, clubbed double-moulded rim with internal bead.

*No.54 (NONA); W4 II/IV 4=**G4**, W4 II/IV 4a=**G4**, W4 II/IV 4c=**G4**; Phase 4.*No.183 (PMFR/NONB); T7 III 3=**G26**, T7 III 4=**G26**; Phase 4. V1 6; Phase 5. No.184 (NONA); T7 III 3=**G26**, T7 III 4=**G26**, T7 III 5=**G26**; Phase 4*

Type 34b (NONA)

Medium-small jar with everted clubbed double-moulded rim, and kicked base.

No.12; W4 II/IV 4=G4**; Phase 4*

Type 34c (NONA)

Small rather squat jar with everted thickened rim with internal bead, and slightly kicked base.

No.115; W5 4=D1**, W5 4a=**D1**; Phase 5*

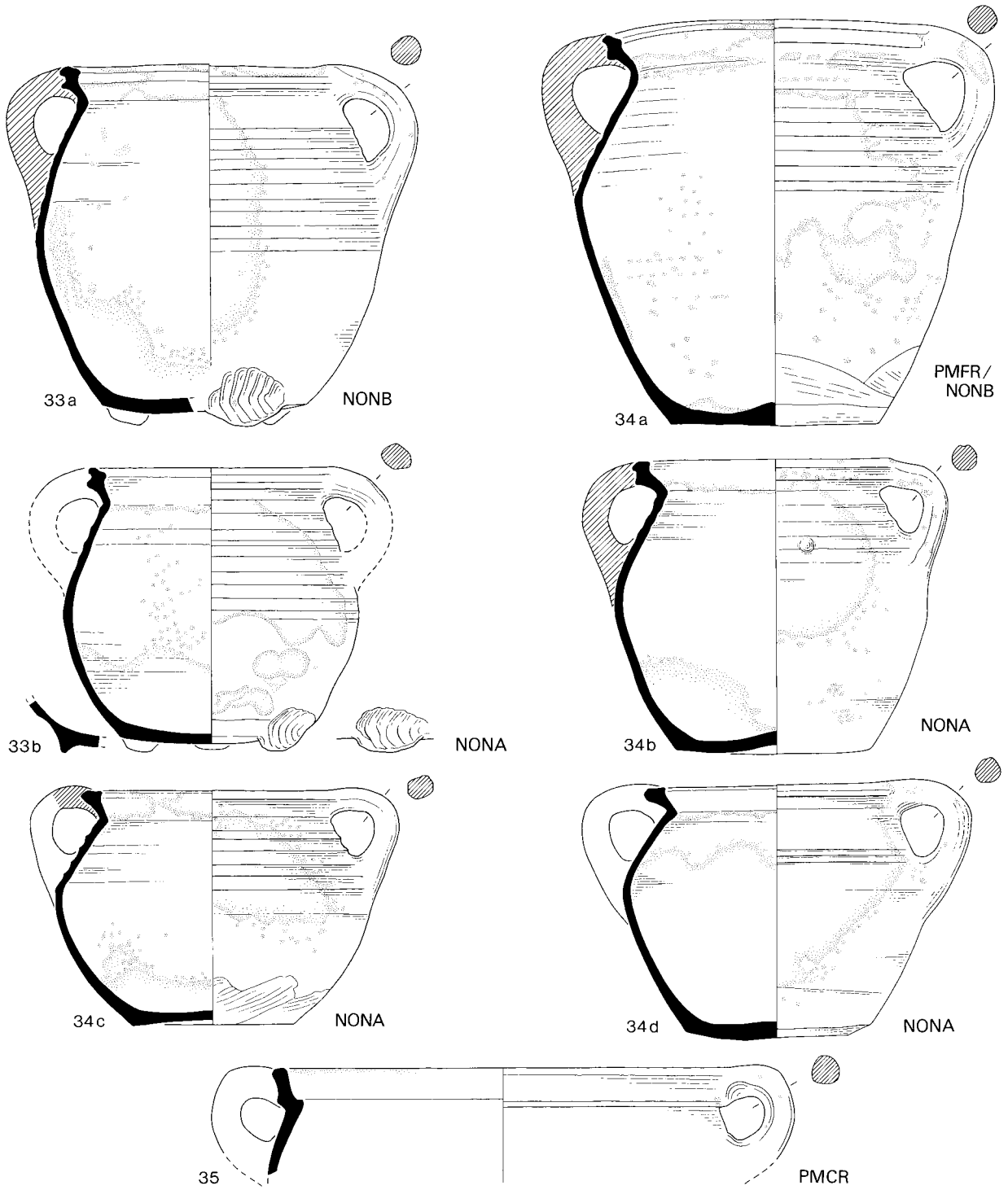


Fig. 87 Earthenware: Red ware, Types **33–5** *(1:4).*

Type 34d (NONA)

Medium to small jar with everted thickened rim with internal bead, and decorated with fine grooves but not ribbing.

No.23; W1 5a=G2**, W1 5d=**G2**; Phase 4. W1 5c; Phase 5. No.141; W8 7=**Great cellar**, Y4 32=**Well**; Phase 4*

Type 35. Rim of jar with ?two handles at the rim (PMCR, and an unrecognised fabric)

Slightly everted upright rim with a loop handle of circular section, presumably one of a pair of opposed vertical loop handles, rising from the shoulder to the rim. The rim is hollowed internally, as if to seat a lid (cf. Type 32). Thick, rather heavily made, well-fired dark red and buff-brown coarse to medium ware with a grey core and pimply surface. Greenish-brown or yellow-brown glaze, patchy on the interior surface and inside the rim, and sometimes on the exterior also. Decorated with some horizontal ribbing.

The rim of No.214 is clubbed and everted, and that of No.407 is everted and internally hollowed. In neither case is there any surviving trace of a handle, and both are different from the type example illustrated here (No.345).

*No.214 (fabric not recognised); Q14 III 5=**SA G**; Phase 5. *No.345 (PMCR); Q7 III 2; Phase 6. No.407 (PMCR); X4 I 2; Phase 6*

Two other fragments from jars with two handles at the rim cannot be more closely identified:

*No.228; T7 III 3=**G19**; Phase 4. R7 III 1; Phase 8. No.146; W4 II/IV 4=**G4**; Phase 4*

Jars with handles on the body: Types 36–42

Unlike Types 30–5 which are almost invariably fire-blackened, jars of Types 36–42 show no sign of having been used on the fire: if Types 30–5 are best identified as cooking pots, Types 36–42 are to be identified as storage jars.

There is a clear difference in fabric between the two forms. Whereas Types 30–5 are heavily weighted towards the NONA, NONB, and TUDB fabrics, Types 36–42 are mainly PMCR and PMFR with a corresponding element of TUDB (Table 13), of a kind which Clive Orton regards as 'late'. The two forms, however, are found in the same garderobe deposits, and, given their complementary functions, it seems probable that they are contemporary types. If this is so, the Nonsuch kitchens must have been purchasing cooking pots (Types 30–5) from one source and storage jars (Types 36–42) from another.

In terms of fabric change, the fabrics of Types 36–42 seem to belong to the transition from TUDB to PMCR and after (eg. Type 38b, No.208). This need imply no chronological distinction vis-à-vis Types 30–5, but rather that the kilns producing Types 36–42 were making the change to PMCR while Types 30–35 were still being produced by other kilns continuing to work in the CHER/NONA/NONB tradition. TUDB, a fabric probably produced in a range of South London kilns, offers a link between the two groups of producers. In the case of Types 36–42 TUDB may probably be equated with Woolwich fabric E1 and PMCR with Woolwich E2.

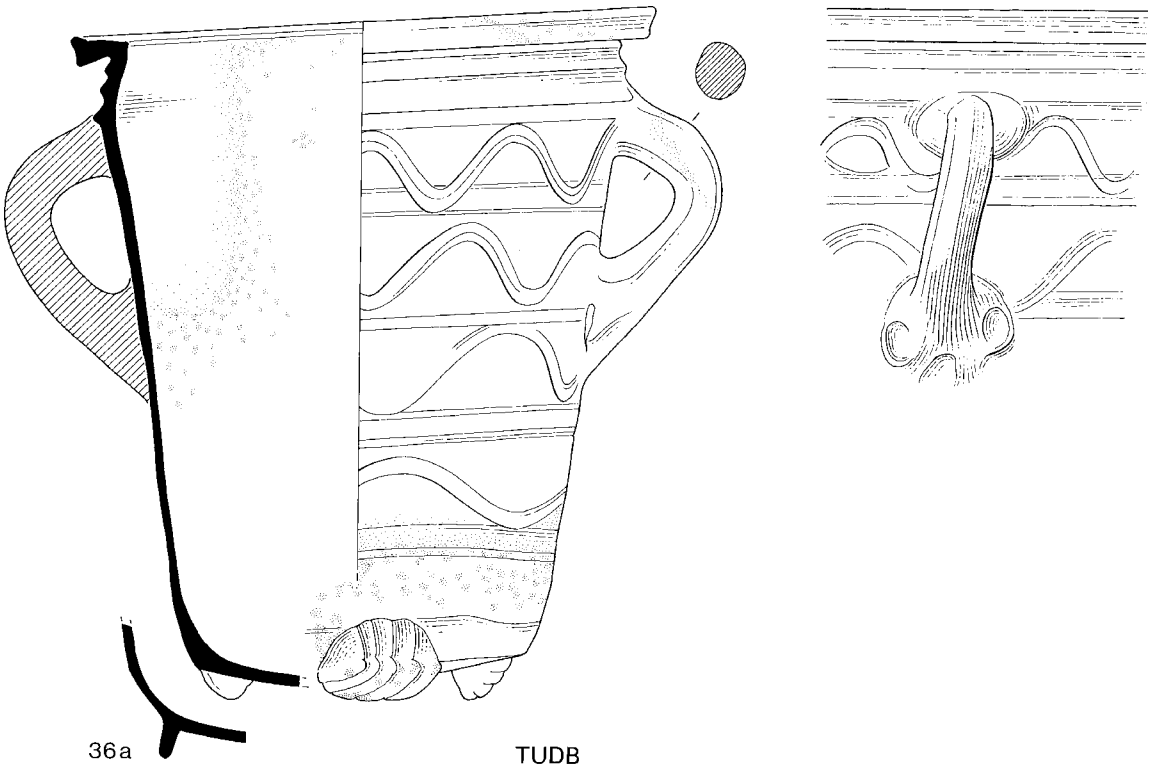
As for forms, the deep jar with two handles on the body first appears at Kingston in the late fifteenth to early sixteenth century,[111] but is rare on London sites in the sixteenth century, as far as published examples go.[112] There seems little doubt that some, at least, of these jars were produced at Woolwich where the production of storage jars in the E2 fabric (equivalent to PMCR) has been assigned to the latter part of the period 1660-1680.[113] The Nonsuch jars which are most likely to be Woolwich-related are Types 37a (?), 37b, and 38b, while Type 42 is a certain Woolwich jar of the latest production phase so far defined. The Nonsuch vessels are frequently different in detail to the published Woolwich examples but the latter probably represent only part of the range of variation in the production area, while the Woolwich E1 wares, perhaps equatable to the Nonsuch TUDB range, were not well represented at Woolwich itself in the later phases.[114]

One of the Nonsuch vessels (Type 37b) is closely paralleled by a jar from a deposit at Aldgate, London, assigned to *c* 1700–1720.[115] The Nonsuch jar is from a good Phase 4 garderobe deposit, datable to the period down to 1682/8. There need be no conflict here. The date range of this type is not known, the Nonsuch vessel may be early in the production period, the Aldgate jar may be residual: in the current state of knowledge it is not possible to make fine distinctions within a span of forty years.

Type 36. Tall storage jars with vertical handles on the body and three flanged feet (TUDB)

Tall deep jars, generally with slightly flaring sides although Type 36b has a gently rounded profile, and with two opposed vertical loop handles,

111. Nelson 1981, 97, Fig 3, No 18 with horizontal rather than vertical handles, noted as 'surprisingly late in form' (p.101)
112. A very small pot of the same shape and decoration (apparently without handles) was found in a ?sixteenth-century deposit at Lincoln's Inn (Thorn 1969, 124, Fig 2, No 6)
113. Pryor and Blockley 1978, 60-6, Figs 15 and 16, Nos 77–82, 86–7
114. Ibid. 52, 53 (Table 2), 63–4 (Table 3)
115. Orton and Pearce 1984, 45, Fig 20, No 51



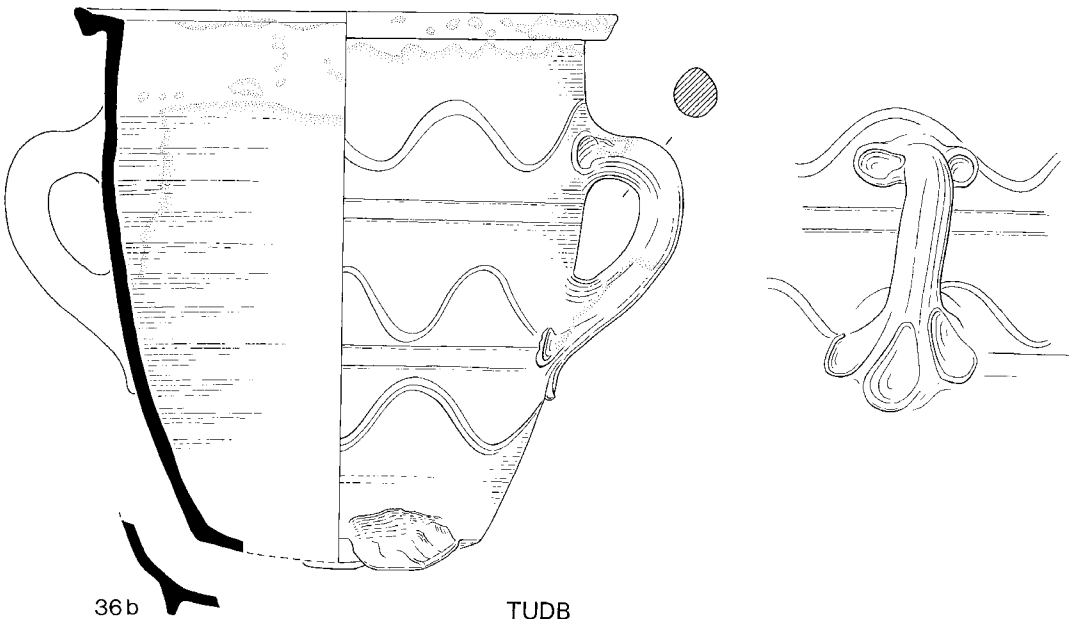


*Fig. 88 Earthenware: Red ware, Type **36** (1:4).*

circular in section, on the body. Rounded base angles, sagging bases, and three flanged feet with overlapping fingering. Medium to soft fired, brown or pink-orange ware with a pimply surface. Olive green to yellow-brown glaze on the interior of the base and the lower parts of the vessel walls. On the exterior, opposed patches of glaze below the rim at right angles to the handles, ie. below the point of pouring. Decoration consists of horizontal incised wavy bands between incised grooves. There are three finger impressions at the base of the handle. Type 36b also has two finger presses at the top of the handle. The chief factor distinguishing the sub-type is rim form.

Type 36a (TUDB, late)
Tall jar with thickened flanged rim, horizontal mouldings forming an elaborate collar above the handles, and flaring sides. Two opposed vertical loop handles on the upper part of the body and three flanged feet with overlapping finger marks. Four bands of shallow wavy-line decoration, separated by horizontal grooves. Small finger impressions around the springing of both handles. Much vertical knife trimming, internally down the sides and horizontally and diagonally inside the rim. Base angle knife-trimmed externally. Olive-green glaze all over base internally and patchy up the sides, with largest patches at right-angles to handles, and corresponding bibs of glaze outside.
No.120; S1 12=G31**, S1 13=**G31**, S1 14=**G31**; Phase 4. S1 11, Phase 5*

Type 36b (TUDB, late)
Less tall and more rounded than Type 36a, with a simple thickened flanged rim and no collar. Three bands of simpler wavy-line decoration separated by horizontal grooves.
No.174; W5ext 2d=G5**, W5ext 3=**G5**; Phase 4. W5 4=**D1**, W5 4a=**D1**, W5ext 2a; Phase 5*

Type 37. Tall storage jars with vertical handles on the body and no feet (PMCR, PMFR)

Tall, deep jars with everted thickened rims and two vertical loop handles, circular in section, on the upper part of the body. Fairly sharp base angles, sometimes knife-trimmed, with a raised or kicked base. Marked ribbing on the interior. Medium to fine reddish orange to brown ware with grey cores, medium to soft fired. Some have pimply surfaces. Olive green or reddish orange glaze on the interior of the bases, and on the exterior below the rim in opposed bibs at right-angles to the handles. Some further spots and patches of glaze on the exterior. Decoration is confined to finger impressions at the top and bottom of the handles.

Type 37a (fabric not recognised)
Very tall jar with everted, thickened, and rounded rim.
No.237; S1 12=G31**, S1 13=**G31**; Phase 5*

Type 37b (PMCR)
Woolwich jar similar in height to Type 37a, but with a wider base. Rim missing.
No.83; W2 5a=G3**; Phase 4. W5 2a; Phase 5*

Type 37c (PMFR)
Shorter jar, with an everted, thickened, and internally beaded rim, and a kicked base.
No.116; W5ext 2d=G5**, W8 3=**G7**, W8 5=**G6**; Phase 4. W5ext 2a; Phase 5*

Type 37d (PMFR)
Jar similar to Type 37c, but smaller and with a slighter clubbed rim.
No 175; W5ext 2c=G5**, W5ext 2d=**G5**, W5ext 3=**G5**; Phase 4. W5 4=**D1**, W5 4a=**D1**; Phase 5*

Type 38. Squat storage jars with vertical handles on the body, everted flanged rims, and no feet (TUDB, PMCR, PMFR)

Squat, deep, wide-mouthed jars, generally with flaring sides, although Type 38a has a gently rounded profile. Two opposed vertical loop handles, circular in section, on the upper part of the body. Knife-trimmed base angles and kicked bases. Medium fired buff-orange or buff-red ware, medium hard. Some have pimply surfaces. Patches of brownish yellow or greenish glaze on the exterior of the base and below the rim, at right-angles to the handles. The lower parts of the interior are also glazed. Generally undecorated, except for some finger impressions at the top and bottom of the handles. The chief factor determining sub-type is rim form.

Type 38a (TUDB)
Flanged, upright, thickened rim with external moulding and internal rebate. Decorated with two incised girth grooves.
*No.34 (TUDB); W8 3=**G6**; Phase 4. W8 1; Phase 8. *No.79 (not seen); W12/13 8=**G11**; Phase 4. W12/13 5; Phase 5. W13 5; Phase 7*

Type 38b (PMCR, PMFR)
Flanged, thickened, and angular rim.
No.178 (PMCR); W5ext 3=G5**; Phase 4. V8 5a, W5 6, W5ext 2, W5ext 2a; Phase 5. No.208 (PMCR); W5ext 2d=**G5**; Phase 4. W5 2a, W5 4=**D1**, W5 4a=**D1**. W5ext 2, W5ext 2a; Phase 5. V8 5; Phase 5. W5 1; Phase 8. U8 5a; phase uncertain. No.268 (PMFR); Y4 33=**Well** (rim only); Phase 4*

Type 38c (PMCR)
Rim as Type 38b, but with thickened outer edge of the flange.
No.270; S1 12=G31**, S1 13=**G31**, S1 14=**G31**; Phase 4*

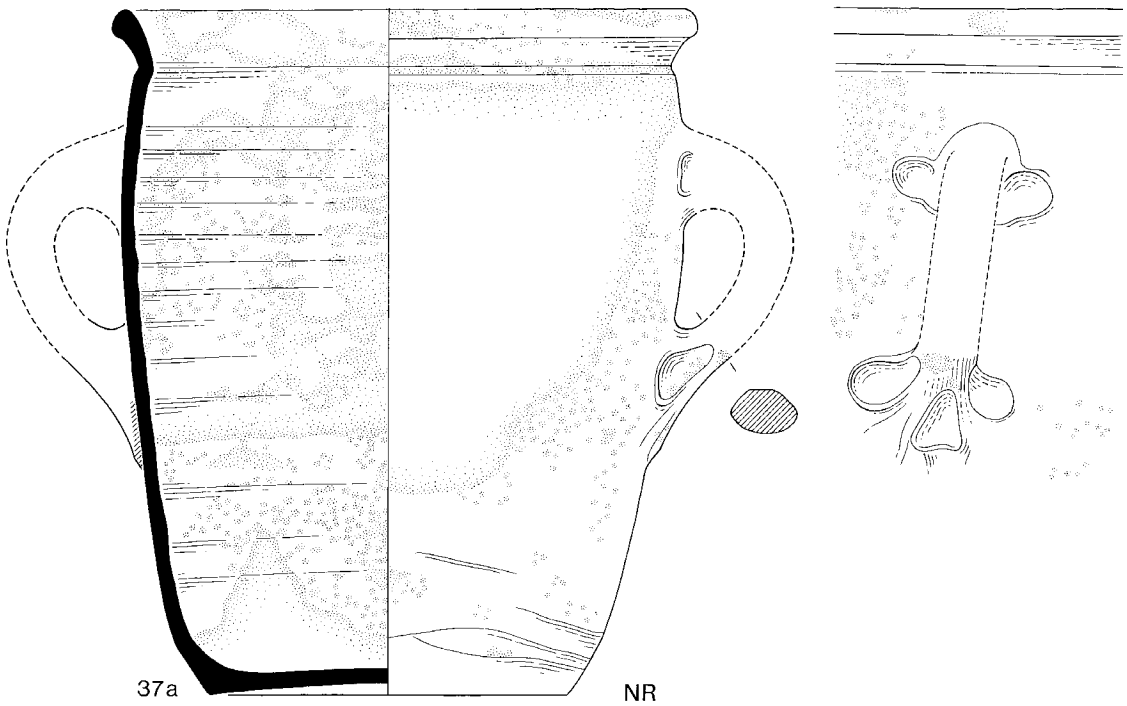


Fig. 89 Earthenware: Red ware, Type ***37*** *(1:4).*

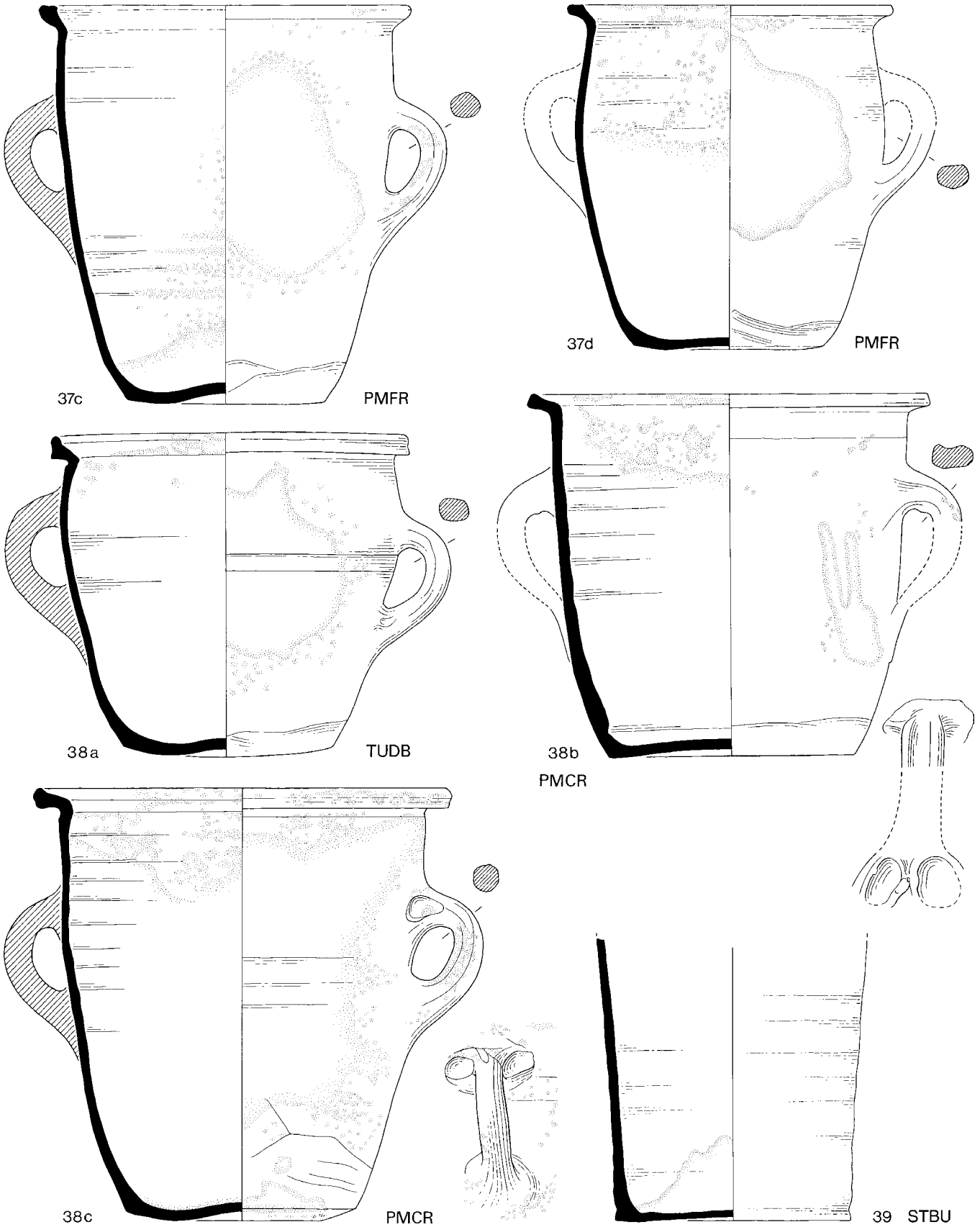


*Fig. 90 Earthenware: Red ware, Type **37** continued, **38–9** (1:4).*

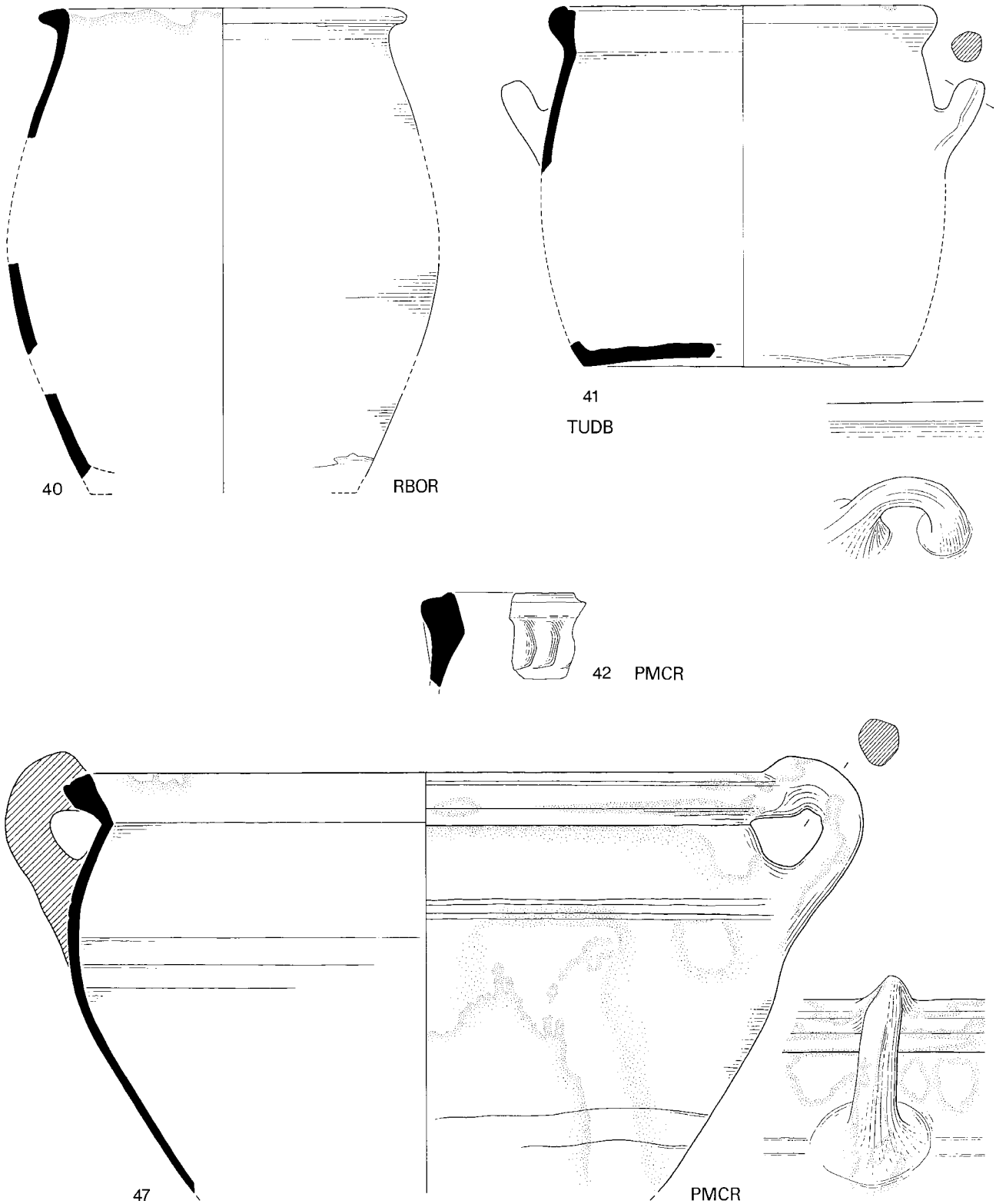


Fig. 91 Earthenware: Red ware, Types ***40-2***, ***47*** *(1:4).*

Type 39 Deep straight-sided storage jar (STBU)

Straight-sided jar with missing rim. Handles, if any, missing. Sharp base angle and raised base. Fine, very hard fired grey-brown ware with a pinkish tinge in places. Spots of purple-brown glaze on the exterior and a black glaze inside on the base and up the walls. Undecorated.
No.318; Q8 17, Q14 III 5=SA G**; Phase 5*

Type 40. Hook-rimmed or roll-rimmed jars, possibly with handles (RBOR, PMCR, PMFR)

Rolled, hooked or thickened rims on a tall rounded profile. Medium to soft fired reddish brown ware with patchy green or brown glaze on the entire interior surface. Undecorated. Nos. 364 and 435 have hooked rims; the remainder are thickened.
*No.364 (PMFR); W8 6=**G6**; Phase 4. *No.380 (RBOR); Q7 4; Phase 4. No.392 (PMCR); Y9 4; Phase 6. No.434 (PMFR); Q5 I/II 2; Phase 5. No.435 (not seen); S1 2; Phase 6*

Type 41. Large, squat, rounded jar (TUDB)

Squat wide-mouthed jar with rounded profile and upright, thickened, rounded rim with an internal bead. Horizontal loop handles, circular in section, on the upper part of the body. Knife-trimmed base angle and raised base. Sandy, medium to soft fired, friable buff-brown ware. Pimply yellow glaze inside and out, and beneath the base. Undecorated.
No.229; T7 III 3=G26**; Phase 4. Q14 III 5=**SA G**, S8 2, T7 III 2, W6 2; Phase 5*

Type 42. Heavy rim with finger-impressed filling below (PMCR)

Upright, flanged, rim fragment with a band of clay decorated with overlapping finger impressions below the rim. Coarse, reddish brown sandy, soft to medium fired ware. Reddish brown glaze on the rim and interior.
**No.425 (PMCR); X7 7; Phase 5. X6 2; Phase 6. No.471 (not seen); Q9 1; Phase 8*

Cup: Type 43

The single example of this type is distinguished by its rounded form and the position of the handle set midway on the body rather than rising to the rim. The glaze is comparable to that on BORD types, but BORD cup forms are different.[116]

Type 43. Cup with single? vertical handle (NONB, and an unrecognised fabric)

Thin-walled vessel with rounded profile and rounded rim. Single? vertical handle, oval in section, set on the body. No bases survive. Sandy buff-orange coarse to medium ware, soft to medium fired. Brownish-yellow glaze, with some olive tones, over the entire exterior surface and in patches all over the interior.
**No.352 (NONB); R8 7; Phase 5. No.389 (not recognised); Y4 3; Phase 6*

?Posset Cups: Type 44

These cups are distinguished from Type 43 by having handles which rise to the rim. None of them has two surviving handles and No. 134 (Type 44b.1) certainly had only one: thus it is not certain that any of them was originally two-handled. A shallower parallel for Type 44a, also in PMFR, comes from the flooding deposits at Mark Brown's Wharf, Southwark, thought to have been laid down *c* 1660–80,[117] and a closer parallel in Woolwich Fabric E2 (=PMCR) comes from the Phase 3 infill of the Woolwich earthenware kiln, assigned to the latter part of the same period.[118] Type 44b, with its distinctive moulded base angle, is difficult to match. The closest parallel for the form comes from the Pottersbury, Northants, kiln in a PMCR fabric, datable 1646–64.[119]

Type 44. Posset cups with upright rim and vertical handle (PMFR)

Squat open-mouthed cups with globular body, upright, rounded, slightly flaring rim and a single? vertical handle rising to the rim from the middle of the body. Soft to medium, flaky or friable orange or red-brown ware with a bright reddish yellow glaze all over the interior surfaces, but only spots and patches on the exterior. The chief factor distinguishing the sub-types is the form of the base angle.

Type 44a (PMFR)
The base angle is barely ridged, the base slightly raised. Undecorated.
**No.97; S1 11; Phase 5*

Type 44b.1 (PMFR)
Strongly moulded base angle with slightly raised base. The decoration consists of a finger impression at the base of the handle. Brown glaze,

116. e.g. Ash: Holling 1969, Fig 5, C7
117. Orton 1988, Fig 147, No 1471
118. Pryor and Blockley 1978, 69, 72, Fig 17, No 89
119. Mayes 1968, 77, Fig 30, No 11

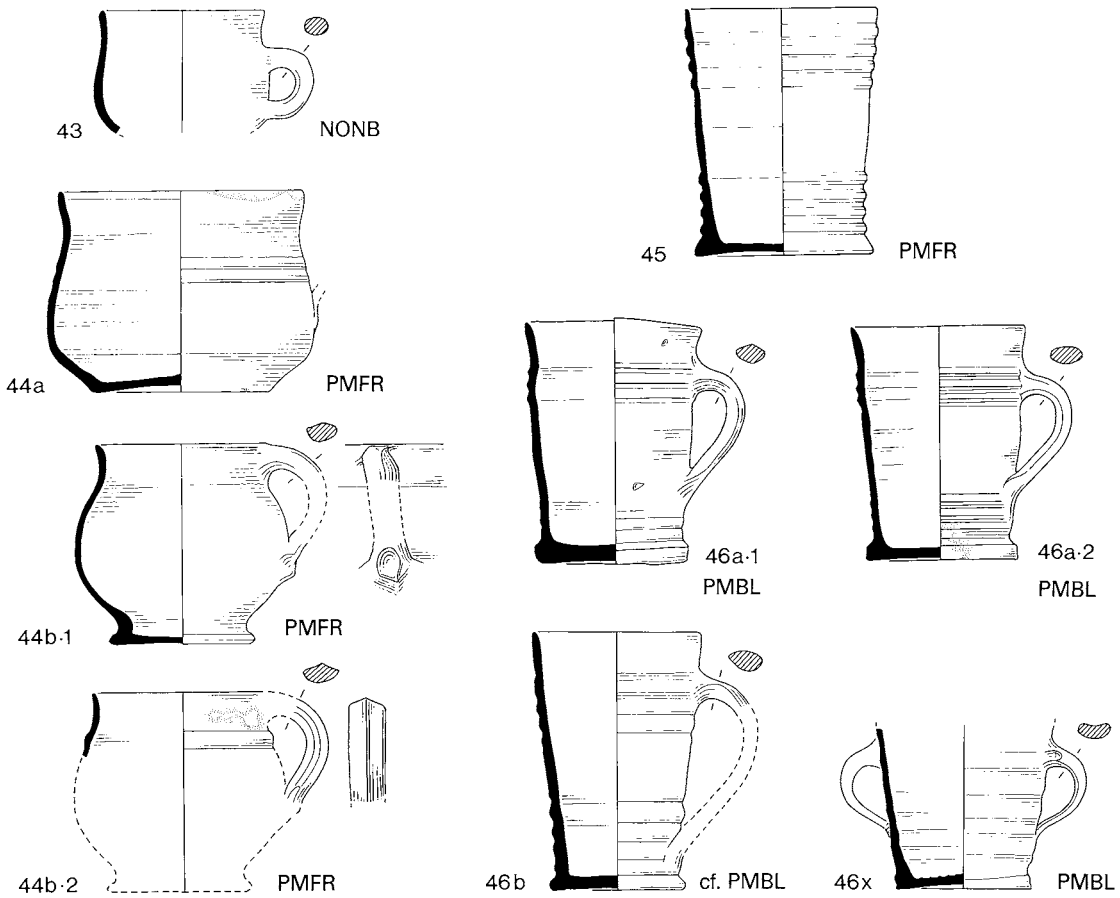


*Fig. 92 Earthenware: Red ware, Types **43–6** (1:4).*

speckled black, all over the exterior surface, and most of the interior except for thin patches.
No.134; U7 8=G9**; Phase 4. X7 6; Phase 5*

Type 44b.2 (PMFR)
Rim and handle fragment, probably from a pot similar to No. 134, but decorated with a cordon at the junction of the rim and body. The handle is ridged.
No.138 (PMFR); U7 8=G9**; Phase 4. No.437 (not seen); U7 8=**G9**; Phase 4*

Beaker: Type 45

Type 45 is similar to Type 46 in form, but has no handle and is in a different fabric, PMFR rather than PMBL. No parallels for this beaker (i.e. handleless) type in this form have been noted. The origin of the form is discussed under Type 46.

Type 45. Beaker with two corrugated zones (PMFR)

Beaker with straight flaring sides and a rounded rim. Moulded base angle with slightly kicked base showing "cheese-wire" removal marks. Fine, soft, medium fired, rather friable, brick-red ware, purplish on surface near base. Yellow-brown glaze on the entire interior surface (now mostly flaked off) Yellow-brown glaze over the entire interior surface and on the upper two-thirds of the exterior. Decoration consists of heavily ribbed bands at the rim and base.
No.16; W1 5a=G2**; Phase 4*

Mugs: Types 46 and 46X

The mugs of these types are in the PMBL fabric and the best parallels are thus found in the Harlow, Essex,

potteries of the earlier and mid seventeenth century.[120] All except one (Type 46X) of the Nonsuch mugs are one-handled, but their body form is comparable to the two-handled or multi-handled varieties: Type 46b, for example, is closely matched by a two-handled 'tyg', also in PMBL, from Sun Street, Harlow, from an unsealed deposit, the coarse pottery in which is attributed to *c* 1675.[121]

The distinctive feature of the mugs of Type 46 is the heavy ribbing which occurs in two bands near the base and towards the rim. The ribbing certainly derives from a wooden prototype, either via a one-part turned vessel, or directly from the withy bindings of stave-built 'coopered' mugs, of the form and type on general sale along the Dalmatian Coast (e.g. at Split) until recent years.[122]

Mugs of Type 46X, with two handles, do not show the two bands of ribbing characteristic of Type 46.

Type 46. Mugs with a vertical handle and two corrugated zones (PMBL)

Mugs with straight flaring sides, a rounded rim, and a single vertical handle, oval in section. Moulded base angle with flat or slightly kicked base. Medium to hard fired coarse to medium reddish or buff-brown to brick-red ware. Very dark brown, to treacly greenish-black, glaze over the entire interior surface and over most of the exterior, excluding the base. Decoration consists of heavily ribbed bands at the rim and base. The chief factors determining the sub-types are the height and diameter of the vessels.

Type 46a.1 (PMBL)
Rounded base moulding, slightly raised.
No.85; Y4 34=Well**, Y4 35=**Well**; Phase 4. No.207; V8 5a; Phase 5. No.436; U14 5; Phase 5*

Type 46a.2 (PMBL)
Angular base moulding. Rather reduced fabric.
No.86; Y4 33=Well**, Y4 34=**Well**; Phase 4*

Type 46b (cf.PMBL, but lumpier and badly wedged)
Taller and narrower than Type 46a. Rounded base moulding.
No.135; U7 8=G9**; Phase 4*

Type 46X. Mug with flat base and two vertical strap handles (PMBL)
Base and lower body fragment of a mug with steeply flaring corrugated sides and two opposed vertical strap handles. Base slightly kicked, with squared exterior moulding. Fine, very hard fired, purple-brown ware with a few minute white particles. Rich, dark, purple-brown glaze inside and out, tinging to reddish purple where thin. No glaze on the bottom 30mm of the walls and under the base. Decoration consists of horizontal corrugation of the walls.
No.109; P/Q 15/16 16=G19**; Phase 4*

Deep bowls with opposed handles: types 47–8

These bowls are all in PMCR fabrics, except for Type 48b which is in ?PMFR. Type 47 is an exceptional vessel, for which no parallel has been noted. Type 48 seems to have been a popular form, with broad parallels from deposits of the ?first half of the eighteenth century at Burlington Road, Fulham,[123] and other "late" sites, and closer parallels from deposits of *c* 1650–75 and *c* 1700–1720 at Aldgate, London.[124] Parallels could be multiplied, but few of them are a better match for the Nonsuch vessels or more closely dated than those already quoted. An exception is a PMFR vessel from the dumped deposit of *c* 1670 at Mark Browns Wharf, Southwark,[125] which is a close match for PMCR Type 48a from Nonsuch. Types 48b and 48c, with their swept-up handles, are most closely paralleled among the Aldgate material already quoted. Type 47 comes from a Phase 4 garderobe deposit, but all the examples of Type 48 are from Phase 5 demolition deposits (and later, as residual material) perhaps suggesting a date in the 1680's rather than earlier.

Type 47. Large bowl with everted rim and vertical handles (PMCR)

Very large, wide-mouthed bowl with rounded shoulder and everted, clubbed, and reeded rim. Two opposed vertical handles, circular in section, rise in crests above the level of the rim. Base missing. Friable, fairly soft fired, pink-buff ware, the surface slightly purple in places. Yellow-brown glaze over most of the lower two-thirds of the interior. Glaze also on the interior of the rim and in patches on the exterior, the distribution of the glaze showing that the vessel was fired upside down. Decoration consists only of two incised grooves just above the shoulder.
No.155; P/Q 15/16 16=G19**; Phase 4*

120. Newton and Bibbings 1959, 368, Figs 8 and 10
121. Huggins 1969, 48, 54–5, Fig 18, No 12; for similar examples from Context 305 at 199 Borough High Street, Southwark, attributed to the mid to later 17th century, and contexts 30 and 36 at Mark Browns Wharf, Southwark, attributed to the 17th century, see Orton 1988, Fig 129, No 1228 and Fig 146, No 1448
122. Pinto 1969, 35 (beakers), 42 (coopered jugs), 438 (co-opering) implies that such items rarely survive. They are missing from his survey
123. Mills 1984, Fig 5, Nos 7, 9, 10
124. Orton and Pearce 1984, Fig 17, Nos 21–2 (*c*.1650–75) and Fig 21, Nos 57–9 (*c*.1700–20)
125. Orton 1988, Fig 148, No 1500

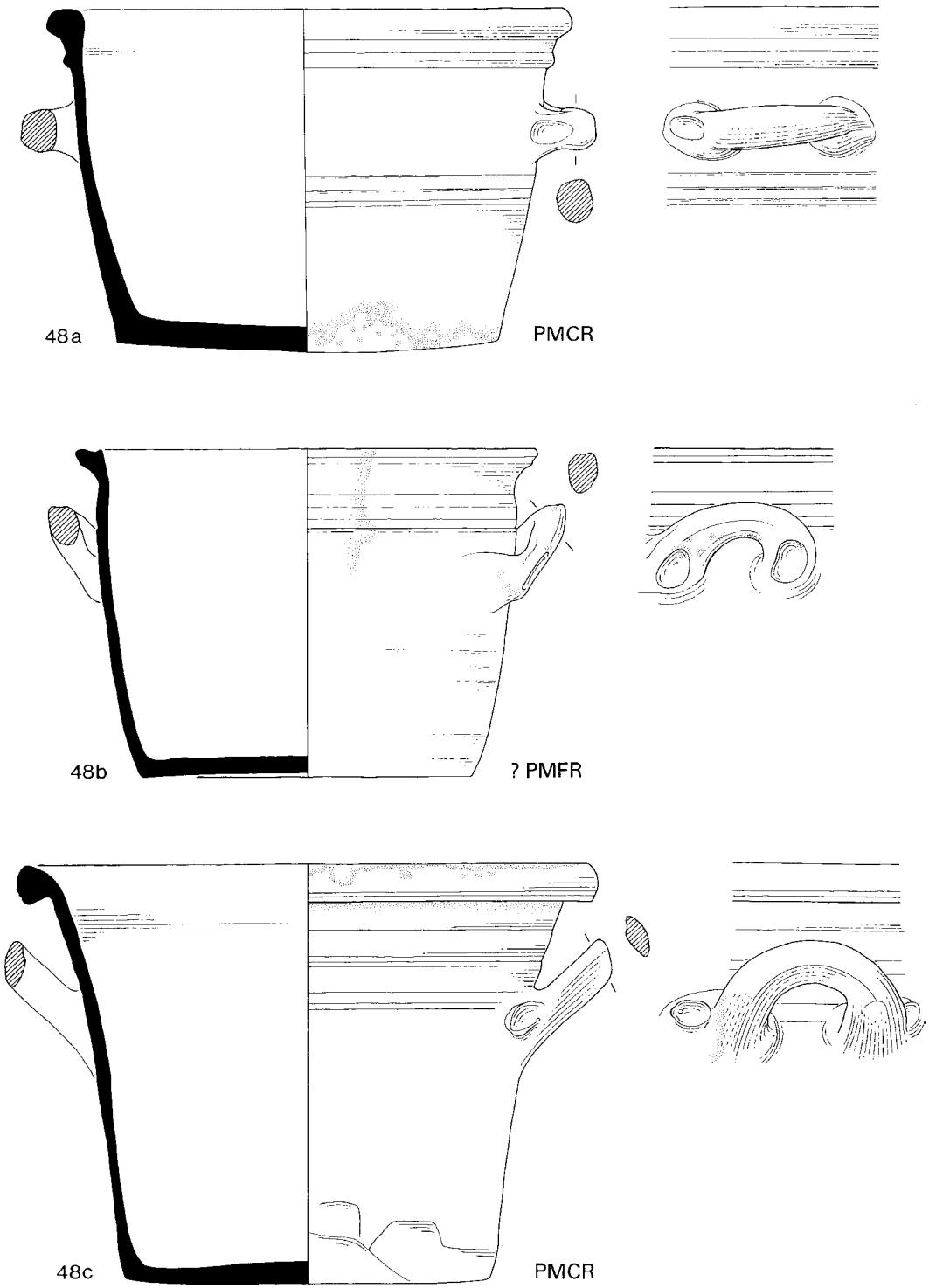


*Fig. 93 Earthenware: Red ware, Type **48** (1:4).*

Table 14. Earthenware plain bowls: Types 49–70.

Type	Fabric	Number of examples	Contexts (Phases)
49a	NR	1	5
49b	PMCR	1	4/5
50a	PMCR	2	4 and 5
50b	PMFR	1	4/5
50c	PMFR	3	4 and 5
51	RBOR	1	4
52	TUDB	1	4/5
53	NR	2	5 and 6
54	PMFR	1	4
55	RBOR	4	4/5 and 5
56	NR	2	4 and 6
57	?PMFR	1	5
58	GUYS	1	5/6
59	NR	1	3
60	NR	1	5
61	NR	1	5
62a	RBOR	6	4 and 5
62b	RBOR	2	5
62c	RBOR	1	8
62d	RBOR	1	5
63	NR	1	4
64	RBOR	1	4
65	RBOR	1	6
66	RBOR	2	4 and 6
67	RBOR	1	4
68	RBOR	3	4 and 5
69	NR	1	4
70	NR	1	5

Fabric/type frequency: RBOR 11; Not recognised (NR) 9; PMFR 4; PMCR 2; TUDB 1; GUYS 1.

Phases given as 4/5 indicate that sherds of the same vessel were found in Phase 4 garderobe deposits and in the *directly* overlying Phase 5 demolition layers.

Type 48. Bowl with two opposed horizontal handles (PMCR, ?PMFR)

Deep bowls with steep or flaring sides and two opposed horizontal handles, oval in section, on the upper portion of the body. Angular base angles, usually knife-trimmed, and sagging, flat, or slightly raised bases. Evenly fired, coarse to medium, reddish-brown-orange ware, medium to soft fired. Yellow-brown glaze all over the interior and exterior of Type 48a, with patches of glaze, some at right-angles to the handles (i.e. below the pouring areas), on the other sub-types. Decoration consists only of horizontal grooves below the rim or on the central portion of the vessel, and finger impressions at the handle springs. The chief factor distinguishing the sub-types is rim form.

Type 48a (PMCR)

Thickened, rounded, rim with heavily moulded exterior collar below. Handles project horizontally. Slightly sagging base. Glaze originally over underside of base, now worn off in many places.
No.106; R8 6, X15 10a=D2**, X15 10b=**D2**; Phase 5*

Type 48b (?PMFR)

Flanged rim with internal bead. Handles swept upwards. Base slightly raised.
**No.250; Q8 3, Q8 6, X8 2; Phase 5. X8 1; Phase 8*

Type 48c (PMCR)

Thickened, rounded, down-turned rim. Handles swept up.
No.126; Q14 III 3; Phase 2 (contamination). Q14 III 5=SA G**; Phase 5. Q14 III 2; Phase 6. No.349; Q8 11; Phase 5. Rim fragment only.*

Plain bowls: Types 49–70

These form a miscellaneous group, most types being represented by no more than one or two examples. Good parallels are hard to find and comment will be restricted to those which provide some chronological guidance.

The large open bowls with out-turned rim of Type 62 in RBOR, with four sub-types represented by ten examples, provide the largest exception. Apart from one example of Type 62a from a Phase 4 garderobe, these vessels all come from Phase 5 demolition contexts (or later, as residual). Parallels are not easy to find, except for Type 62c (as noted below).

The ribbed carinated bowls of Type 50 in PMCR and PMFR fabrics are another exception, with three sub-types represented by six examples, and parallels in PMCR from Aldgate, London, from deposits assigned to *c* 1700–1720.[126] At Nonsuch Type 50 occurs in Phase 4 garderobe and Phase 5 demolition contexts.

For the remainder (Table 14), the best range of approximate parallels comes from the red wares of the Hampshire/Surrey border region (RBOR), in which eleven of the types occur. Parallels for Types 51 and 55 can be found in the ?production dump at Cove, Hampshire, assigned to the second quarter of the seventeenth century.[127] Type 68 can also be paralleled at Cove.[128] Types 62c, 66, and 68 are most closely matched in the material from Ash, Surrey, assigned to the mid to late seventeenth century.[129] The general impression is therefore that Types 51–70 derive mainly from kilns in the area west of Nonsuch, but the range

126. Orton and Pearce 1984, Fig 22, No 68 (an approximate parallel for Type 50c) and No 69 (a close match for Type 50a)
127. Haslam 1975a, Fig 5, Nos 35–9 (for Type 51) and Fig 3, No 2 (for Type 55)
128. Ibid. Fig 3, Nos 3, 4
129. Holling 1969, Fig 6, No E1 (for the rims of Types 62c and 66), Fig 5, No B1 (=Holling 1971, Fig 2, No 3) (for Type 68)

of forms and fabrics suggests how little is yet known of this material.

Type 58 in GUYS ware can be matched at the type site.[130] Type 59 (in an unrecognised fabric) comes from a palace construction level which contains both pre-palace pottery and later material probably introduced by extensive root disturbances; it is not therefore certainly a sixteenth-century type. The rim form and the use of the white slip can be paralleled among GUYS material,[131] but the fabric indicates another source.

Type 49. Bowls with simple rims and no handles (PMCR and an unrecognised fabric)

Medium-sized, deep, open bowls with straight or slightly curved flaring sides. Sharp base angle and slightly raised or sagging base. Medium to hard fired, buff-orange to buff-red, medium to coarse ware. Yellow-brown glaze all over the interior and on the rim of Type 49b; patches of glaze only on Type 49a. The chief factor determining the sub-types is rim form.

Type 49a (not recognised)

Slightly thickened squared-off rim. Thick walls. Straight, flaring sides. Sagging base. Undecorated.

**No.128; Y7 8; Phase 5*

Type 49b (PMCR)

Rounded flanged rim. Slightly raised base. The glaze ends in a straight line on the exterior, 6mm below rim. Decorated with two horizontal grooves on the upper part of the body.

No.232; S1 12=G31**; Phase 4. S1 11; Phase 5*

Type 50. Carinated bowls with ribbed upper bodies (PMCR, PMFR)

Small to medium-sized open bowls with a carinated profile. The base of Type 50a is missing, but the remaining sub-types have a strongly moulded foot ring and a slightly raised base. Medium to coarse, red-brown or orange ware, soft to medium fired. Yellow-brown glaze all over the interior, with only spots and patches on the exterior. Decoration consists only of horizontal ribbing on the upper part of the exterior. The chief factors determining sub-type are vessel size and rim form.

Type 50a (?PMCR)

Small to medium-sized bowl with a less sharply carinated profile than Types 50b and 50c. Thickened rolled out rim. The external ribbing is pronounced. Flaking on interior and exterior surfaces.

No.171 (PMCR); W12/13 8=G11**; Phase 4. No.438 (not seen); Q13 III 5 [?error for Q14 III 5=**SA G**; Phase 5], Phase uncertain*

Type 50b (PMFR)

Small bowl with rolled-out, rounded rim.

No.107; S1 12=G31**; Phase 4. S1 11; Phase 5*

Type 50c (PMFR)

Smaller than Type 50b, with a simple rounded upright rim.

*No.311 (PMFR); Q14 III 5=**SA G**; Phase 5. *No.314 (PMFR); Q14 III 5=**SA G**; Phase 5. No.439 (not seen); W4 II/IV 4=**G4**; Phase 4*

Type 51. Bowl with straight flaring sides and flanged rim (RBOR)

Medium-sized straight-sided shallow open bowl with a flanged rim, angular base angle, and slightly raised base. Buff-brown medium ware, slightly burnt under the base. Orange-red glaze all over the interior and the top of the rim, with a thin patchy glaze on most of the exterior. Undecorated.

No.41; W2 5b=G3**, W2 5c=**G3**; Phase 4*

Type 52. Bowl with rounded profile and flanged rim (TUDB)

Small to medium-sized shallow open bowl with a flanged rim, rounded profile, and slightly raised base. Hard fired reddish-brown ware, purple in places, with a pimply surface. Brown glaze over the inside of the base and the lower half of the walls, with some on the rim. Exterior unglazed. Undecorated.

No.64; W4 II/IV 4a=G4**, W4 II/IV 4c=**G4**, W4 II/IV 7=**G4**; Phase 4. W4 II/IV 3; Phase 5*

Type 53. Bowl with elaborately moulded flanged rim (an unrecognised fabric)

Medium-sized open bowl with flaring sides and a moulded flanged rim with inner and outer beads. Well fired, pale buff-orange ware with a grey core and reddish to purple-orange exterior surface. Green or yellow-brown glaze on the interior surfaces, spotty and patchy over the purple surfaces. Exterior unglazed, except for spots. Undecorated.

**No.355 (fabric not recognised); W2ext 5; Phase 5. W3 1a; Phase 6. No.339 (fabric not seen); Q5 III 2; Phase 6*

130. Dawson 1979, 45, Fig 9, No. 138

131. Ibid. Fig 8, Nos 108–9

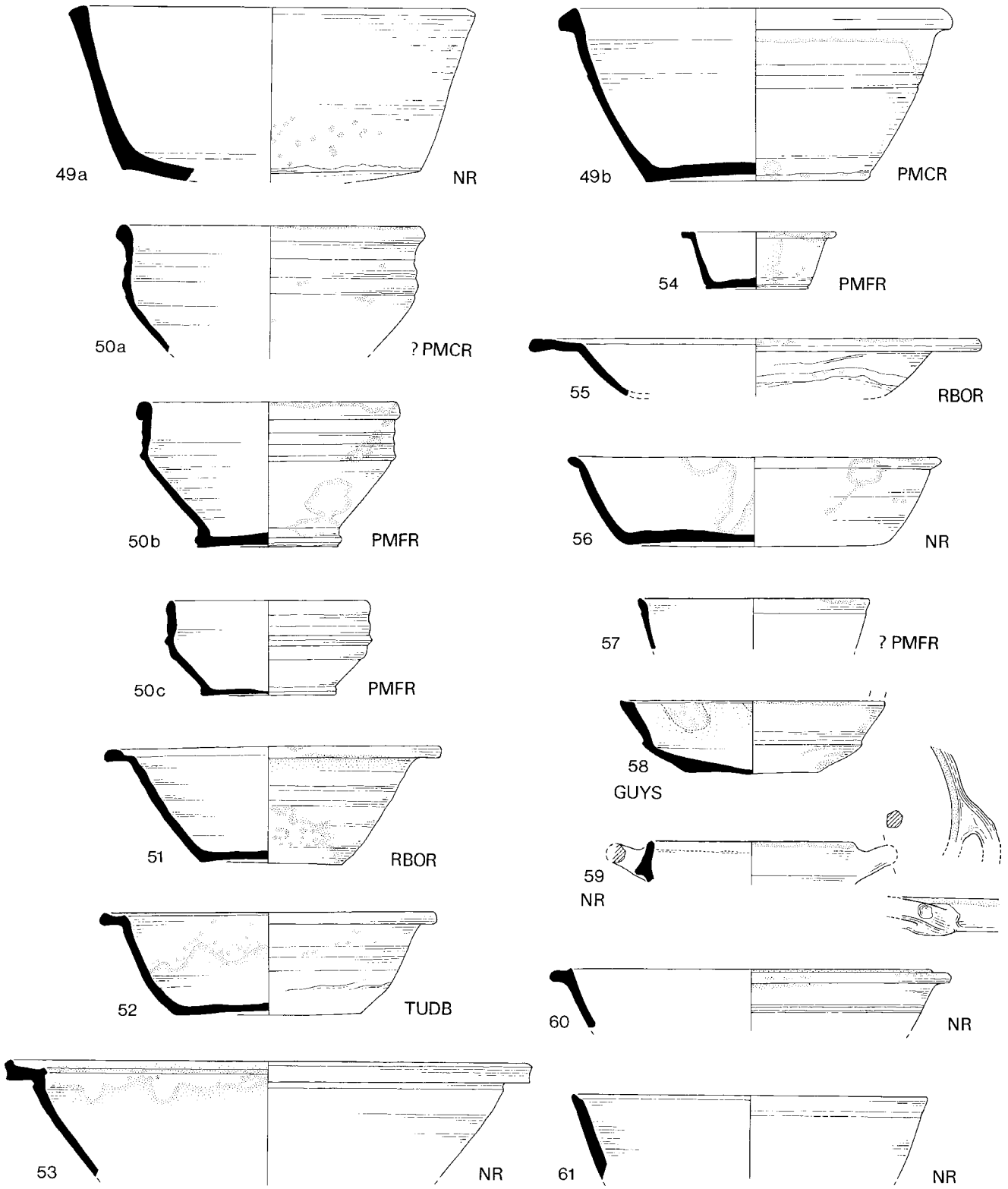


Fig. 94 Earthenware: Red ware, Types ***49–61*** *(1:4).*

Type 54. Miniature bowl with plain flanged rim (PMFR)

Very small bowl with straight flaring sides and a simple flanged rim. Beaded base angle and slightly raised base. Medium fired, reddish brown ware. Yellow-brown glaze on the entire interior surface and on the top of the rim. A thin clear wash over most of the exterior, with traces under the base. Undecorated.
No.101; T7 III 3=G26**; Phase 4*

Type 55. Open bowl with broad flanged rim (RBOR)

Very shallow bowl/plate with a very broad flanged rim, thickened on the outer edge, with a slight bead on the upper surface. Some knife trimming on the exterior. Base missing. Medium to soft fired, flaky, reddish brown ware. Deep yellow-orange glaze all over the interior and on top of the flange. Exterior unglazed, except for a thin wash in places. Undecorated.
No.293 (RBOR); S1 12=G31**; Phase 4. S1 11; Phase 5. No.440 (fabric not seen); X8 4; Phase 5. No.441 (fabric not seen); X8 4; Phase 5. No.442 (fabric not seen); W5ext 2; Phase 5*

Type 56. Open bowl with simple everted rim (an unrecognised fabric)

Shallow, medium-sized open bowl with almost straight sides and a rolled-out, rounded rim. Rounded base angle and slightly raised base. Orange brown, very slightly pimply ware with reddish inclusions up to 1.5mm, medium to hard fired. Bright orange-brown glaze all over the interior and round and under the rim, with patches only on the exterior, especially under the base. Undecorated. On the underside of the base are the marks of the rim of the pot below in firing.
No.87 (fabric not recognised); W2 5c=G3**; Phase 4. No.443 (fabric not seen); S1 2; Phase 6*

Type 57. Open bowl with simple upright rim (?PMFR)

Small bowl with flaring sides and simple, slightly rolled out rounded rim. Base missing. Medium to hard, evenly fired, reddish brown ware with a good yellow-brown glaze on the entire interior surface. Spots of glaze only on the exterior. Decoration consists of a single incised horizontal groove below the rim.
No.315; Q14 III 5=SA G**; Phase 5*

Type 58. Carinated open bowl with flaring upper walls (GUYS)

Shallow, open bowl with a thickened flaring rim, a moulded carination, and a slightly moulded base angle. A detached rim fragment, apparently part of No. 346, has part of an upturned handle. Brick red ware with a grey core. Thick white slip over the interior except for a band 6mm wide below the rim. Pale yellowish green glaze over the white slip on the entire interior surface. Olive-green spots and patches only over the red-brown exterior surface. Undecorated.
**No.346; R8 3; Phase 5. R8 2; Phase 6*

Type 59. Bowl with down-turned external flange and horizontal loop handle (an unrecognised fabric)

Fragment of a vertical rim with external flange and a horizontal loop handle, circular in section. Soft fired, pale pink to reddish-brown, smooth ware with slightly sandy surface. A white slip covers the interior surface up to a line 6mm below the rim. Glazed inside and out, the glaze pale green over the slip and light brown over the ware, giving the effect of light green below a brown band. Undecorated.
No.350; T8 3; Phase 3

Type 60. Bowl with flanged rim (an unrecognised fabric)

Fragment of a small to medium-sized bowl with almost straight flaring sides and a flanged rim with an internal bead. Flaky, pinkish buff, evenly fired ware, with red and white particles up to 0.5mm. Poor orange-yellow glaze over the interior surface and on top of the rim. No glaze on the exterior, except for patches of a thin wash.
**No.348; V7 4; Phase 5*

Type 61. Bowl with flaring walls (an unrecognised fabric)

Bowl with straight flaring sides and rounded rim, grooved internally. Base missing. Softish, pink-red, evenly fired ware with many red and white particles up to 1mm, with deep purple-brown external surface. Rich, deep yellow-brown glaze all over the interior and on top of the rim. Decoration comprises two shallow horizontal grooves on the exterior below the rim.
**No.424; S8 2; Phase 5*

Type 62. Large open bowl with out-turned rim (RBOR)

Large, rather shallow, open bowls with straight flaring sides. Bases are preserved only for Types 62a and 62b, and these have knife-trimmed base angles and raised bases. Coarse to medium, reddish-brown and pinkish red to red-orange ware, medium and evenly fired. A rich orange, red- brown, or olive-brown glaze on the exterior

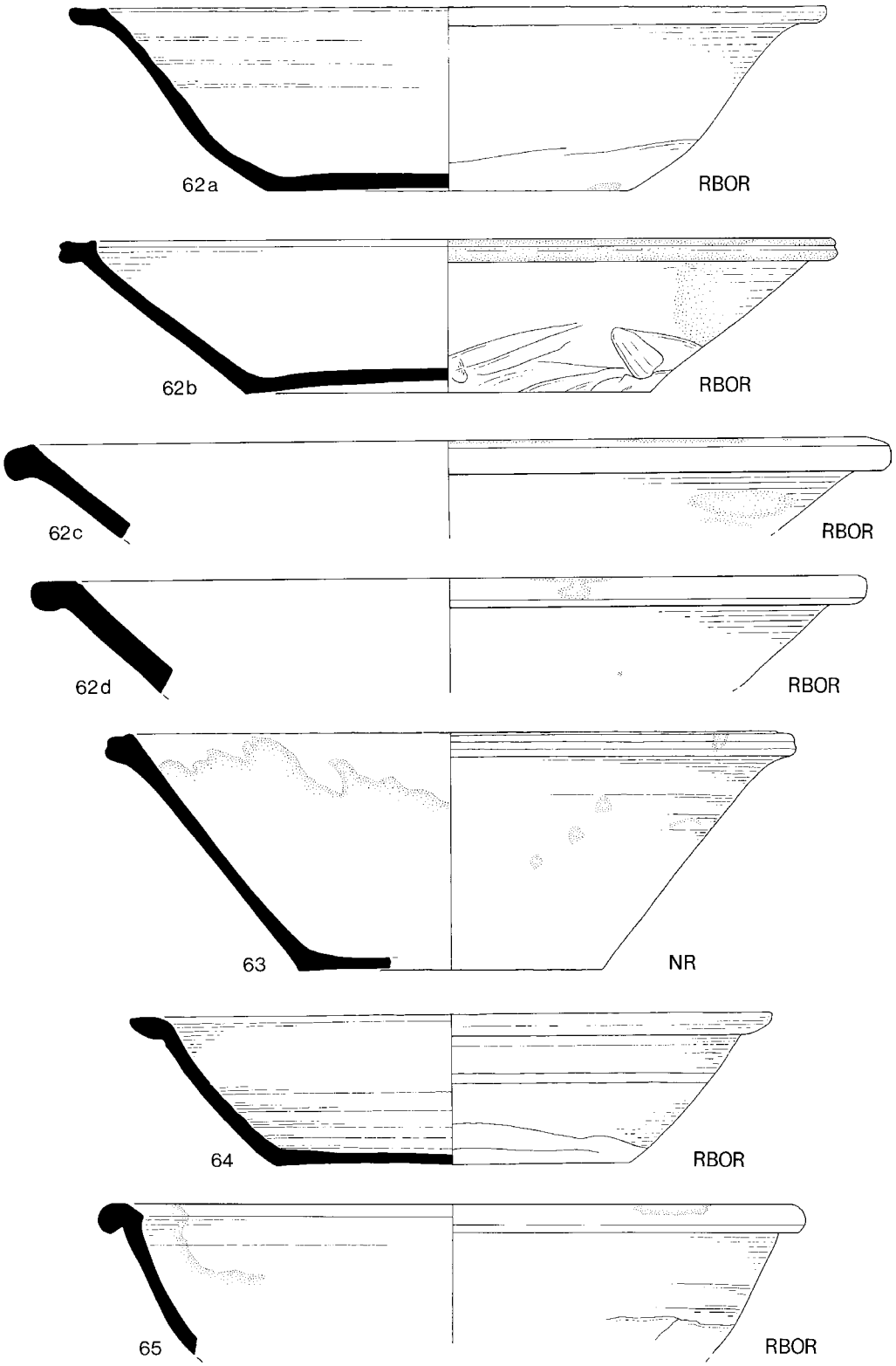


Fig. 95 Earthenware: Red ware, Types ***62–5*** *(1:4).*

surface of all types, but with only spots and patches of glaze on the exterior. Undecorated. The chief factor determining the sub-types is rim form.

Type 62a (RBOR)
Out-turned rim with slight internal bead. The rim of No.165 also has a slight external bead.
No.77; W2 5a=G3**; Phase 4. No.221; W5ext 8=**G5**, W5 4=**D1**, W5ext 2b; Phase 5. No.165; W8 3; Phase 5. No.223; W5 4=**D1**; Phase 5. No.239; Y4 32=**Well**; Phase 4. No.240; Y4 32=**Well**; Phase 4. No.329; X7 7; Phase 5*

Type 62b (RBOR)
Rim similar to Type 62a, but internal bead is more marked. Double moulding on the exterior of the rim.
No.125; X7 6, X7 7; Phase 5. No.248; X15 10a=D2**; Phase 5*

Type 62c (RBOR)
Heavy open bowl with thick, squared, flanged rim, slightly down-turned.
**No.202; CH.XV 1; Phase 8*

Type 62d (RBOR)
Similar to Type 62c, but with a broader, not down-turned, slightly undercut rim with an internal bevel.
**No.201; Q8 11; Phase 5*

Type 63. Large open bowl with simple thickened rim (an unrecognised fabric)

Large, deep open bowl with straight steep flaring sides and thickened flanged rim, double-moulded externally and beaded internally. Sharp base angle and slightly raised base. Even, medium to hard fired, buff orange-brown ware with a grey core and mottled olive-green glaze over the entire interior surface, except below the rim. Exterior unglazed. Undecorated.
*No.172; P/Q 15/16 16=**G19**; Phase 4*

Type 64. Medium-sized open bowl with everted rim (RBOR)

Medium-sized open bowl with slightly curved sides and a flanged rim, undercut and flanged at its outer edge. Sharp base angle, knife-trimmed, with a slightly raised base. Fine, medium to hard fired, pinkish grey ware with a purple-brown outer surface. Olive-green glaze all over the interior and on top of the rim. Exterior unglazed, except for some spots below the rim. Undecorated.
No.188; S1 12=G31**, S1 13=**G31**, S1 14=**G31**; Phase 4*

Type 65. Medium-sized open bowl with down-turned rim (RBOR)

Medium-sized open bowl with curved sides and a hook rim with an internal bead. Some knife trimming. Base missing. Evenly fired, medium to fine, reddish-orange ware with a slightly pimply purple-brown surface. Clear yellow-brown glaze over most of the interior. Exterior unglazed. Undecorated.
**No.249; S15 S.ext 2; Phase 6*

Type 66. Medium-sized bowl with rolled rim (RBOR)

Rim fragment of an open bowl with straight flaring sides and a thickened rounded rim with internal groove. The rim was formed by rolling over and round, leaving a hollow core. Knife trimming on the lower parts of the walls. Base missing. Medium fired, even, brownish-orange ware with a rich yellow-brown glaze over the entire interior surface. Exterior unglazed, except for a few small spots. Undecorated.
No.243; Y4 32=Well**; Phase 4.*

Type 67. Large open bowl with elaborate flanged rim (RBOR)

Large open bowl with steep, flaring, almost straight, sides and a flanged rim, thickened by being folded over under itself at the outer edge, producing a pronounced moulding on top of the rim. Sharp base angle and flat base. Medium, evenly fired, sandy orange-buff ware with a dull purple-red outer surface. Rich yellow-brown glaze, with dark brown or black specks, over the entire interior surface and over the lower part of the interior of the rim. Exterior unglazed except for spots. Undecorated.
No.110; P/Q 15/16 16=G19**; Phase 4*

Type 68. Large shallow bowl with broad flanged rim (RBOR)

Large, shallow open bowl with slightly curved flaring sides and broad flanged rim, the outer edge of which is thickened by folding over under itself. Sharp, wiped or knife-trimmed base angle and slightly raised base. Rather sandy, soft to medium fired reddish brown ware, tending to laminate. Dark olive-green and brown or bright yellow-brown glaze on the entire interior and on top of the rim, with patches only on the exterior. Undecorated.
No.187; S1 12=G31**, S1 14=**G31**; Phase 4. No.292; W5 6; Phase 5. No.299; S1 11; Phase 5*

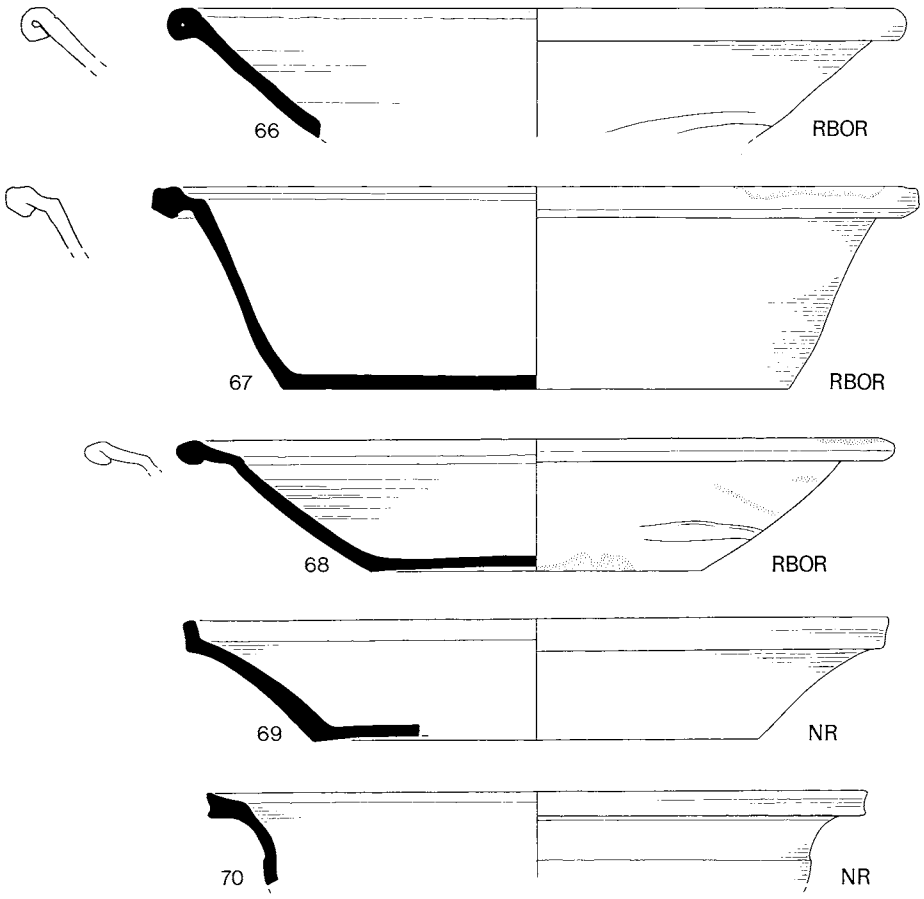


*Fig. 96 Earthenware: Red ware, Types **66–70** (1:4).*

Type 69. Large shallow bowl with vertically upturned rim (an unrecognised fabric)

Large shallow, open bowl with an upright collar rim, rounded over at the top, rising vertically from the inward curving, flared sides. Sharp base angle and slightly raised base. Medium coarse, dull rose-red ware, soft to medium fired, with some white and red inclusions (one large red), and a flaky surface. Bright yellow-brown glaze all over the exterior, under the base, and up the outside of the rim. Thin wash of glaze on the upper part of the interior, but no glaze on the interior base or lower walls, where there is instead a surface ?wash of red-brown ?slip, partly flaked off. Undecorated. The upper surface of the rim has been worn all round, suggesting that the vessel may have been used upside down as a large lid.

G1 remained open until the mid eighteenth century (see above p. 47), so Type 69 may be of eighteenth rather than seventeenth century date.
No.226; U1 6=G1**; Phase 4*

Type 70. Large vessel with flaring mouth and moulded rim (an unrecognised fabric)

Rim fragment, probably from a bowl, with carinated sides and a flanged, double-moulded rim with a slight internal bead. Base missing. Hard, evenly fired, grey ware, with a slightly pimply surface, and black and red inclusions up to 1mm. Unglazed. May be decorated with a line of paint on the interior, parallel to the rim.
**No.217; Y4 4a, Y4 14; Phase 5*

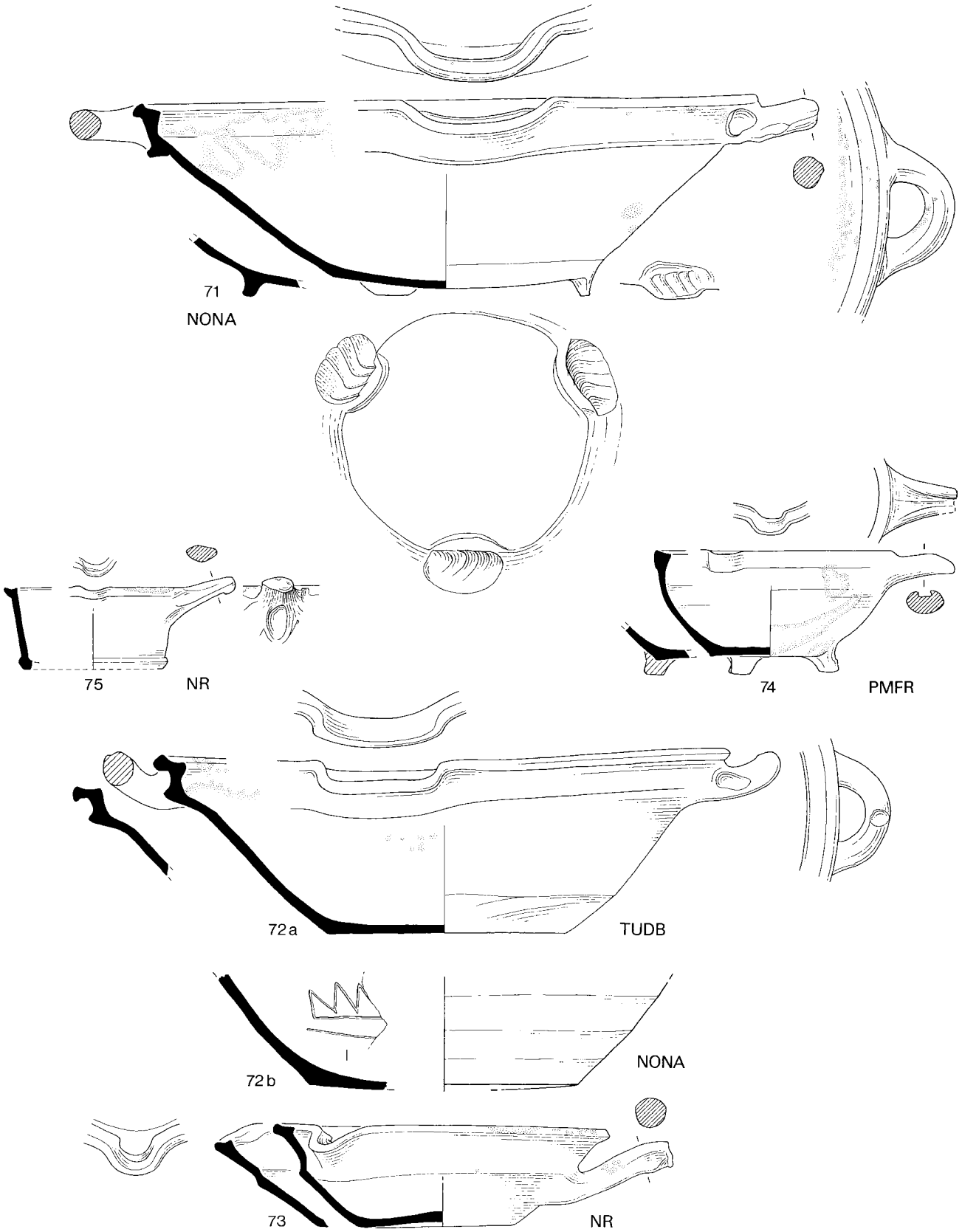


Fig. 97 Earthenware: Red ware, Types ***71–5*** *(1:4).*

Large pans with opposed handles: Types 71–2

These large pans, sometimes described as 'milk pans', occur at Nonsuch in a variety of fabrics (GUYS, NONA, TUDB, and others unrecognised). Type 71, with flanged feet, is paralleled at Guy's Hospital (cf. No. 156 in GUYS ware),[132] and at Kingston[133] (cf. No. 182 in NONA fabric). These parallels are close and these are both production sites, with suggested dates in the sixteenth century. Examples were recovered from a supposed sixteenth-century well filling at 43 High Street, Reigate,[134] and others from seventeenth-century contexts have been recorded from the demolition of Otford Palace, Kent,[135] and from Brentford, Greater London.[136] The Reigate and Brentford vessels lacked their bases and might therefore be of Type 71 or Type 72, but the rim forms and bowl shapes showed that they were of one of these types.

As with some other basic types of food preparation vessels from Nonsuch (eg. pipkins of Types 22, 27, and 28; jars with handles at the rim of Types 30, 31, 33, and 34) the closest parallels suggest that the pans should be dated to the sixteenth or early seventeenth century rather than to *c* 1670–1682/8. This problem is discussed further in the introduction (p 00).

Type 71. Large pans with three flanged feet and a wide lip (GUYS, NONA)

Large, shallow, open pans with an elaborately moulded upright rim and a wide lip at right-angles to two opposed horizontal loop handles which are circular in section and project horizontally from the rim. Slight base angle, and sagging base with three flanged feet with overlapping finger impressions. Medium to fine, even, red-orange, well-fired ware. Rich yellow-brown or yellowish green glaze on the interior, with spots only on the exterior. Decoration comprises finger impressions at the spring of each handle, and in the case of No.182, a white slip on the interior.

*No.156 (GUYS); X4 11a; Phase 5. *No.182 (NONA); T7 III 5=**G26**; Phase 4. No.472; CH.XVI 2; Phase 6*

Type 72. Medium-sized pan with wide lip and no feet (TUDB, NONA and an unrecognised fabric)

Shallow open pans with an elaborately moulded rim and a broad lip at right-angles to two opposed horizontal loop handles which are circular in section and swept up in profile. No. 294 shows that the rim is constructed by folding over down the outside of the vessel. Sharp base angle with flat or kicked base. Some knife trimming at the base. Medium to hard, reddish orange, buff, or brown ware, medium to hard fired, with a grey core and a slightly pimply surface. Red-brown or green/yellow brown glaze inside the base and up the sides, with spots only on the exterior. The inside of the base of Type 72b is marked with an incised pattern, but decoration is otherwise confined to finger impressions on the handles of some examples. The sub-types are defined on the shape of the lower part of the bowl.

Type 72a (TUDB, NONA and an unrecognised fabric)

The sides are straight.

*No.61 (not recognised); W4 II/IV 4=**G4**; Phase 4. *No.81 (TUDB); U14 8; Phase 5. U14 9; Phase 5. No.158 (NONA); W1 5a=**G2**; Phase 4. No.161 (NONA); W1 5a=**G2**; Phase 4. No.294 (NONA); W5 4a=**D1**; Phase 5. No.310 (NONA); X4 4; Phase 5. X4 2; Phase 6. No.387 (NONA); W8 2; Phase 6*

Type 72b (NONA)

Base, probably of Type 72, but the lower part of the sides curve slightly outwards. There is part of an incised pattern of lines and zig-zag inside the base.

No.145; W4 II/IV 4a=G4**, W4 II/IV 4b=**G4**; Phase 4*

Small pans with bar handles: Types 73–5

The forms of the three types within this group are very different, and of the five vessels represented, the fabric of three is unrecognised. Type 74 is represented by three vessels, Types 73 and 75 by one each. No close parallels have been noted for Types 73 and 75, but Type 74 is matched by a vessel from a deposit of 1660–-80 at Dover Castle, Kent.[137]

Type 73. Small pan with a single bar handle and lip (an unrecognised fabric)

Small, open pan with a carinated body and a clubbed rim with an internal bead. Pulled and pinched lip, with a bar handle, circular in section, at c 120° to its lip. Rounded base angle and kicked base. Medium fired, coarse, flaky, brick-red ware. Yellow-brown glaze on the entire interior surface, with only a few spots on the exterior. Undecorated.

No.72; W5ext 2d=G5;** Phase 4*

132. Ibid. 45, Fig 10, No 144
133. Nelson 1981, 97, Fig 3, Nos 13, 14
134. Williams 1984, 122-3, Fig 11, Nos 23–4, cf. No 35
135. Philp 1984, 179, Fig 68, No 415
136. Sheppard 1978, 109, Fig 122, No 4
137. Mynard 1969, 43, Fig 13, No 40

Type 74. Deep pan with a single bar handle, lip, and tripod feet (PMFR, and an unrecognised fabric)

Small, deep, pan with a rounded body and an upright, thickened, internally beaded rim, folded over externally. Pulled and pinched lip at 110° to a single bar handle, circular in section. Sharp base angle, flat base, and three stump feet. Reddish brown well-fired ware. Dark yellow-brown glaze on the interior surface. Exterior unglazed. Undecorated. The exterior surface is burnt through use. No. 358, of which only the bottom part is preserved, is rather deep for a pan and may not be of this type.
No.91 (PMFR); U7 8=G9**; Phase 4. No.121 (not seen); unstratified. No.358 (fabric not recognised); X14 4=**D2**, X15 5; Phase 5*

Type 75. Small pan with vertical sides, a single bar handle, and elaborately moulded base angle (an unrecognised fabric)

Small, deep, vertical-sided pan with a small flanged rim, hollowed on top, with an internal bead and a pulled and pinched lip. A bar handle, rather flat in section, projects upwards from the rim, at 90° to the lip. Moulded base angle; base missing. The form of the base and the presence/absence of feet are unknown. Reddish orange, medium-fired ware with a purple exterior. Rich yellow-brown glaze all over the interior surface, with only a thin wash on the exterior. Undecorated, except for one finger impression at the base of the handle.
**No.422; X7 6; Phase 5*

Pans or bowls of uncertain form: types 76–8

These fragments provide only rim profiles on which to assess parallels. The elaborate forms suggest products found in the GUYS-ware tradition and Type 76 (although not GUYS) can be approximately matched there,[138] as can Type 78[139] which is itself GUYS or something close to it. Type 76 is perhaps wrongly typed here. It was found on the uppermost floor of a Cuddington building under Room 12 in the west range of the palace and should therefore be dated to pre-1538.

Type 76. Moulded upright rim from a ?pan (fabric not recognised)

Rim fragment, folded over on the exterior and elaborately moulded, with a slight bead on the top of the interior. Possibly from a pan with very shallow walls. Well fired buff-brown ware with a grey core. Yellowish green glaze on the interior below the rim. Undecorated.
**No.351; Q7 II/IV 5; Phase 3*

Type 77. Moulded upright rim with down-turned flange (PMCR)

Externally down-turned rim with a rounded top. Possibly from a large pan. Well fired brick-red ware. Rich brown glaze all over the interior, with a patch on the top of the rim. Undecorated.
**No.391; Y9 4; Phase 6*

Type 78. Moulded upright rim and lip (GUYS or CHER)

Rim with elaborately folded over and moulded rim and a pinched and pulled lip. Possibly from a large pan. Scar of a handle spring. Possibly belonging to this type is a single stump foot from the same context. Red-brown, medium to hard fired ware with a grey core. Greenish yellow glaze all over the interior. Exterior unglazed. Decoration comprises a white slip on the entire inner surface, below the glaze, and in streaks on the exterior.
**No.347; Q8 11; Phase 5*

Chafing dishes: Types 79–82

The Nonsuch chafing dishes are in TUDB/CHER (Type 79), TUDB (Type 80), and GUYS (Type 81) fabrics. The chafing dishes produced in red ware (CHER) at Cheam itself were, however, of rather different form.[140] The closest parallel to the shape of Type 80 comes from St. George's Street, Canterbury, from the late sixteenth- to early seventeenth- century infilling of a cellar.[141] There are comparable examples from cesspits at Arundel House, Strand, London, assigned to the later part of the sixteenth century,[142] and from Lincoln's Inn, London, assigned (but on very slim grounds) to the sixteenth century.[143] The chafing dishes in GUYS ware from Guy's Hospital are in the same general form, but different in detail, and quite unlike the Nonsuch Type 81 which is nevertheless in GUYS ware.[144]

138. Dawson 1979, 42, Fig 8, No 109
139. Ibid. 45, Fig 10, No 147
140. Orton 1982, Fig 22, No 120R, cf. Fig 24
141. Frere and Stow 1983, 223, Fig 92, No 238
142. Haslam 1975b, 225, 229, Fig 8, No 18
143. Thorn 1969, 124, Fig 2, No 9
144. Dawson 1979, 44, Fig 9, Nos 126–31

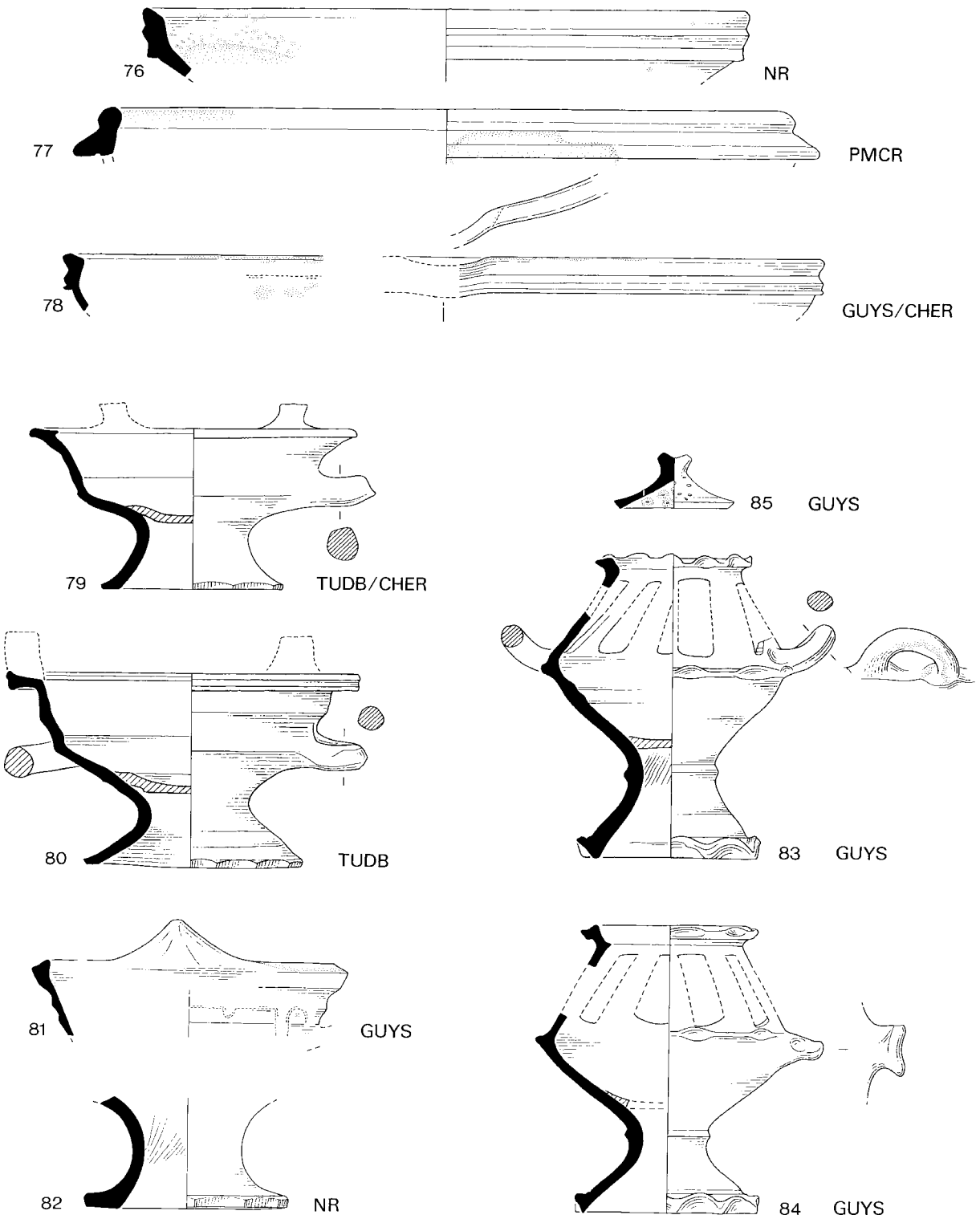


Fig. 98 Earthenware: Red ware, Types ***76–85*** *(1:4).*

Type 79. Chafing dish with three supports on the rim, a pedestal foot, and a bar handle (TUDB/CHER)

Carinated chafing dish with an out-turned and internally beaded rim with three supports on the rim. A single horizontal bar handle, circular in section, set on the carination of the body. Hollow pedestal foot with an angular, knife-cut base, and knife trimming inside the pedestal. The body of the pot and the pedestal were thrown as one, and the base inserted as a separate piece. Buff-brown medium ware, evenly fired. Yellow-brown glaze all over the interior and the top of the rim, with a partial wash on the outer surface. Undecorated.
No.177 (TUDB/CHER); W5 ?=G5**; Phase 4. W5 4=**D1**; Phase 5. No.160 (not seen); W8 3=**G6**, W8 6=**G6**; Phase 4*

Type 80. Chafing dish, with ?three supports on the rim, a pedestal foot, and horizontal loop handles (TUDB)

Carinated chafing dish with flanged and double-moulded rim. Three supports may have been seated on the rim, but not sufficient of the rim survives to be sure. Two opposed horizontal loop handles, circular in section, set on the carination of the body. Hollow pedestal foot with an angular cut edge. Made in two pieces, as Type 79. Medium fired, reddish brown ware. Yellowish brown glaze on the entire interior surface, none on the exterior. Undecorated.
No.375; W5 4a=D1**; Phase 5*

Type 81. ?Chafing dish with ?three triangular projections above the rim and a handle (GUYS)

Thickened, inturned rim of a ?chafing dish with straight, horizontally ribbed, flaring sides. A triangular projection, presumably one of three originally, on the rim, and traces of a handle spring on the body. The base has not survived. Medium to soft fired light brown, pimply, ware with a white slip on the exterior and over some of the interior. Glaze appears rich apple-green over the slip, dull olive-green over the ware. Undecorated, except for the slip.
**No.331 (GUYS); X4 11a; Phase 5. No.444 (not seen); Q9 I ?; Phase uncertain*

Type 82. Pedestal base with angular trimming and finger impressions (an unrecognised fabric)

Pedestal foot of a ?chafing dish with internal finger-pressing at the junction of the (missing) base and pedestal, an angular, cut edge to the foot, and knife trimming inside the pedestal. Outer edge of the foot has angular knife trimming. Fine, pale buff ware with a grey core. No.421 has a white slip in stripes on the exterior and spots of light brown glaze. No. 213 has only a few spots of yellow-green glaze. Otherwise undecorated.
**No.213 (fabric not recognised); X15 IV 8; Phase 5. No.421 (not seen); Q2 III 3; Phase uncertain. A handle from X4 11, Phase 6, may possibly belong to No.421.*

Stink pots and lid: Types 83–5

These vessels are in GUYS ware, but another stink pot occurs in BORD (see below Type 107). In their pedestal feet and inserted bases Types 83 and 84 are comparable to the chafing dishes of Types 79, 80, and 82. There are however no stink pots, nor a lid like Type 85, from the Guy's Hospital site.[145] 'Stink' or 'fuming' pots were used in sick rooms and in times of plague to contain scented preparations, such as burning pot-pourri, to cleanse the air.[146]

Type 83. Stink pots with tall pedestal foot and two opposed loop handles (GUYS)

Carinated stink pots with a slightly flared frilled rim, the finger impressions on which provide a seat for a lid.
Two opposed up-swept horizontal loop handles, circular in section, rise from the carination. Trapezoidal, triangular or sub-rectangular holes are cut through the upper part of the walls. Pedestal foot, frilled at the base, with knife trimming beneath. The body of the pot and the pedestal were thrown as one, and the base inserted as a separate piece, as in Types 79–80. Friable, medium fired, brick-red ware with a grey core. The glaze appears mottled dark green over a white slip on the exterior and rim, and mottled yellow over the ware where the slip is not present. It covers the whole of the exterior and interior, but not below the pedestal. Decoration comprises frilling on the base and rim, a finger-impressed cordon on the carination, a plain cordon at the junction of the base and body, and finger impressions at the springing of the handles. No.281 has pierced holes below the carination, as well as cut openings above.
No.36; W5ext 2d=G5**, W5ext 3=**G5**; Phase 4. W5 4=**D1**; Phase 5. No.287; W5ext 2d=**G5**; Phase 4. W5 4a=**D1**, W5ext 2a; Phase 5. W5 1, W5ext 2; Phase 6: probably the rim of No.36. No.281; W3 4, W5 2a, W5ext 2a, W5ext 4a=**D1**; Phase 5. W5ext 1; Phase 8. No.290; W5ext 2d=**G5**; Phase 4. W5ext 2a; Phase 5: almost certainly the rim of No.281. No.282; W5ext 2a; Phase 5. No.285; W5 4=**D1**, W5ext 2b; Phase 5*

145. Ibid

146. Bell 1951, 35–6, 51, 106 (fig), 139 155, 285, 334

Type 84. Stink pot with pedestal foot and a single lug handle (GUYS)

Carinated stink pot. Form and decoration as for Type 83, but with a single horizontal lug handle set on the finger-impressed carination. White slip on the upper part of the exterior. Dark green glaze over part of the interior, light green on the exterior over the white slip.
No.283; W5 5; Phase 3 (contamination). W5ext 2d=G5**, W5ext 3=**G5**; Phase 4. W5 4=**D1**, W5 4a=**D1**; Phase 5. W5 2; Phase 6.*

The following are from vessels of Type 83 or 84.
*No.445; W5 8, W5ext 2a; Phase 5. No.446; Q14 III 5=**SA G**; Phase 5. No.447; X4 2; Phase 6*

Type 85. Small pierced lid with simple or horned knob (GUYS)

Small lid with rim bevelled on the underside, and a simple or horned knob. Circular piercings in many places. Friable, red-brown ware with a white slip on the upper surface. Dark green or rich yellow glaze over the slip. Otherwise undecorated. Appears to be lid for Types 83 and 84.
No.284; W5 4=D1**, W5ext 2a; Phase 5. No.286; W5 4a=**D1**; Phase 5*

Chamber pots: Type 86

Although conventionally called chamber pots, these handled vessels could obviously be used for a variety of purposes, eg. as paint pots. A long series of chamber pots in a variety of fabrics and with differing rim forms was found at Aldgate, London, in 1974 in the filling of a cess-pit assigned to *c* 1650–75, in RBOR and PMCR in shapes comparable to Nonsuch Type 86c in PMFR.[147] Two of the Aldgate chamber pots in RBOR from a later deposit, assigned to *c* 1700–1720, are different in form, but a third in RBOR provides a close match for Nonsuch Type 86c.[148] The other Nonsuch types are more difficult to parallel: Aldgate provides an approximate match for Type 86a in the cess-pit of *c* 1650–75;[149] and 199 Borough High Street, Southwark, for Type 86b in a GUYS ware vessel from a pit of ?early seventeenth-century date.[150]

Type 86. Chamber pot with moulded rim and strap handle (cf STBU, RBOR, NONB, PMCR, PMFR, and an unrecognised fabric)

Squat, open mouthed chamber pot with a rounded body which, even at its greatest circumference, is little wider than the mouth. Flanged rim. A single strap handle rises from the lower body to the rim. Moulded base angle, and a kicked base. Coarse to fine reddish-brown or buff-brown ware, medium to hard fired. Brown or yellow-brown glaze with black speckling, dark, almost purple on Type 86a, over the entire exterior surface. Spots of glaze on the interior. Decoration comprises finger-impressions at the base and/or top of the handles. The chief factors distinguishing the sub-types are size and rim form.

Type 86a (cf STBU, RBOR, and an unrecognised fabric)
Large vessel with elaborately moulded rim with a prominent internal bead .
*No.57 (cf.STBU); W4 II/IV 4=**G4**; Phase 4. W4 II/IV 2, W4 II/IV 3, W4 III/IV 3a; Phase 5. *No.93 (fabric not recognised); U7 8=**G9**; Phase 4. No.170 (RBOR); W12/13 8=**G11**; Phase 4. W12/13 7; Phase 5. No.448 (not seen); X4 I/III/W4 I/II Baulk 2; Phase 6. No.449 (not seen); unstratified*

Type 86b (NONB, PMCR, PMFR)
Smaller than Type 86a, with a simple internally beaded flanged rim. The base of No.189 shows the outline of two other vessels below in the kiln stacking.
No.189 (NONB); W2 5a=G3**; Phase 4. No.450 (PMCR); X7 6; Phase 5. No.451 (PMCR); W5 6; Phase 5. No.452 (PMCR); Q8 3; Phase 5. Q8 2; Phase 6. No.453 (PMFR); U8 II/IV 2; Phase 5. No.454 (not seen); W5ext 2a, X5 III/IV 6; Phase 5. No.455 (PMCR); U7 2; Phase 5*

Type 86c (PMFR, and an unrecognised fabric)
Intermediate size, with rounded flanged rim. Nos.344 and 414 have a metallic wash on the exterior. The base of No.344 bears kiln stacking traces.
*No.238 (fabric not recognised); Y4 31; Phase 5. No.344 (fabric not recognised); S1 13=**G31**; Phase 4. *No.414 (PMFR); U14 4, U14 5, U14 6; Phase 5. U14 2, U14 12; Phase 6. No.456 (not seen); X7 6; Phase 5. U7 3; Phase 6*

Miscellaneous vessels: Types 87–96

"Bucket" or "basket-handled" pots like Type 87 occur occasionally in deposits dated from the later sixteenth or early seventeenth century onwards, for example at Exeter.[151] Type 89 is similar to chamber-pot forms (cf. Type 86), but the vessel is probably too thin-walled to belong to this type. Type 91 is certainly a flower pot, but may be of eighteenth-century date as it comes

147. Orton and Pearce 1984, Fig 15, Nos 6–9, 11–13, and 23–25
148. Ibid. Fig 20, Nos 48–50
149. Ibid. Fig 17, No 19
150. Orton 1988, Fig 130, No 1236
151. Allen 1984, Fig 89, No 2057

from Garderobe 1 which seems to have been open until well into that century. Type 90 may also be a flower pot, but does not have the usual drainage hole in the bottom. Lids similar to Types 92 in RBOR appear on the RBOR/BORD production sites[152] and BORD Type 115 (below) provides a close parallel.

Type 93 is a vessel of unusual form, apparently the neck of a ?jug. There is an approximate parallel from Harlow, Essex, probably in PMBL.[153] Vessels in BORD and related fabrics copying tall-necked German stoneware forms[154] may also provide possible matches in wares related to the RBOR of Type 93, as do some kinds of two-handled posset cups.[155]

The shallow vertical-walled dish, Type 94a, is possibly a cheese-press. Type 94b is the base of a Form A watering can.[156] This example is in TUDB, but the best parallels from the London area are in GUYS ware.[157]

The lug handle, Type 95, probably in TUDB, has not been paralleled. The GUYS ware vessel, Type 96, is not paralleled among the Guy's Hospital material.[158]

Type 87. 'Basket' with handle crossing vessel mouth (NONA)

Rim fragment from a wide-mouthed jar with an everted and slightly thickened rim. A handle, circular in section, rises from the rim and spans the mouth of the vessel. Buff-orange, medium to fine ware with a slightly pimply exterior. Exterior surface purplish to light buff brown. Brownish green glaze on the top of the handle, with spots on both the interior and exterior of the rim. Undecorated.

No.366; W5ext 2d=G5**; Phase 4. W5ext 2a; Phase 5*

Type 88. Small bottle with a tall, narrow neck (PMBL)

Small, globular bottle with a tall, vertical neck with a rounded rim. Moulded base angle and slightly kicked base. Medium to coarse ware, fairly hard fired, with a pimply exterior, reddish brown in the core with a purplish red interior surface, and dark purple/red exterior surface. Very dark brown-black glaze over almost all the exterior, but very little on the base. The interior of the neck is also glazed, with a patch of glaze on the inside of the base. Undecorated.

No.194; W8 3=G6**; Phase 4*

Type 89. Large globular pot with a sharply everted rim (fabric not recognised)

Globular vessel with an out-turned flanged rim, slightly under cut. Medium to coarse, bright red-orange ware, hard fired. Dark brown glaze on the entire exterior surface. Decoration comprises a cordon on the exterior below the rim.

**No.353; Q5 III 2; Phase 6*

Type 90. Deep pot with simple thickened rim (RBOR)

Deep pot with flaring slightly rounded sides and a simple, thickened rim, slightly squared on top. Sharp base angle and slightly kicked base. Soft to medium fired, pinkish buff, medium ware. Yellow to olive green glaze on the interior up to the rim, with patches on the rim itself. Spots only on the exterior. Undecorated.

No.420; W5 2a, W5 2b, W5 4=D1**, W5 4a**=D1**; Phase 5. W5 2; Phase 6. W5 1; Phase 8*

Type 91. Flower pot with flaring sides (fabric not recognised)

Deep pot with straight flaring sides and rounded, down-turned, slightly undercut rim. Sharp base angle, and thick base pierced by a single hole. Pinkish red, soft, friable ware. Unglazed and decorated only with a single groove on the body.

No.409; U1 6=G1**; Phase 5*

Type 92. Lid with central knob (RBOR)

Flat-topped lid with central, rounded knob, rounded top angle, and slightly thickened, rounded rim. Medium to coarse, medium fired, reddish orange-buff ware. Yellow glaze over the top, with patches on the sides. A few spots of glaze only on the interior. Undecorated.

**No.402; W4 I/II / X4 I/III Baulk 2; Phase 6*

Type 93. ?Globular vessel with constricted neck (RBOR)

Rim and upper part of a vessel with a tall hollowed rim and a constricted neck. There is the scar of a handle below the rim and an external cordon at the constriction. Although the lower part is missing, the vessel appears to have

152. See for example Holling 1969, Fig 6, No F1 from Ash, Surrey, which the author thinks were probably designed for use with pipkins of his Fig 5, Nos A1-A4 (cf. Nonsuch BORD Types 112–13); and cf. Holling 1971, 81–2, Fig 5, No R1
153. Newton and Bibbings 1959, Fig 10, jug
154. Matthews and Green 1969, Fig 3, No 33; Thorn 1969, Fig 2, No 3
155. Philp 1984, Fig 68, Nos 401–4
156. Moorhouse 1991, 106–8, Fig 9.6
157. Dawson 1969, 44, Fig 9, No 123
158. Ibid

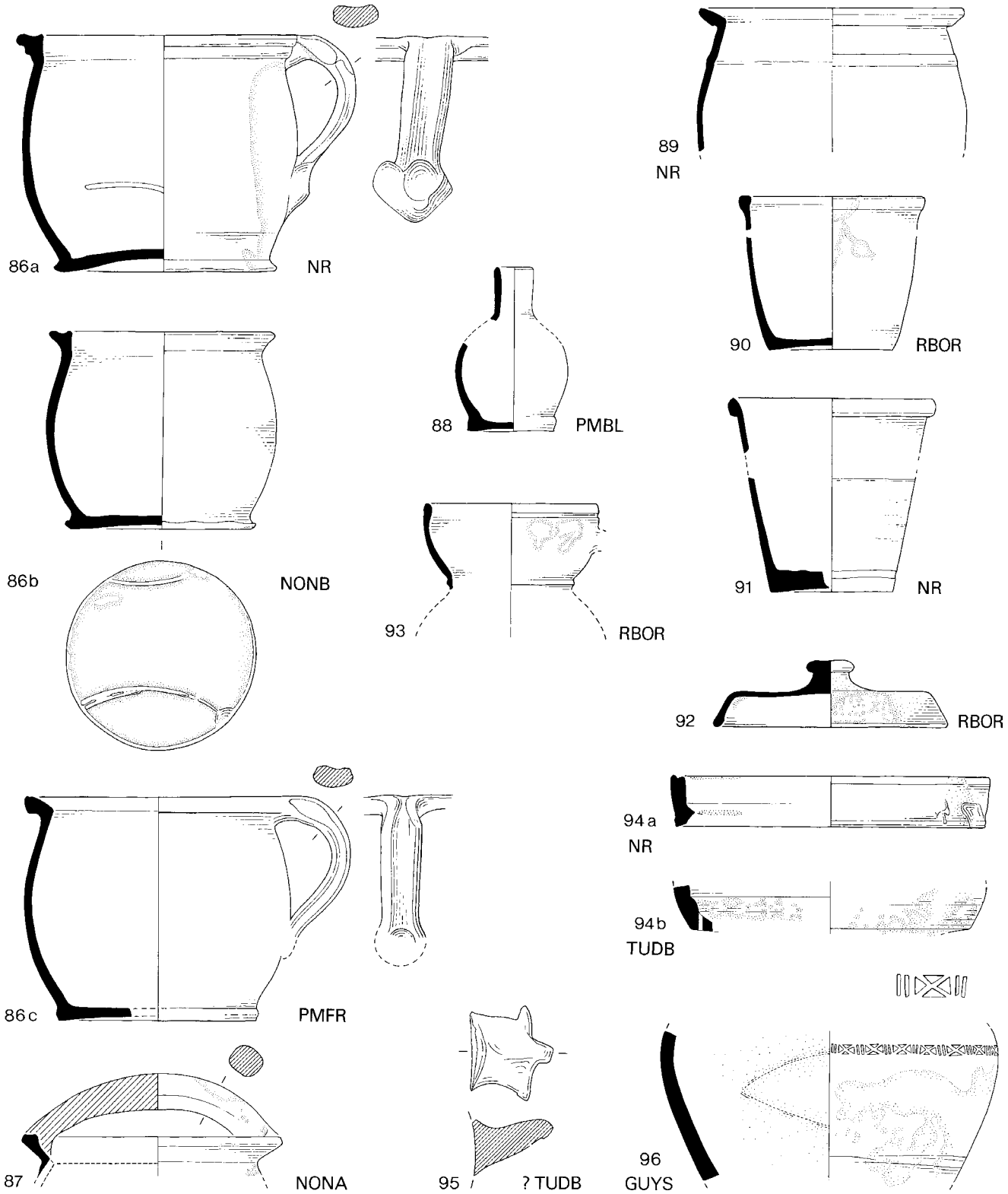


Fig. 99 Earthenware: Red ware, Types ***86–96*** *(1:4).*

widened out below the constriction into a ?globular body. Medium to coarse, soft, orange-buff ware, medium fired. Dark brown glaze with a green tinge on both the interior and exterior surfaces. Decoration comprises a groove below the rim and a cordon at the point where the vessel is constricted.
No.262; W5ext 2c=G5**; Phase 4. W5 2b, W5 4a=**D1**, W5ext 2, W5ext 2b; Phase 5*

Type 94a. ?Cheese press (fabric not recognised)
Shallow vertical-walled vessel with a beaded rim. Medium to hard fired, orange-buff ware with red-purple surfaces. Rich yellow-brown glaze inside on the base and on top of the rim. Thin wash on the exterior. Undecorated.
**No.408; Y4 12; Phase 5*

Type 94b. ?Watering can (TUDB)
Part of the base angle of a watering pot. Sagging base, through which a series of small vertical holes have been pierced. Fine to medium grey ware, with red-orange exterior surfaces. Spots and patches of purple-brown glaze on the interior and exterior. Undecorated.
No.417; W8 7=Great cellar**; Phase 4*

Type 95. Horizontal lug handle with three projections (?TUDB)

Horizontal lug handle from a vessel of unknown form. The lug has three small, fingered 'ears'. Medium-fired, buff ware with a grey core. Olive-green glaze on the entire upper surface and on the edge. Underside unglazed.
**No.390; X14 5; Phase 5*

Type 96. Fragment from a vessel with thick walls (GUYS)

Part of the wall of the lower part of a vessel. Harsh, coarse, sandy grey to buff-red ware. There is an area of white slip below the glaze on the interior. Clear yellow glaze all over the interior, and in spots on the exterior. The exterior has a horizontal band of roller-stamped decoration. The white slip "pattern" on the interior suggests this was meant to be seen and that the vessel was therefore open-mouthed.
No.137; U7 8=G9**; Phase 4.*

Cream wares: Types 97–125

Introduction

These cream wares are mostly products of the pottery industry on the Hampshire/Surrey borders studied by Holling.[159] The fabric is now known by the code-name BORD, and this can be subdivided into vessels with a fine green glaze (BORDG, Types 97–111) and those glazed yellow (BORDY, Types 112–25).

The products of the post-medieval industry are known mainly from four production sites believed to have been working between the late sixteenth and the late seventeenth century:

Farnborough, Hants[160]	active in the late 16th century, prior to *c* 1600
Cove, Hants[161]	second quarter of the 17th century
Hawley, Hants[162]	*c* 1620 to *c* 1650 or later
Ash, Surrey[163]	mid to late 17th century

It is clear that these sites represent only a fraction of those producing pottery in the area during this period,[164] and that there were other cream-ware producers in adjacent regions, eg. Cheam, Surrey, where no sites working later than *c* 1500 have yet been discovered.[165]

Since the series is better known, thanks to Holling's work, it seems best to present the parallels and current dating as Table 8.

Dating presents serious problems. Holling has done much to identify such few changes as seem to be present in the principal types through time and has suggested the dates for Farnborough, Hawley, and Ash given above. But these production sites are not independently dated (eg. by unequivocal documenting evidence or datable finds such as coins) and the sites where BORD was used (eg. Basing House, Hants, and Arundel House, Strand, London) all too often turn out to have no dating independent of ceramic typology. The dates given in Table 8 for Types 97 to 125 are those indicated by the current dating of the production sites, refined in some cases by the suggested dating of the development of the individual types within these spans. These suggestions are based on (a) typology, for example the lowering of the maximum diameter of pipkins suggested by Holling, and (b) parallels with BORD-using sites, but the dating of these is not itself necessarily clear enough to control the suggested typological evolutions. Above all, it is

159. Holling 1969, 1971
160. Holling 1971
161. Haslam 1975a. The date given is for the waster deposit published by Haslam. In his list of the Hampshire/Surrey border production sites Holling notes three in Cove parish (additional to that investigated by Haslam) and gives them dates in the late 16th to early 17th century (one site) and mid to later 17th century (two sites): Holling 1971, 61
162. Holling 1971
163. Holling 1969, 1971
164. Holling 1971, 57–65
165. Orton 1982, 79–84

the range of variation possible between contemporary production sites, and the range of date over which types may remain in use, of which we are almost wholly ignorant. This problem is compounded by the lack of change through time apparent in some BORD types. The relative paucity of information on the later types presents particular difficulty in assessing the Nonsuch material. In fact only the pipkins seem to show a clear development through time, and the changes – the fall in the maximum diameter towards the base just mentioned and the abandonment of ribbing *c* 1640 – are themselves not securely dated, and are not known not to vary between the producing sites. Moreover, the earlier stages of the industry are better known than the later, and the end-date of the Ash site, the latest of the principal producing sites, is undefined.

In these circumstances it is to be expected that the dates shown in Table 8 will tend to be early rather than late. It may be significant that in the case of the pipkins (Types 112–14, and 116–17), where the evolution is clearest and the dating consequently perhaps most secure, the dates for parallels to the Nonsuch vessels fall mainly in the mid to late seventeenth century.

Some specific comments need to be added to Table 8:

Type 100: the Cove pipkins have hollow handles, rather than the bar handle of the Nonsuch vessel. This apart, the Cove vessels offer the closest parallel.

Type 102: the Nonsuch vessel is a bowl not a handled pan, but the shape, especially the rim, is close to the Arundel House pan.

Type 106: the form of chafing dishes appears to be relatively unchanging, and there is little evidence from Ash to trace the type into the later seventeenth century.

Type 108: neither the Arundel House nor Farnborough parallels are close, for they approximate to the 'pocket-watch' form of the costrel, whereas the Nonsuch vessel appears to be barrel-shaped.

Type 109: the money-box form does not change much through time.

Type 110: this is a miniature form; the parallels quoted are larger.

Type 112a: the maximum diameter of the Nonsuch pipkin is higher than in the Ash parallel.

Type 112c: the Ash pipkin is a close match for the form of the Nonsuch vessel, but Holling suggests that 'for this industry' (ie. the kilns on which he was basing his research) ribbing ends *c* 1640.[166] It is not known how generally valid this statement may be.

Type 112d: the maximum diameter of this vessel seems higher than normal in the Ash pipkins; the thin walls and shape can perhaps best be compared to the Cove pipkins.

Type 113: unlike the Ash parallel, the Nonsuch vessel has no feet and its exterior is slightly ribbed.

Type 115: Holling notes that lids seem to show no distinctive changes over time, but appear to be commoner products in the seventeenth century than earlier.[167]

Type 117: the Nonsuch vessel has a single strap handle rather than the opposed rod handles of the Farnborough vessel. The similar pot from Elsyng Palace, Enfield, Greater London, is tentatively ascribed by Jones and Drayton without further reference to the Hawley kilns.[168]

Type 118: many fragments of similar mugs were found at Hawley.[169]

Type 119: comparable forms with evidence for handles occur at Basing House, Hants, in contexts of the first half of the seventeenth century.[170]

Type 121: the Cove parallel has a simple thickened rim, rather than the rolled down rim of the Nonsuch vessel.

Type 122: the Cove pots provide possible parallels but too little of the Nonsuch vessel survives for certainty. A comparable Southwark fragment is regarded as a jug rim.[171]

Type 123a: the walls of the Nonsuch vessel are considerably thicker than those of the Cove pot.

Type 123b: the Nonsuch vessel is again thicker.

Postscript. The Museum of London's volume on *Border Wares*[172] appeared after this section had been written and too late to be taken into detailed consideration, but it fully confirms the trends suggested here. In every case where the dates proposed in *Border Wares* differ from those in Table 8, they indicate, as expected, a later dating, usually in the mid to later seventeenth century. The most striking case is provided by the pipkins (Types 112a–114), vessels with plain or only slightly ribbed bodies and external lid seatings belonging to the period from *c* 1650 onwards.[173]

Two further points need to be made. First, the difficulty of matching many of the Nonsuch vessels at all precisely to the series of 460 profiles in *Border Wares* shows how incomplete our knowledge remains. Second, the dating of many of the types is still imprecise, either because they underwent little change over time, or because we still lack the long stratified sequences and closely dated groups which alone will provide greater precision. The Nonsuch material, with outer limits of *c* 1670–1682/8, and the possibility that

166. Holling 1971, 76–7
167. Ibid. 81
168. Jones and Drayton 1984, 49, Fig 32, No 1
169. Holling 1969, 26, and Holling 1971, 74–6
170. Moorhouse 1970, 58–9, Fig 13, Nos 107, 109
171. Orton 1988, Fig 146, No 1467
172. Pearce 1992
173. Pearce 1992, 18–20, 97–9

the bulk of the material belongs to the 1680's, provides such a group.

Cream wares with fine green glaze: Types 97–111

Type 97. Jug with tall neck and strap handle (BORDG)

High-shouldered jug with a tall, flaring neck. Squared-off rim, with a small pushed-out lip opposite a vertical strap handle, flat in section, rising from just below the shoulder to the middle of the neck. Rounded base angle 1670–1682/8 and kicked base. Fine buff-yellow ware, evenly fired. Deep green glaze on the exterior, thick on the neck, handle, and upper part of the body. Trickles of glaze inside rim and lip. Undecorated.
No.67; W4 II/IV 4=G4**; Phase 4*

Type 98. Jugs with flaring neck and rod handle (BORDG)

Small jugs with a short, rounded body and flaring mouth. Rounded rim with a small pushed-out lip set at less than 180° to a single vertical handle, circular in section, rising from just above the shoulder to the middle of the neck. Sharp base angle and kicked base. Fine cream ware, medium fired with a smooth rich yellowish cream surface. Bright, dark apple-green glaze covers the exterior surface of the neck, handle, and upper part of the body, and the inside of the base and lower half of the body. Undecorated.
No.29; T3 III 3=G26**; Phase 4. No.30; T3 III 3=**G26**; Phase 4. No.31; T3 III 3=**G26**; Phase 4. No.458; U7 8=**G9**; Phase 4*

Type 99. Costrel with two pierced vertical lugs (BORDG)

Small, globular costrel with a tall vertical neck and a sharply out-turned rectangular flanged rim. Two vertical lugs, pierced for suspension, on the shoulder. Well moulded slightly kicked base. Even, medium fired, cream-white to cream-yellow ware, with a slight greyish sheen where the glaze is absent. Mottled dark and light green glaze all over the upper part of the exterior body, neck, and lugs, with spots and patches of glaze on the lower body. Interior glaze confined to the neck. No interior glaze in some cases. Marks on the outer edge of the rim and on the shoulder show where adjacent costrels were stacked upside down in the kiln. There is a patch of red ware below the base from a red-ware vessel adjacent in the kiln. The base of No.48 is elaborately moulded and bevelled.
*No.48; W8 5=**G7**; Phase 4. No.61; W1 5a=**G2**; Phase 4. No.68; W1 5a=**G2**; Phase 4. *No.71; W5ext 5d=**G5**; Phase 4. No.385; Unstratified*

Type 100. Pipkin with tripod feet and hollowed rim (BORDG)

Pipkin with slightly rounded body and an everted, slightly hollowed rim with a small lip at 90° to a straight bar handle, rectangular in section. Slightly kicked base with three pointed feet. Fine, medium fired, yellowish cream ware, slightly greyed around base. Deep mottled green glaze all over the upper three-quarters of the body, the handle, and rim. Internal glazing on the rim only.
No.10; W4 II/IV 4=G4**, W4 II/IV 4a=**G4**; Phase 4*

Type 101. Pot with slightly flaring sides and out-turned rim (BORDG)

Upright rim from a vessel with slightly flaring sides, the upper part of the rim slightly everted. Incised groove below the rim. The base angle just survives, indicating that the vessel was steep sided with a thin base. Fine, evenly fired, dirty cream ware with some iron staining. Dark apple-green glaze, possibly originally all over the interior, with one large patch of glaze on the exterior, thinning to a thin wash near the rim. Decoration consists only of marked horizontal ribbing on the body.
No.400; S1 13=G31**; Phase 4. S1 11; Phase 5*

Type 102. Bowl with sharply everted angular rim (BORDG)

Deep bowl with straight flaring sides and an everted rim, carefully moulded at the extremity. Sharp base angle. Kicked base. Fine, whitish-cream ware with a buff core. Firing less hard than is usual for cream ware. Mottled apple-green glaze, dark in places, all over the interior, including the top of the rim. There is a very thin almost colourless, yellow wash over much of the exterior surface.
No.92; W5ext 2d=G5**, W5 2b, W5 4=**D1**, W5 4a=**D1**, W5 6; Phase 5. W5ext 1; Phase 8*

Type 103. Bowl with rounded sides and moulded, flanged, and up-turned rim (BORDG)

Open bowl with steep, rounded sides and a flanged, moulded up-turned rim, the upper part of which is missing. Sharp base angle. Kicked base. Fine, medium to soft, evenly fired, dirty white-cream ware with a smooth exterior surface. Good, crazed, rich apple-green glaze all over the interior and the top of the rim. Only a few patches of glaze on the exterior, thining to a yellow wash. Undecorated.
No.204; Q14 III 5=SA G**; Phase 5*

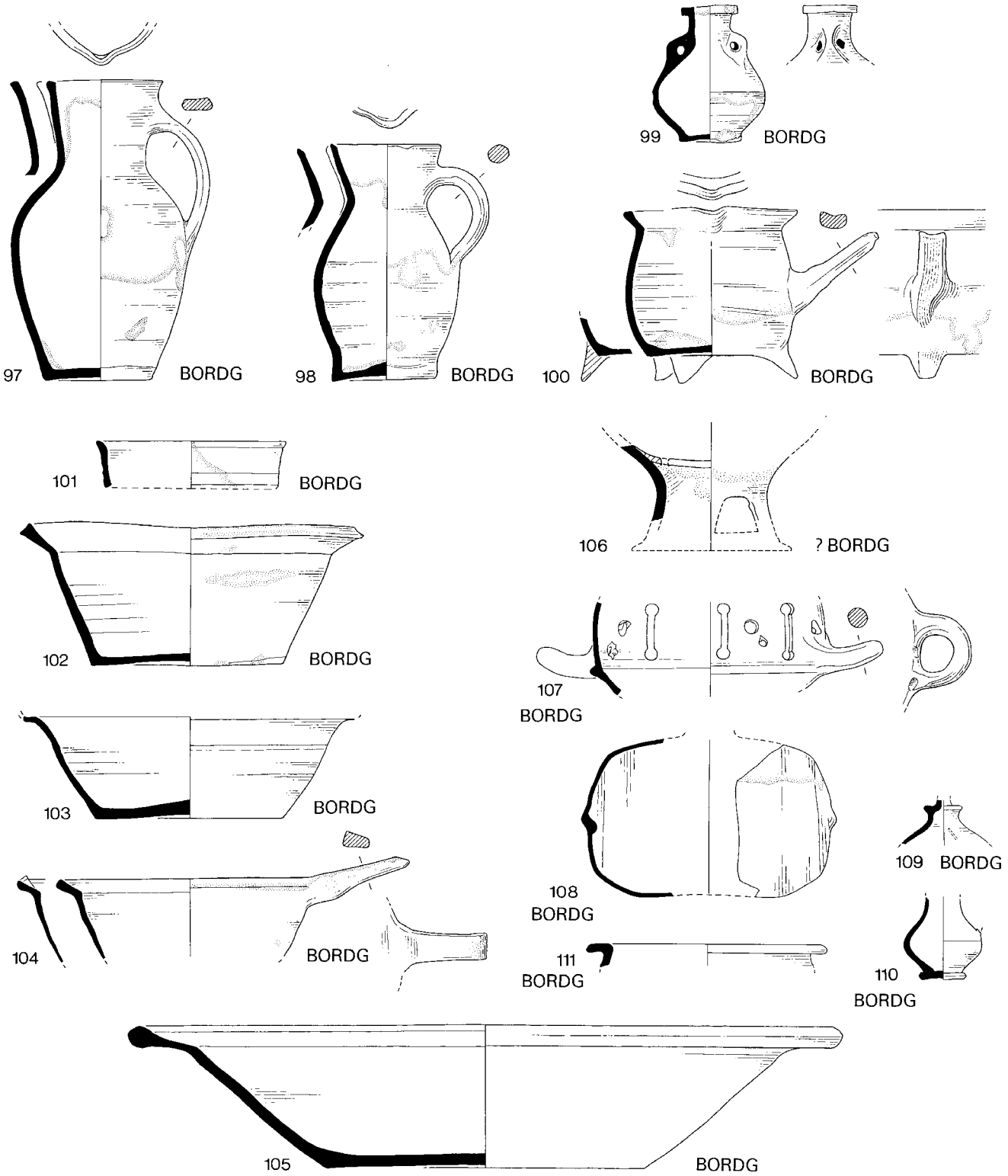


Fig. 100 Earthenware: Cream ware, Types ***97–111*** *(1:4).*

Type 104. Pans with curving sides, lip, and bar handle (BORDG)

Small pans with gently sloping, slightly rounded sides and sharply everted, flaring rim, with a lip presumably at right-angles to the bar handle rising from the rim. Base missing. Very fine creamy to creamy-grey ware. Rich dark green glaze, mottled or streaked almost black in places, covers the inside, the top of the handle, and over and under the rim. No exterior glaze. Undecorated. The rim of No.460 has an external overhanging moulding.
No.190; W4 II/IV 4=G4**; Phase 4. No.460; X4 11; Phase 5*

Type 105. Large shallow bowls with a broad flanged and thickened rim (BORDG)

Large, open bowl with gently sloping walls and a broad, flanged and thickened rim, formed by folding over and under. Knife-trimmed base angle and slightly raised base. White-cream ware, soft and evenly fired but somewhat flaky. Fairly dark, dull apple-green glaze all over the interior, with small patches of dark brown glaze on the exterior, with a thin clear wash on the underside, making the surface a very pale yellow. Undecorated.
No.235; T7 III 3=G26**; Phase 4*
Three other fragments with slightly varying rim forms appear to come from vessels of this type.
No.461; Q8 3; Phase 5. No.462; W11 7a; Phase 6. No.463; Q8 6; Phase 5

Type 106. Chafing dish (?BORDG)

Upper part of the hollow pedestal foot and base of the bowl of a chafing dish. Openings cut through both the foot and the base to facilitate air circulation. Hard, evenly fired, yellow-cream ware with a buff to pink core. Sparse, light mottled apple-green glaze on the exterior, with a little on the foot. Good dark green glaze on the base and sides of the bowl.
**No.430; X8 4; Phase 5*

Type 107. Stink pot with horizontal loop handles (BORDG)

The upper part of the carinated body of a stink pot, the rim and base missing. Above the carination the vessel is pierced by single holes and by pairs of holes linked by vertical incisions. A horizontal loop handle, prsumably one of two, circular in section, is placed at the carination. Fine, greyish, even, medium and in places hard fired, buff-cream ware. Bright apple-green glaze covers the upper part of the body, terminating just below the carination. Glaze is very thin and transparent on the handle. Thin wash on the interior, giving a light yellow-green in places. Otherwise undecorated. No.464 is probably part of No.193.
No.193; T7 III 3=G26**; Phase 4. No.464; T7 III 3**=G26**; Phase 4*

Type 108. Rounded side of a bottle (BORDG)

Mammiform side of a barrel-shaped ?costrel. Fine cream ware, sometimes with an orange tinge to the ware. Deep green partly mottled glaze on the exterior.
No.180; W5ext 2d=G5**; Phase 4. W5 4**=D1**; Phase 5*

Type 109. Globular money box with moulded knob (BORDG)

Upper part of a globular money box, with a carefully moulded knob, the top of which is broken off. The top of the slit for introducing the coins is just preserved. Slightly dirty, evenly fired, fine, cream ware. Mottled apple-green and dark green glaze all over the exterior. Interior unglazed. Undecorated.
**No.426; X9 8; Phase 3 (contamination)*

Type 110. Miniature jug with a single handle (BORDG)

Miniature bulbous jug with a constricted vertical neck, a ?single vertical handle, and a well marked, carefully bevelled, base angle. The rim and handle are missing. Fine, evenly fired, cream ware, slightly dirty. Mottled apple-green and dark green glaze all over the exterior. Interior unglazed. Undecorated. A patch of red ware adhering shows that this vessel was fired beside a red ware pot.
No.427; X15 10a=D2**; Q13 III 5, probable recording error for Q14 III 5**=SA G**; Phase 5*

Type 111. Small hook-rimmed pot (BORDG)

Rim fragment from a vessel with a sharply everted hooked rim, the outer edge of which is carefully rounded over. Even, fairly hard fired, medium greyish cream ware with a greyish core. Lime-green glaze all over the inside and good on top of the rim. Exterior and underside of the rim unglazed. Undecorated.
**No.429; Y4 6; Phase 7*

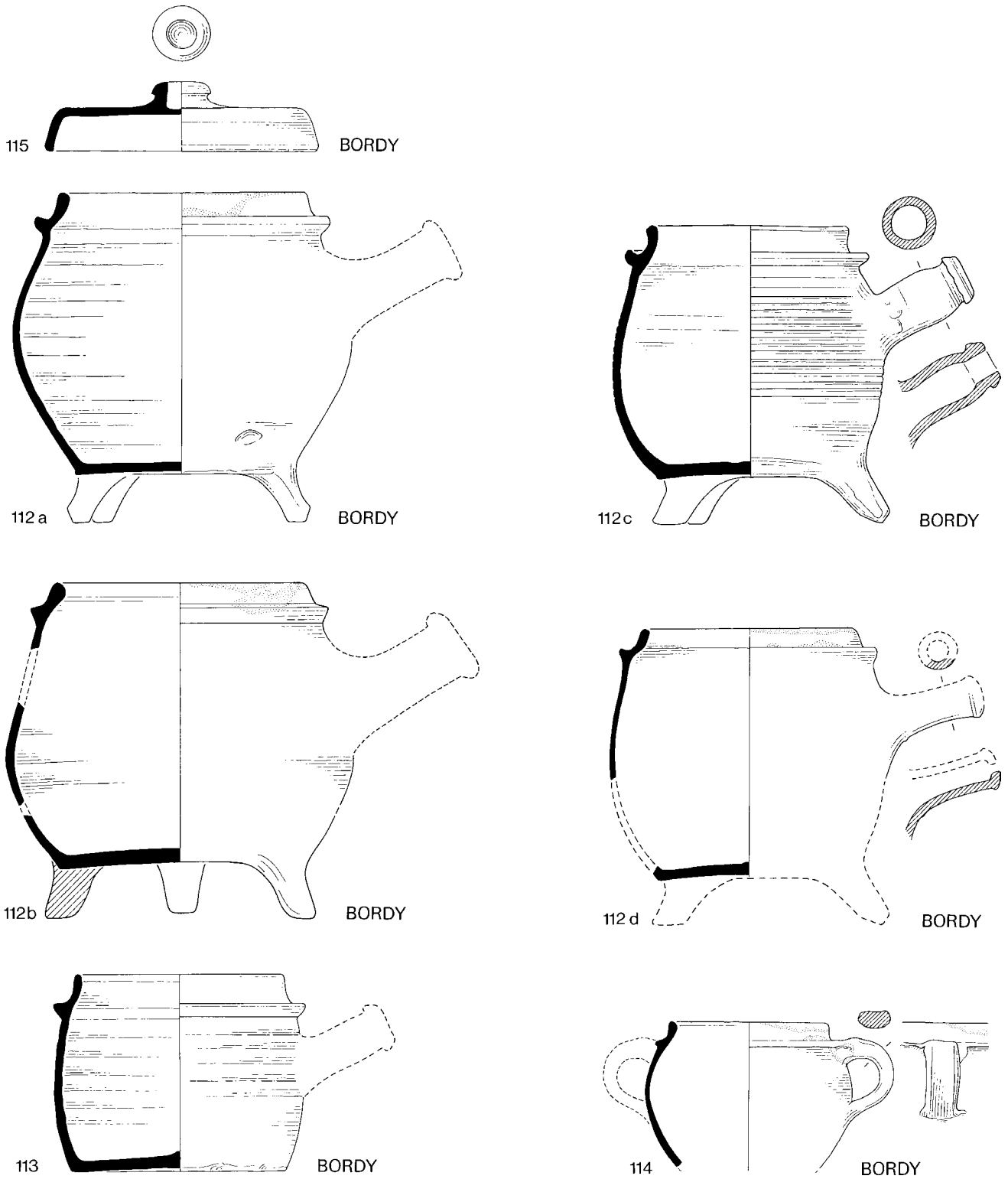


Fig. 101 Earthenware: Cream ware, Types ***112–15*** *(1:4).*

Cream wares with fine yellow glaze: Types 112–25

Type 112. Pipkins with tripod feet, handle, and external seating for a lid (BORDY)

Pipkins with a globular body, and a rounded, inverted rim with an external flanged seating for a lid. Single, straight, hollow handle, round in section, projecting from the upper part of the body. Where surviving (Types 112c, 112d), the handle has a prominent rolled rim at its outer end. Flat base with tripod feet. Fine to medium cream ware, tinged to white or sometimes to grey. Lemon-yellow to warmer yellow glaze all over the exterior, with some dark brown patches where the glaze is thickest. Exterior unglazed. Undecorated, with the exception of Type 112c, which has heavy rilling on the body. Several show signs of burning, especially on the side away from the handle, suggesting that they were put on the fire as cooking pots. The chief factors distinguishing the sub-types are size and body profile.

Type 112a (BORDY)
Large pipkin with markedly globular body, tall tripod feet, and sharp base angle. Fired beside a red ware vessel, as were Nos. 71 (Type 99) and 427 (Type 110), above.
No.139; W4 II/IV 4=G4**, W4 II/IV 4b=**G4**, W4 II/IV 4c=**G4**; Phase 4. W4 II/IV 2, W4 II/IV 3; Phase 5*

Type 112b (BORDY)
Similar to Type 112a, but profile slightly slacker, and the external seating for the lid less pronounced.
**No.418; X14 4, X14 5, X14 6; Phase 5. X14 3; Phase 6. V8 1; Phase 8*

Type 112c (BORDY)
Smaller pipkin with a sagging profile. Twenty parallel horizontal rills decorate the body.
No.74; V7 6a=G8**; Phase 4.*

Type 112d (BORDY)
Small pipkin, similar to Type 112b, but with profile like Type 112c.
No.192; W5 2b, W5 4=D1**, W5 6, W5 8; Phase 5*

Type 113. Pipkin without feet, but with a handle and an external seating for a lid (BORDY)

Medium-sized pipkin with rounded rim and external flanged seating for a lid. Single handle, now missing, projecting from the body. Slightly raised base. No feet. Fine buff- cream ware, evenly fired, but slightly soft and friable. Poor yellow glaze over the base and half way up the walls on the inside. Above this point, on the rim and seating, the glaze is streaky. Exterior unglazed. Undecorated. The patterning of the glaze suggests the vessel was fired upside down.
No.104; U7 8=G9**; Phase 4*

Type 114. Vessel with vertical handle(s) and external seating for a lid (BORDY)

Globular vessel with an upright rounded rim and external flanged seating for a lid. A single vertical strap handle survives, but there may originally have been two. Base missing. Fine cream ware, medium and evenly fired, with a smooth exterior. Lemon-yellow glaze all over the interior and just over the top of the rim. On the exterior small patches of glaze only, and one green patch by the handle spring. Undecorated.
No.300; X14 4a=D2**, X15 10a=**D2**; Phase 5*

Type 115. Pipkin lid with a central knob (BORDY)

Broad flat lid with sloping sides and a hollow central knob finished off with a broad collar. Fine buff-cream ware. Greyish below the surface in some places. Unglazed and undecorated. Fits a pipkin of the size of Type 112a.
No.140; W4 II/IV 4=G4**, W4 II/IV 4b=**G4**, W4 II/IV 7=**G4**; Phase 4.*

Type 116. Pipkin with hollow rim, straight handle, and tripod feet (BORDY)

Small pipkin with rounded body, a rim hollowed to hold a lid, and a straight hollow handle, circular in section. Sharp base angle and tripod feet. Evenly fired, fine cream ware, medium to hard fired. Lime-yellow to rich yellow glaze all over the interior and top of the rim. No glaze, except for chance spots, on the exterior. Decoration consists of horizontal rilling on the body and finger presses at the base of the handle. The principal factors distinguishing the sub-types are size and rim form.

Type 116a (BORDY)
Medium-sized pipkin with sharply everted, hollowed rim, thickened to the exterior. The outer end of the handle has a constricted moulding. Base almost flat.
No.108; W2 5b=G3**, W2 5c=**G3**, W2 5d=**G3**; Phase 4*

Type 116b (BORDY)
Small pipkin with sagging body. Rim more rounded than Type 116a. Handle has a rounded and expanded end. Kicked base. Body rilling very faint.
No.173; W8 7=Great cellar**; Phase 4*

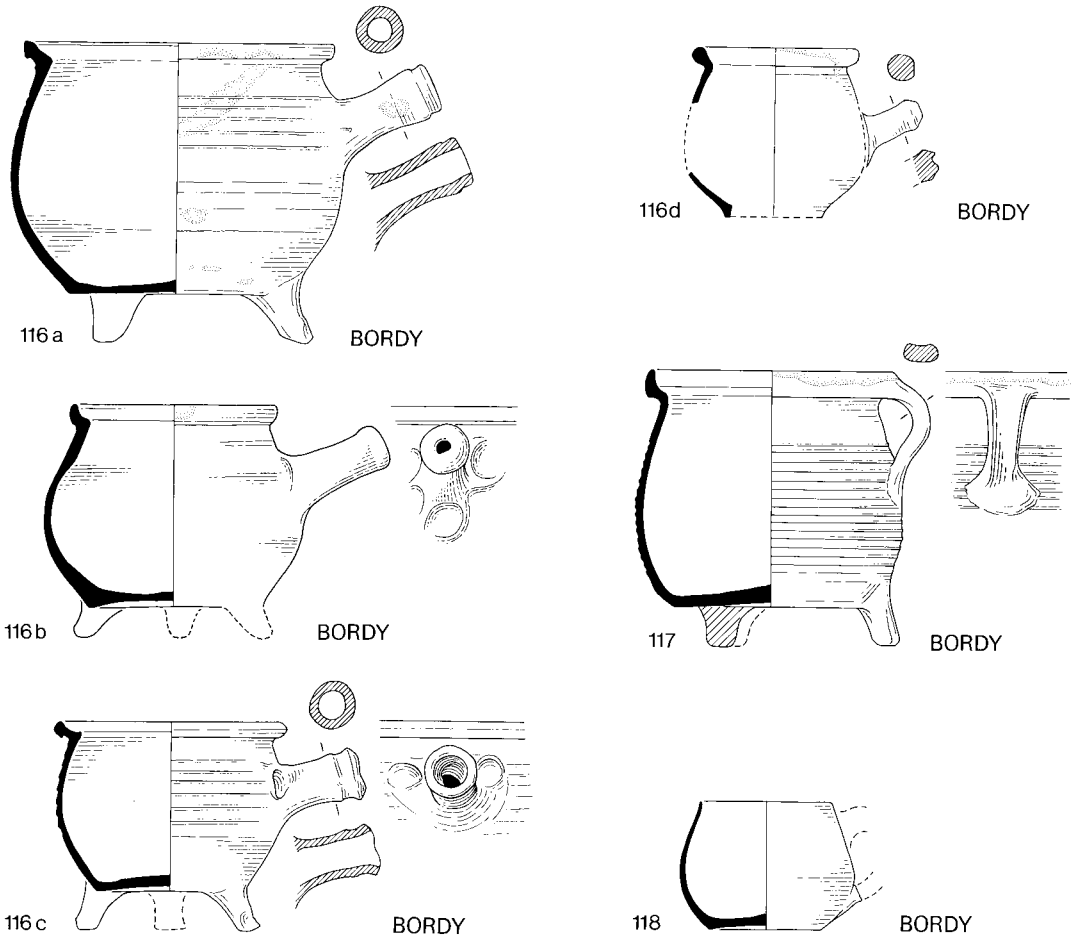


*Fig. 102 Earthenware: Cream ware, Types **116–18** (1:4).*

Type 116c (BORDY)

Small pipkin with well rounded body and carefully moulded everted flanged and thickened rim. Handle has slight moulding at the end. Kicked base. No.124 is rilled on the upper body only.

*No.90; W1 5b; Phase 5. No.99; T7 III 3=**G26**; Phase 4. *No.102; S1 12=**G31**, S1 13=**G31**, S1 14=**G31**; Phase 4. No.124; W5 1, W8 1; Phase 8. No.205; Y4 2; Phase 5*

Type 116d (BORDY)

Small pipkin with everted, rounded, and thickened rim. Straight solid handle with a slight hollow at the end. Marked basal ridge and angle.

No.163; P/Q 15/16 19 [?for 15 or 16]=G19**; Phase 4. No.465; U8 2a, X15 IV 8; Ph*ase 5.

Also two rims of Type 116 form, but both heavier and larger than those above:

No.466; W6 3; Phase 5. No.467; X8 2; Phase 5

Type 117. Variant pipkin with hollowed rim and vertical loop handle (BORDY)

Pipkin with sagging body and a carefully rounded up-turned rim, hollowed to seat a lid. Single, vertical, strap handle. Slightly kicked base and tripod feet. Fine, medium-fired, cream-buff ware, the feet grey in the core. Rich yellow glaze with many brown/black speckles covers the interior and the top of the rim. Only one small patch of glaze on the exterior. Decoration comprises horizontal rilling on the body.

No.66; W4 II/IV 4=G4**; Phase 4*

Type 118. Cup with upright rim and vertical handle (BORDY)

Cup with a sagging profile and a simple upright rounded rim. The sides are irregular and the rim uneven. Single vertical loop handle, now missing.

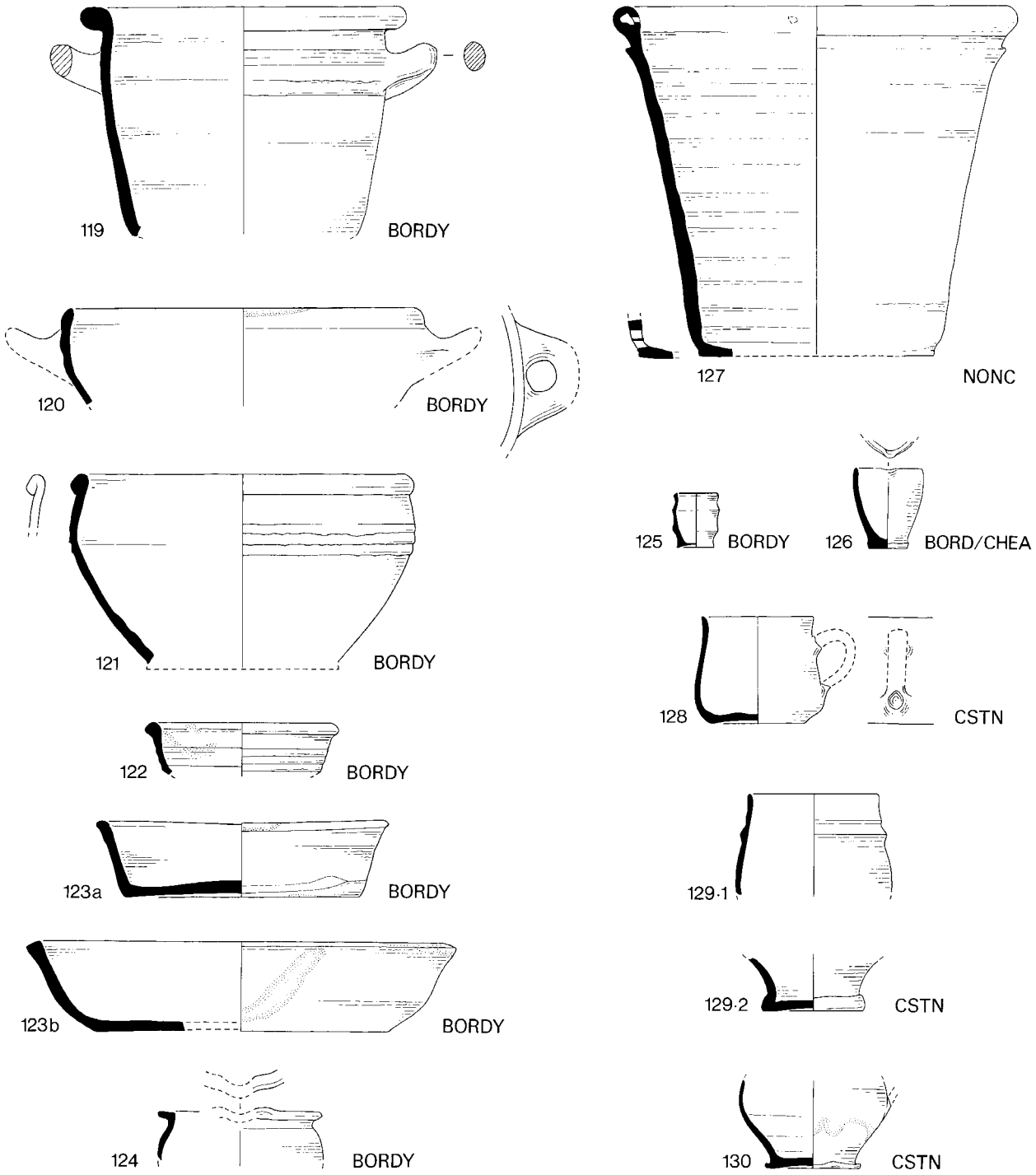


Fig. 103 Earthenware: Cream ware, Types ***119–25****; Crucible* ***126****; Coarse-painted cream ware,* ***127****; Dark ware, Types* ***128–30*** *(1:4).*

Even, buff-cream ware, soft fired and rather flaky. Dirty yellow glaze, with frequent brown spots, covers the interior and exterior. Undecorated.
No.276; T7 III 3=G26**; Phase 4. CH.XVIII 2, T7 III 2; Phase 5*

Type 119. Deep bowl with rolled rim and opposed horizontal loop handles (BORDY)

Deep bowl with almost vertical sides and a rolled over, probably hollow, rim. Two opposed upswept horizontal loop handles, circular in section, on the upper part of the body. Base missing. Even, fairly hard fired, medium, dirty white ware. Bright yellow glaze covers the interior and up over the rim. Also two patches and one streak of green glaze on the interior. A few chance spots of glaze on the exterior. Decoration consists of rilling on the upper part of the body.
No.32; Q14 III 5=SA G**; Phase 5*

Type 120. Carinated bowl with inverted rounded rim and horizontal loop handle(s) (BORDY)

Open, carinated bowl with a simple inverted, rounded rim. One horizontal loop handle survives, possibly one of two. Base missing. Even, fairly soft fired, dirty white ware, flaky on the interior, with some pink traces in the core. Bright, clear, lemon-yellow glaze on the interior, tinging to green at one point on the rim. Some green streaks of glaze run from the rim over to the outside, but the exterior is otherwise unglazed. Undecorated.
**No.304; X7 6, X7 7; Phase 5*

Type 121. Deep bowl with slight carination and simple rolled-out rim (BORDY)

Deep bowl with a folded over rim, and a rounded carination on the upper portion of the body. Base broken off at base angle. Even, medium to hard fired, fine cream ware, with slight surface flaking in places. Lemon-yellow glaze, tinging to greyish green, covers the interior and the top of the rim. Exterior unglazed. Decoration comprises horizontal ribbing on and above the carination.
**No.271; W12 6, W12/13 6, W12/13 7; Phase 5*

Type 122. Small carinated bowl with a thickened rim (BORDY)

Fragment of the rim and upper body of a small, deep bowl with carinated sides and a simple thickened rim. Lower body and base missing. Fine, even, medium to hard fired, cream ware with a pink-buff tinge to the core, and cream surfaces. Clear lemon-yellow glaze all over the interior, but patchy below the rim. Exterior unglazed. Decoration comprises horizontal rilling on the body.
**No.428; P/Q 2/3 2; Phase 5*

Type 123. Shallow bowls with flaring sides (BORDY)

Shallow open bowls with flaring sides and simple, slightly thickened, rims. Fairly sharp base angle. Soft, medium fired, fine whitish cream ware with a yellow-cream surface. Yellow glaze covers the interior and top of the rim. Type 123b has a very thin glaze wash on the exterior. Undecorated. The principal factor distinguishing the sub-types is rim form.

Type 123a (BORDY)
Shallow bowl with simple rounded rim. Twisted, slightly kicked base. Fairly sharp base angle, with knife trimming at the side of the base and at the angle.
No.69; W2 5c=G3**; Phase 4*

Type 123b (BORDY)
Bigger and deeper than Type 123a, with more rounded sides. Thickened rim. Flat base.
**No.301; W4 II/IV 2; Phase 5*
Also rim fragment of Type 123 form:
No.468; Z5 I/II 3; Phase 5

Type 124. Small pot with flanged rim and lip (BORDY)

Small pot with sharply everted, flanged rim, cleanly moulded, and pushed out lip. Lower body missing, but the profile appears to have been globular. Even, hard fired, fine cream ware with a few minute red impurities. Some surface flaking. Thin, slightly yellow wash on both interior and exterior, only noticeable as a real yellow glaze just inside and below the rim. Otherwise undecorated.
**No.383; Q8 9; Phase 3*

Type 125. ?Ointment pot (BORDY)

Tiny, thin-walled pot of 'albarello' form, with a kicked base. Fine, hard fired, cream ware. Yellow glaze covers the exterior except near the base. There is a thin pimply wash inside. A curving patch of red ware below the base shows where the pot has been fired in contact with the rim or base of a red-ware vessel.
**No.473; BH A D5 II 4; BH Phase 4*

Crucibles: Type 126

The two crucibles are very similar to modern products of the Morgan Crucible Co., Type 5/0. The occurrence of such specialised vessels at Nonsuch may be the result of the presence there between 15 August 1665 and January 1666 of the Receipt of the Exchequer, with the Tally Office and 'all things thereunto belonging', removed from London on account of the Great Plague.[174] This involved the removal of the treasure – ie. gold and silver coin – and probably the equipment for trials, which would have included crucibles.[175]

Leland noted in his Itinerary in the 1540s that 'Compton of London hath a close by Codington [Cuddington] in Southerey where the King buildith. In this close is a vaine of fine yerth to make moldes for goldesmithes and casters of metale that a loode [load] of it is solde for 2. crounes of golde. Like yerth to this is [not] found yet in al Englande.'[176]

Camden was probably referring to Leland when he wrote in his *Britannia* in 1607 that near Nonsuch 'is a vein of potters earth, excellent for making crucibles for goldsmiths and sold at a high price.'[177] Type 126 is perhaps to be identified with one of these crucibles.

Type 126. Crucible with a lip and flat base (BORD/CHEA)

Small, narrow crucible with flaring rounded sides and a single, rounded, slightly inturned rim. Pushed out lip. Clearly marked, flat, knife-trimmed base. Fine, even, medium fired, slightly friable sandy cream ware. Smooth surfaces. Unglazed and undecorated.

No.28; T7 III 4=G26**; Phase 4. No.412; W4 II/IV 4=**G4**; Phase 4*

Coarse painted cream ware

Plant pots: Type 127

There are five examples of these vessels in a very distinctive fabric which occurs in no other form. One occurs in Phase 4 garderobe deposits (No. 225), and most of the others in Phase 5 demolition deposits or later, but sherds of No.212 occur in a Phase 3 layer (X15 IV 6) and a sherd of No.469 occurs in the same layer. This is probably a recording error, perhaps for X15 IV Feature 6, which has a Phase 5 demolition fill (layer 8).

Both the surviving pieces have holes just above the base angle, suggesting that these vessels were used as plant pots. A very similar plant pot, with water running from a hole just above the base, is shown being watered by *Grammar* in a painting by Laurent de la Hire (1606-58) in the National Gallery (Fig 104).

Type 127. Deep pot with hollow, rolled rim, and holes near base (NONC)

Deep pot with flaring, slightly concave sides and hollow rim formed by rolling over and inward (No.225) or outward (Nos.212, 377). Sharp external cordon below the rim. Slightly kicked base. Nos.212 and 225 have holes through the lower walls, immediately above the base. They also have holes in the rim to allow for escape of gasses during firing. Coarse, badly washed, poorly fired, white to yellow-cream ware, sometimes with a pinkish core, and with numerous large quartz, and other white and red inclusions. Porous, flaky, and sometimes blistered internally. Unglazed, but traces of a purple-red, orange-red, or white wash or paint on the exterior.

*No.212; X15 IV 6; Phase 3. X15 8, Phase 5. X15 5a; Phase 6. *No.225; W5ext 2c=**G5**, W5ext 2d=**G5**; Phase 4. W5 2a, W5 4=**D1**, W5 6, W5ext 2a, W5ext 2b; Phase 5. W5ext 1; Phase 8. No.334; Z5 I/II 3; Phase 5. No.377 (probably from the same vessel as No.212); X15 IV 6; Phase 3. No.469; X15 IV 6; Phase 3. X15 II 1; Phase 8.*

Nos.212 and 225 have holes in the walls just above the base angle, and gas holes either inside or outside the rim.

Dark wares

Cups: Types 128–30

These are small apparently one-handled cups in the fine, hard, red or brown ware with thick dark brown to black glaze conventionally known as Cistercian Ware (CSTN). They are usually datable to the fifteenth and sixteenth centuries, but Types 128 and 129 come from Phase 5 demolition layers, and the untyped strap-handle No.470 comes from a modern Phase 7 context. The latter is clearly residual, and Types 128 and 129 may be as well, possibly derived from construction (ie. Phase 3) fills broken up in the demolition. Type 130 comes from a Cuddington Phase 1 context.

174. *Calendar of State Papers Domestic, Charles II*, iv (1664–5), 492, 573; *ibid*. v (1665–6). 191; Dent 1981, 202–5. The Exchequer may have been briefly at Nonsuch, in September 1666, because of the Great Fire: *ibid*. 205–6. See above, p. 1, 58
175. On trials in the Exchequer at this period, see Challis and Dyer 1982, 3–5; Challis 1992, 286–307
176. Toulmin Smith 1906–7, iv, 121
177. This statement first appeared in the 7th (Latin) edn. of the *Britannia* (Camden 1607, 215–16). For this translation by Richard Gough, se Copley (ed) 1977, 18

Fig. 104 Grammar *by Laurent de la Hire (1606–58).* Reproduced by courtesy of the Trustees, The National Gallery, London. *The right-hand flower pot, with water draining out of a hole just above the base, is similar to Nonsuch Earthenware Type* **127** *(cf Fig. 103).*

Type 128. Cup with upright rounded rim and vertical handle (CSTN)

Squat cup with an upright rounded rim, slightly everted. ?One-handled. Fine, very hard fired, dull, reddish grey ware. Dark purple-brown to purple-black manganese glaze over all surfaces. Decoration comprises one finger-press at the base of the handle.
**No.303; X7 6, X7 7; Phase 5. X7 1 (?possibly 2); Phase 5 (or ?8)*

Type 129. Bag-shaped vessel with upright rim (CSTN)

Bag-shaped vessel, possibly a beaker, with a simple rounded upright rim. A second, not fitting, fragment has a gathered-in foot and a pronounced basal ring. Fine, very hard fired, purple-brown ware. Reddish, purple-brown glaze all over the interior and exterior. Decoration comprises a marked external cordon below the rim.

Type 129.1 (CTSN)
Rim and body fragment.
**No.401; Y4 27; Phase 5*

Type 129.2 (CSTN)
**No.242; Y4 12a; Phase 5*

Type 130. Globular pot with well-marked base ring (CSTN)

Base fragments from a globular pot with one (?two) handle(s), and a constricted base with a pronounced basal ring. Fine, very hard fired, purple-brown to dark grey ware. Thick dark brown or black-purple glaze all over the interior and exterior, but patchy on the bottom *c* 30mm. Undecorated.
**No.206; Q5 8; Phase 1. No.419; Q5 8; Phase 1*
Also a strap handle from a darkware vessel of uncertain type, but clearly larger than Types 128-30.
No.470; CH.XI (?or CH.VI) 7; Phase 7

6

FINE VESSEL GLASS

by the late ROBERT J. CHARLESTON[1]

(Plates 8–12; Figs 105–125; Table 15)

The use of glass in the late-medieval and Renaissance periods was governed roughly by the same criteria as we use today. Fine glass was used for table-ware and coarser for utilitarian purposes. In practice this meant that the tables and side-boards of the wealthy and sophisticated were decked out with colourless 'crystal' or deliberately coloured glasses, while the kitchen, the still-room and the butler's pantry were furnished with relatively coarse green glass made from the basic ingredients of local sand and indigenous plant-ashes. In England the finer glasses were imported, chiefly from Venice, while the green glasses were for the most part made in England. As William Harrison wrote in his *Description of England* (1577): 'The poorest will also have glass if they may; but sith the Venetian is somewhat to deare for them they content themselves with such as are made at home of ferne and burned stone' (that is, fern-ashes and calcined stone as a substitute for naturally found sand). It is logical to treat the material from a sixteenth–seventeenth century site in accordance with this dichotomy, which was so clearly recognized at the time.

i. VENETIAN AND *FAÇON DE VENISE* GLASS

The history of glass-making in the Venetian area goes back to a very remote antiquity, and the excavation of a glass-making site on the dependent island of Torcello has revealed that the craft was established there in the eighth century at the latest. It was being practised nearer to the heart of the city itself by the eleventh century, and an edict of 1191 decreed that, owing to the risk of fire in the city, glass-making should thenceforth be confined to the island of Murano. This move also ensured that the State could control the industry and its work-force in the service of the Republic's external trade, and the output of glass was very early slanted towards the taste of foreign customers, whether in the East or in northern Europe. Richard Lassels, an English traveller to Venice in the late 17th century, wrote of Murano: 'They utter here forth two hundred thousand crowns worth a year of this brittle wares and they seem to have taken

1. The writer wishes to acknowledge his indebtedness to his daughter, Jenny Stringer, for her superlative drawings and for much general help; to Dr. Jane Webster and to Dr. Tim Clayton for invaluable assistance with the handling of a complex body of material; and to the former for her patience and skill in shaping the final form of this report. [Special thanks are due to Reino Liefkes (Victoria and Albert Museum) and to Jenny Stringer who read the proofs of the late Robert Charleston's chapter].

measure of every nation's belly and humour, to fit them with drinking glasses accordingly'.[2] Imports of Venetian glass into England are recorded from as early as 1399,[3] and the recent upsurge of studies on medieval glass has tended to suggest that the international trade in fine glassware was established well before this date.

The main vehicle of Venetian supremacy in the glass-trade was its crystal glass ('cristallo', so named from its approximation to the natural substance of rock-crystal although the glass substitute nearly always has in fact a brownish or greyish cast). Venice also excelled in the production of deliberately coloured transparent glasses (blue, emerald-green, and manganese-purple) as well as coloured and variegated opaque glasses (*lattimo* (white), turquoise, and red). During the second half of the fifteenth, and in the early sixteenth, century any of these basic materials might be further enlivened by painting in enamel-colour, supplemented by gilding, to produce some of the most luxurious and ambitious works of art in glass ever conceived.

Venetian enamelled and gilt glass was the product of collaboration between glasshouse and painter's studio. The glass was blown in the normal way and then annealed. The gilding in leaf-gold was applied in strips or squares using a sticky substance such as gum arabic. It was subsequently painted in fusible enamel-colours, these being laid, where necessary, over the gold leaf. It was then returned to the glasshouse, gradually heated in the annealing-furnace until hot enough to be fixed to a solid iron rod ('pontil') by a blob of red-hot glass and thus inserted into the main furnace. There it was rotated in the full heat until 'you see that the smalti (enamels) shine and that they have flowed well', when the glass was withdrawn, knocked from the pontil and gradually cooled off once more in the annealing-chamber of the furnace.[4]

Venetian enamelled and gilt glass was not only popular in Italy. It was commissioned for foreign potentates and prelates, with their coats-of-arms emblazoned, and the more common pieces were regularly exported by way of trade to northern Europe and the Near East. A two-handled opaque-white bottle in the British Museum is enamelled with the head of Henry VII on one side and his badge of a portcullis on the other, and a counterpart in green glass was once in an English private collection; but otherwise no examples with English armorials or subject-matter are known.[5] Henry VIII, however, is known to have had at his death more than 600 Venetian glasses, and although the descriptions in the inventory tend to be cursory, some at least of them were described as 'paynted and guilte'.[6]

At Nonsuch the type is represented by a fine fragmentary goblet (**1**; Plate 8) painted with repeating flower and leaf motifs centred on small squares of gold leaf; and by what appears to be a small bowl with mould-blown ribbing below an applied horizontal thread which has above it a gilt border with imbricated design (**2**). Shallower bowls with decoration which follows the same formula have been found on several English sites, and the type is common enough in collections.[7]

On a more mundane level, the Muranese glass-workers exploited all the normal technical devices available for the embellishment of glass at the furnace. These included blowing in moulds to produce either overall repeat-patterns which could be expanded by further blowing to produce attractive soft rippling effects (e.g. **2**, **3**, **6**, **8** etc.) or to impart a fixed design intended to be left untouched by subsequent working (e.g. **8** (stem), **9**, **25** etc.). Embellishments could be added in the form of applied threads, either self-coloured (e.g. **2**, **60**) or in contrasting colours (e.g. **49**, **56**); or as appliqués formed by pressing in moulds and then applied pastille-like to the

2. Richard Lassels, cit. Charleston 1979a, 402
3. Charleston 1975, 206
4. For a full account of the process, see Charleston 1972, 18–24. For Venetian enamelled and gilt glass in general, see Gasparetto 1958, 81–6; Zecchin 1968, 22–5; Charleston 1977, 15–19; Mentasti 1982, 30–75
5. Tait 1979, No 204; Hartshorne 1897, 141–2, Fig 154
6. Charleston 1984a, 45–6 [see now Starkey (ed.) 1999, No. 10925]
7. Charleston 1984a, 45, where the Nonsuch example is perhaps uncritically grouped with the shallow bowls, to which before 'reconstruction' it appeared to belong

Fig. 105 Fine vessel glass: probably English (London) beer or wine glass **8**, *mould-blown* cristallo, *late 16th to early 17th century (cf Fig. 111).*

surface of the vessel. These are self-explanatory tricks of the trade. More complex was a technique which evolved in Murano probably about the turn of the sixteenth century. This involved the use of opaque-white canes applied either as single threads (appearing as ribbons when flattened by working) or as multiple cables, enclosed within a matrix of *cristallo*. These techniques were commonplace in the manufacture of beads, a branch of the industry in which Venice was supreme, and which represented a significant proportion by value of her export trade in glass. The bead makers were past-masters in coating one type of glass with another, then pulling out the resultant gathering by attaching an iron and walking rapidly backwards until a long cane was produced, as was done until recently in the making of thermometer tubes. If several white threads were enclosed in a crystal 'coperta' (covering) and twisted as the workman retreated and drew out the narrowing rod, a cable-pattern resulted. These white-decorated canes could either be trailed on the surface of a vessel while hot, or be chopped into lengths while cold, these shorter rods being then assembled in a chosen sequence on a fire-proof tray and re-heated until they fused at the points of contact. The resultant sheet of parallel canes was then picked up on a 'paraison', a gather of glass enclosing the first bubble of inflation, 'marvered' (smoothed) by rolling on a flat slab of stone or metal and then worked in the normal way. Alternatively, the canes, lightly fused together longitudinally, might be picked up on a disc of glass held on the end of an iron, manipulated in such a way that the sheet was rolled into a cylinder, the two outside canes being joined by reheating and 'marvering'. The resultant cylinder could then be constricted at the end furthest from the iron, the surplus glass beyond the constriction being cut away. The closed cylinder could then be worked as a normal paraison, the threads running vertically and coming neatly together in a point at the base. Changes could be rung on the formation of the cables and on the sequence in which the canes were used, an alternation of plain bands and cables being a common formula. The goblet (**3**) has been decorated with two zones of six or more canes laid parallel on top of gold leaf spread on the surface of the glass, in such a way that the threads stand proud of the surface; the whole paraison was then blown in a vertically ribbed mould prior to further inflation and tooling. The technique of decorating *cristallo* with incorporated threads of opaque white glass (*lattimo*) is first mentioned in October 1527, when Philippo and Bernardo Serena obtained a privilege for their method of decorating glasses 'with stripes having twists of thread'. The general technique, however, seems to have been in use before this date. The gold leaf used in the Nonsuch goblet is an unusual complication and may indicate an experimental phase before the glassmakers settled down to a regular routine of using the *lattimo* stripes in vertical formation.[8]

8. Zecchin 1987, 188

The second Nonsuch glass of consequence decorated in the opaque-white threaded technique is the splendid 'goblet-vase' (**4**; Plate 9**)** This is decorated with alternating vertical canes which have been picked up on a thick paraison of crystal, in such a way that the canes form a thin decorative shell on the outside of the vessel. The canes comprise a plain spiral gauze of probably eight threads alternating with a fancy cane composed of a single central thread between diametrically opposed pairs of spiralling threads.

Such 'goblet-vases' are not uncommon in surviving examples, and are referred to in a manuscript catalogue of the Colinet glass-house at Beauwelz (Belgian Netherlands) datable *c* 1550–55, as 'Verres Cibores' ('Ciborium glasses') with the rubric 'verres cibores a panse pour vin ou bier en verre cracquelé ou non' ('bellied ciborium glasses for wine or beer in ice-glass or plain').[9] [Since Robert Charleston revised this text in 1992, the authenticity of the Catalogue Colinet has been seriously challenged and it is now believed to have been made in the eighteenth century at the earliest.][10] The word 'ciborium' has probably no religious connotation in this context, and the shape was obviously designed for drinking.[11] That such glasses were also used for other purposes is demonstrated by a still-life picture showing one used as a vase for flowers.[12] Glasses of this sort in a number of different decorative techniques are known – the 'ice-glass' referred to in the Colinet manuscript, millefiori, with applied 'prunts', gilt, etc., but particularly the 'a fili' (threaded) technique, often with the addition of mould-blowing.[13] Such glasses were probably made in Venetian-style glasshouses in a number of countries, but although an argument can be advanced for the manufacture of such glasses in England, the Nonsuch goblet-vase was most probably imported from Venice.[14] Henry VIII is known to have possessed a number of glasses decorated in the '*latticinio*' technique, including 'xiiij other standinge Cuppes of glasse Diap(er) worke of sundrye fasshons',[15] although it would be difficult to argue strongly for a date before the middle of the sixteenth century for the Nonsuch vase. The shape appears to have a long life, examples with 'broken gadrooning' round the base and applied threads and prunts round the shoulder appearing in paintings by Osias Beert (probably The Elder, *c* 1580–1623?) and Rubens (1577–1640), probably painted after about 1610.[16] The shape appears again (although the details are difficult to discern) in a further painting by Rubens executed in collaboration with Jan Brueghel (1568–1625).[17] These occurrences suggest that the form was still current in the first quarter of the seventeenth century. An 'ice-glass' goblet-vase appears twice in pictures by W. Kalf (1619–93), once with a cover, once without. These pictures were probably painted after his return to Holland in 1646. Kalf was known, however, as a dealer in works of art and antiquities, and it seems likely he was using an old glass in these late pictures.[18] The middle of the seventeenth century would seem to be the *terminus post quem non* for the Nonsuch goblet-vase.

9. Charleston 1977, 112–5
10. Page 2002
11. A print by P. Galle after H. Goltzius (1568–1617) shows a goblet vase unequivocally in use for drinking (*Stilleben in Europa*, Münster (1979), Fig 79)
12. Corning Museum of Glass 1952, 25 and Pl VII. A painting by Jan Davidsz de Heem (1606–64) shows what appears to be a goblet-vase with knopped stem, ribbed base and threads applied round the shoulder: it contains a magnificent bouquet of flowers (Leger Galleries, *Antiques Fair* 1972, 73)
13. eg Schlosser 1951, Fig 36; Corning Museum of Glass 1958, No 68
14. Charleston 1984a, 48 and sources quoted there
15. Charleston 1984a, 49 [see now Starkey (ed.) 1998, No. 10909]
16. Osias Beert, *Still-Life*, formerly in the Pardo Collection, Paris. Rubens, *The Dream of Silenus*, Akademie der Bildenden Künste, Vienna (executed probably in collaboration with Frans Snyders, who probably painted the glasses). The most likely time for this conjunction would be after Rubens' and Snyders' return to Antwerp in 1608 and 1609 respectively
17. Allegory of *Sight* in the Prado Museum, Madrid. Jan Brueghel collaborated with Rubens after his return to Antwerp from Italy in 1596; Rubens himself did not make the same journey until 1608. The painting can hardly have been executed much before 1610 nor after Brueghel's death in 1625
18. *Still-Life* in the Springfield Museum of Fine Arts, Springfield, Mass. (Corning Museum of Glass 1952, Pl VII); *Still-Life* in the Museum Boymans-van Beuningen, Rotterdam (Cat. 2503); Bergström 1956, 260–85

Apart from the supposedly mid-sixteenth century drawings of the 'Colinet Catalogue', the only goblet-vase with a claim to an exact date is the ice-glass example now in the Museum für Angewandte Kunst in Vienna, but originally in Schloss Ambras. It was apparently ordered from Venice in 1568.[19] Like the Nonsuch glass, it has a stem formed of a single depressed knop rather than the lion-mask stem of the 'Colinet Catalogue' drawing and of most of the goblet-vases shown in the still-life paintings mentioned above. This depressed knop may be an early feature, but vases with comparable stems abound in the still-life paintings of the seventeenth century. All in all, a date in the second half of the sixteenth century seems most likely for the Nonsuch goblet vase. Its tall flaring neck suggests that it never had a cover, and was probably intended as a vase.

Far less complex than the white-threaded decoration just discussed was the use of applied threads, either self-coloured or deliberately coloured, which could in addition be tooled into decorative adjuncts, such as those accompanying the pincered ear-handles of which several were found at Nonsuch (e.g. the pair **67**, with opaque-white threads, Plate 10; **68**, with greenish-blue, Plate 11; **69**, with self-coloured). The greenish-blue colour was one particularly favoured in the middle and second half of the seventeenth century. Less common is the use of this colour for spiral trailing, as evinced on the small fragment **56**.

Much of the surviving Nonsuch *cristallo*, however, is relatively plain, the main decoration, if any, being concentrated on the blown-moulded stem. The earliest type of goblet form is the two-piece glass with plain pedestal-stem, represented here by the enamelled and gilt goblet (**1**) dating from the early years of the sixteenth century. Not far behind in date is the heavily-ribbed three-knopped stem of the white-threaded goblet already described (**3**), a type of stem not infrequently found on goblets with enamelled and gilt decoration and flat-based ogee bowls like that of the Nonsuch enamelled goblet. A useful comparison is the enamelled goblet made for Jörg von Kopidlnansky von Kopidlna and datable to 1511, once in the Stadtmuseum, Dresden.[20]

Although these three-piece glasses normally have the raised pedestal foot, this often continues the mould-blown ribbing of the knopped stem, as is the case with the flat foot of the thread-decorated Nonsuch glass (**3**). All these features suggest a date perhaps some years before the building of the palace. A place amongst the glasses of Henry VIII's own time may perhaps also be accorded to a large biconical goblet, originally with flaring trumpet-bowl and raised conical foot, now represented only by its central heavily ribbed 'wrythen' mould-blown knop (**5**) and a portion of the foot. A closely similar fragment was excavated in Southampton, in context with the reconstructable bowl and mould-blown (diaper-patterned) knop of a second biconical goblet, and with bowls and flasks of undoubted late fifteenth-early sixteenth century date.[21] Although this shape of goblet has sometimes been dated as late as the seventeenth century, these larger heavy glasses have a much earlier feel, and probably belong predominantly to the first half of the sixteenth century. The shape is echoed in English silver, not least the 'Anne Boleyn Cup' of Cirencester Church, hall-marked for 1535–6, with its bladed central knop, conical bowl and tall pedestal foot, the bowl and foot being gadrooned in a way distinctly reminiscent of mould-blown gadrooning on glass.[22] A goblet of the heavily knopped biconical form is shown on the

19. Egg 1962, 44, Abb 25
20. Schmidt 1922, 96 and Fig 59. Goblets of this form have also been plausibly dated to the second half of the 15th century (e.g. Schlosser 1951, No 1, Pl 1, in blue glass), but examples in colourless glass are more likely to belong to the early years of the 16th century
21. Charleston 1975, 218, 220, nos 1525, 1527, and discussion of this type, *ibid*, 207
22. Sale 1990, 19, and personal communication from Mrs. Philippa Glanville

frontispiece of Erasmus' *Adagia*, printed by Aldus Manutius in 1508,[23] and the lighter form is clearly depicted in *The Supper at Emmaus* by Pontormo (1494–1557) in the Uffizi in Florence, suggesting a mid-century date; another is shown in a portrait by Hans Muelich which is dated 1548 (Biblioteca Ambrosiana, Milan).

Glasses of this character not infrequently had a cover, and it is within the bounds of possibility that the large cover **6** with its vague mould-blown pattern, may have belonged to this goblet (**5**), although the knop seems a little light for such a large glass.

Far more difficult to pin down in time is the Venetian long-stemmed three-piece goblet (bowl, stem, foot), the stem dominated by an inverted slender baluster shape. This stem appears in a vast diversity of proportions, sometimes blown in a mould, giving a variety of patterns, usually comprising masks and festoons of leaves and flowers between horizontal borders of gadrooning. The plain inverted baluster stem, joined to bowl and foot by discs ('mereses'), provided in the second half of the sixteenth century the purest and most satisfactory forms to be found in Venetian glass-making, and this aesthetic seems to have been deliberately and consciously cultivated (**11**, **23** etc). A series of engravings dating from the second half of the century and signed with the monogram CAP (the artist so far unidentified) shows these forms in all their purity and they are in some instances provided with sketch-lines which indicate the derivation of their curves from arcs of a circle, in a manner familiar from Leonardo's or Dürer's analysis of the proportions of the human body.[24] Such glasses appear in the paintings of Veronese (*c* 1528–88) and Tintoretto (1518–94); and that such glasses found their way to, and were favoured in, northern Europe is demonstrated by the appearance of one in a group portrait of the van Berchem family by Frans Floris dated 1561 (Lier Musea Wuyts-Van Campen en Baron Caroly). The question of whether such glasses, with simple inverted hollow baluster stems and usually plain wide bowls, are of Venetian origin is complicated by the fact that by the mid-sixteenth century many glasshouses working in Venetian style had been established in northern Europe; many more were to be founded before 1600, notably – as far as England was concerned – that set up in London in 1567 and usually associated with Giacomo Verzelini, a Venetian by birth but settled in Antwerp (an important glass-making centre) before coming to England in 1570. Ten complete glasses are known which may reasonably be attributed to Verzelini's glasshouse in the Hall of the Crutched Friars. The most striking common denominator in their stem-forms is a wide ribbed hollow-blown knop between mereses; variants from this formula include a short ribbed inverted baluster between mereses, a lion-mask stem of a type found universally among *façon de Venise* glasses, and a large plump inverted baluster with vertical mould-blown notched ribbing ('ladder-stem'). An example of the plain ribbed stem was found at Nonsuch (**7**), but the similarity does not guarantee English origin; two examples of the third type ('ladder-stem') are much more likely to be English (**8** and **9**), for the type is uncommon, although not unknown, on the Continent, whereas the latest of the putative Verzelini glasses (with round-funnel bowl and gilt decoration dated 1590) has an almost identical stem, and the fragments of two almost certainly Verzelini round-funnel goblets (one dated in the 1580s) found at Southampton were excavated in the same context as a 'ladder-stem' of exactly the same type and probably belonging to one of them. Of the two Nonsuch examples, one (**8**) had a dimpled mould-blown round-funnel bowl; the other (**9**) was not accompanied by bowl-fragments but preserved enough of its foot to authorize a reasonable reconstruction. A bowl with mesh-moulded design found on another part of the site probably derived from a similar glass (**10**).

In the mainstream of contemporary Venetian glass-making a new tendency may be noted as

23. Huizinga 1952, Pl VII

24. Schmidt 1922, 75–6; Heikamp 1986, 22–3, Fig 3

the sixteenth century drew to its close. It is well summarised in Caravaggio's famous painting of *Bacchus* in the Uffizi, Florence, where the young god reclines at his ease with a glass of wine in his left hand. This glass is rendered in the greatest detail, with faint swirled ribbing detectable on the wide flat bowl, and the structure of the stem visible in every detail. The tall inverted baluster stem of Veronese's pictures has grown even taller, and between it and the bowl has been interposed a further element, a hollow-blown depressed knop with vertical ribbing, thus making a markedly taller glass, with increased risk of instability. The picture has been ascribed a date in the 1590s.[25] Several glasses corresponding to Bacchus's perilous goblet have survived,[26] and glasses of this type were evidently well on their way to answering the description given by Richard Lassels in the 1660s '... they seem to have taken measure of every nations belly and humour, to fit them with drinking glasses accordingly; .... For the Italians that love to drink leisurely, they have glasses that are almost as large and flat as silver plates and almost as uneasie to drink out of'. The 'normal' Venetian stem of the mid-sixteenth century is a fairly short and plump baluster of almost oval proportions, joined to the bowl above, and the foot below by a waisted merese of 'capstan' form; the baluster might be replaced by a lion-mask stem joined to the bowl by a button merese, but to the foot by a capstan. These principles of structure are applied to the 'Caravaggio-type' glasses to produce a two-tier stem, and this form of compilation may be seen in some of the Nonsuch fragments (**15–17**), though the baluster is, in all cases where it survives, of a less elongated form.

One Nonsuch glass seems to represent a perfect point of balance between the classic 'Veronese' type of stem and the more elongated, less reposeful, 'Caravaggio' stem. This is the beautiful goblet (**11**) of greyish-colourless *cristallo*, with vertically rib-moulded stem and foot, and mesh-moulded bowl. A glass with identical rib-moulded stem, albeit with a larger and undecorated round-funnel bowl, appears in Hans von Aachen's picture *Bacchus, Ceres and Cupid* in the Kunsthistorisches Museum, Vienna. Von Aachen died in 1615, and the picture may reasonably be dated about the turn of the century.

The tendency to increased height in stems is documented in the sole surviving glass attributable to the glasshouse of Verzelini's successor, Sir Jerome Bowes – the diamond-engraved 'Barbara Potters' glass dated 1602;[27] here the lion-mask stem is surmounted by a long solid baluster component joined to the bowl by a capstan. A Nonsuch fragment (**13**) may be such a component which has lost almost all the hollow-blown stem below. A more or less re-constructable lion-mask goblet at Nonsuch (**25**) also shows a strong tendency to grow tall, but without the supplementary baluster section of the 'Barbara Potters' glass. The same tendency, in both lion-mask stems and inverted baluster-stems, is to be seen in a numerous collection of drinking-glasses found in a cellar in Gracechurch Street (City of London) brought to light during the demolition of All Hallows, Lombard Street, in 1938–40. The great quantity of glasses found suggests that the premises were those of a glass-seller. An occasional glass in this ensemble seemed to be of a date straddling 1600, but most were of types demonstrably of seventeenth-century date, as was the pottery which accompanied the find. The cellar lay beneath a thick layer of burned material which can be interpreted as debris from the Great Fire of 1666.[28] By far the most numerous type of glass here was the round-funnel bowl with tall cigar-stem, a form closely mirrored in the silver wine-cups of the period *c* 1600–30.[29] The tall cigar-stem is in general one of the commonest of English glass finds and this circumstance, together with the correspondence with English silver, suggests that it was usually English-made, and the

25. See, eg Kitson 1969, 87–8
26. See eg Buckley 1929, Nos 20 and 25 (Pls 16, 22); Charleston 1978, Fig 4; cf also Mariacher 1959, 47 for variants
27. Charleston 1984a, Pl 14, d
28. Oswald and Phillips 1949, 30–1
29. Charleston 1978, 285–7

Fig. 106 Fine vessel glass: probably English (London) goblet ***15****,* cristallo*, first half 17th century (cf Fig. 112).*

commonly robust and strongly tinted glass-metal confirms this supposition. Strangely enough, the Nonsuch finds do not include a single example of the tall cigar-stem, perhaps because these common home-made glasses would not be so readily acceptable in a palace as in a less pretentious dwelling; more probably, their absence may be attributed to pure chance.

A type of baluster stem represented among the Gracechurch Street 'hoard' by nine examples now in the Museum of London,[30] and a further two from the same site in the possession of Barclay's Bank, is relatively short but considerably wider at the shoulder, and is joined to the bowl by a short baluster section and a merese. Comparable stems found on London sites are datable to the first half of the seventeenth century, and a fine example attached to the lower portion of a wide round-funnel bowl was excavated at Gunnersbury, London, in a find including a 'cigar' stem and pottery of the first half, and perhaps the second quarter, of the seventeenth century. Since this shape (although with minor differences of manufacture) occurs frequently in the diamond-engraved Netherlands glasses of the second half of the seventeenth century,[31] it may perhaps be regarded as a transition to the shorter-stemmed glasses of the 1660s and 1670s (see below, p 209). Comparisons with dated English silver forms (examples from 1632–57) support this general dating to the second quarter of the century.[32] A goblet of this type excavated at Montgomery Castle, however, may date from before 1625.[33] The splendid Nonsuch goblet (**15**) has a stem of this general type combined with a broad button and capstan section above, which suggest a date towards the beginning of the sequence, in the line of the glasses of the 'Caravaggio' type (see above, p 206). Furthermore, its general shape and appearance (discounting the extra disc between bowl and baluster) are remarkably similar to those of a turned *wooden* goblet dated 1610.[34] The glass has a markedly provincial look, and may well be of English make. There are two fragmentary stems from Nonsuch which closely correspond to this more or less intact goblet (**16, 17**), and it is difficult to resist the suspicion that these three glasses came from the same set, a supposition strengthened by their very similar weathering. Two further stem-fragments (**21**–**2**) are close matches and must have belonged to comparable wine- or beer-glasses. It is probably unwise to pose too heavy a diagnostic load on the simple inverted baluster-stem, which runs with subtle nuances for almost a hundred and fifty years from 1550 onwards (cf. **23**–**4**). An incomplete round-funnel bowl with

30. Oswald and Phillips 1949, 32–3, No V
31. See eg Christies' Sale of the Guépin Collection, Amsterdam, 5/7/1989, Lots 38 (1657), 39 (1662), 48 (1683), 73 (1685); Hudig 1926, Pl 56 (*c* 1655); Pl 58 (*c* 1664); etc
32. Charleston 1978, 288
33. Lewis 1968, 141, 147, Fig 4, No G1
34. See *Apollo* (July, 1937), 28

Fig. 107 Fine vessel glass: probably English (London) goblet **25**, *mould-blown* cristallo *with lion-mask stem, first half 17th century (cf Fig. 113).*

faint vertical ribbing (**38**) came from the same context as **16** and **17** and may well have belonged with one of them.

The lion-mask stem, of which nineteen examples are known from Gracechurch Street, is represented at Nonsuch by one completely reconstructable goblet (**25**) and three identifiable fragments of the hollow stem (**26–8**). The Gracechurch Street stems seemed to fall into two categories, one of finer metal and workmanship, the other of coarser metal and clumsier workmanship, the former presumably foreign imports, the latter English-made. This distinction, clear in some instances, is more difficult to establish in others. The Nonsuch goblet (**25**), although of fairly colourless material, has a heaviness of touch which combines with the mesh-moulded round funnel bowl and a close resemblance to one of the coarser Gracechurch Street examples to suggest English origin.[35] The presence of such stems in the finds from Basing House (destroyed by the siege of October, 1645) suggests that they were still in use at this time,[36] a finding supported by the Gracechurch Street material.

Three further glasses which find parallels in London excavations are the fragments (**30–2**), the first (**30**) corresponding exactly to a number of specimens from the Gracechurch Street "hoard".[37] This glass (**30**) is made from a single paraison, the stem being made by pushing up the base of the glass-bubble to form a double thickness, the convexity at the base of the bowl being the central point of the *interior* of the original paraison. This trick was practised in the English country glasshouses making green glass (see p 235, below) and may well have been taken over by the crystal glasshouses of the mid-seventeenth century. The Gracechurch Street examples were placed late in the series of glasses found there, and this view is probably correct. A glass of this type may be seen in a picture of *The Supper at Emmaus* in the Los Angeles Museum, attributed variously to Filippo Tarchiani (active 1619/21), Carlo Dolci (1616–86) and Jacopo Chimenti da Empoli (1584–1640).

A second fragment which finds a parallel from Gracechurch Street is the solid stem-fragment (**31**) with no recognizable feature other than a spreading point of attachment to the foot, identifiable by the remains of a pontil-scar below it.[38]

The third fragment (**32**) finds its nearest parallel in a glass with tall funnel-bowl found in a refuse-pit in Honey Lane Market, Cheapside, in 1955.[39] Both glasses have the double collar at the base of the bowl, and this characteristic may well be an English feature. It is found again on

35. Oswald and Phillips 1949, Fig IX
36. Moorhouse 1971, 35, 63–5, Fig 27, Nos 1–3
37. Oswald and Phillips 1949, Fig XI, left
38. *Ibid.*, Fig XI, right
39. Hume 1962, 271, Fig 7

two fragments from Basing House.[40] The Honey Lane glass was accompanied by material of late-sixteenth/early-seventeenth century date, and the Nonsuch glass is of comparable date.

Apart from these basically simple stems formed by the compilation of knops and discs, the seventeenth century saw the emergence of some of the most fantastical stem-forms in the history of glass-making – forms which taxed to the utmost the manipulative skills of the Venetian or Venetian-trained gaffers, and which exploited to the full the ductile qualities of the *cristallo* material. In English parlance these glasses were called 'of extraordinary fashions', and although English-made glasses never rivalled in complexity the forms designed for the glassware of Florence or Venice, or those worked out by the Netherlands glassmen of the later seventeenth century, they were elaborate and fragile enough to have disappeared almost completely and to be known mainly from excavated fragments. One glass found at Nonsuch (**33**) provides an example which is in the main line of Venetian craftsmanship.[41] Of fine-quality and virtually colourless material, the bowl and the stem are joined by an openwork cage formed of three supporting scrolled threads and enclosing drop-pendants supported in the same way. The quality of this glass, in both workmanship and material suggests a Venetian origin. Stems 'of extraordinary fashions' were found in the Gracechurch Street 'hoard' and echo fragments found on other English sites.[42] Perhaps the commonest type consisted of hollow ribbed tubing laid down in a continuous series of serpentine coils and joined to the foot by a circular loop and a separate merese.[43] A possible fragment from such a stem at Nonsuch is a curved section of solid twisted rod.[44]

The tendency towards stem-height and elaboration did not die away in Continental Europe after the middle of the seventeenth century, as it appears to have done in England, but in the course of the century a strain of short-stemmed drinking-glasses seems to re-enter the repertory of forms throughout Europe. A foretaste of this tendency may perhaps be discerned in the Nonsuch glass **35**, which has no more than a merese by way of stem. A closely similar glass is depicted in a painting of a *Laughing Toper*, attributed to Judith Leyster and datable to about 1627/8.[45] The suite of drawings in the Uffizi Gallery in Florence attributed to Giacomo Ligozzi (designer to Cosimo II's glasshouse in Florence from 1617 onwards) and others, and datable to the early years of the seventeenth century, show numerous vase-like glasses which have no more stem than a single depressed knop.[46] Perhaps to be considered in this spirit are the two charming small-scale Nonsuch glasses (**36–7**), where the stems are more complex but nevertheless markedly short; that of **37** is seen to be a variant of its larger cousins (**15–17** etc.) discussed above. The complexity of its bowl-formation is entirely in keeping with the elaborate Italian designs of the early seventeenth century.[47]

The Civil War seems, not unnaturally, to have caused a significant break in the continuity of glass fashions in England, as it did in the continuity of the English glass industry itself.[48] Customs records, however, show that importation of glass continued under the Commonwealth, although one may imagine that the trade in the finer glasses languished in a period of puritanism. It certainly seems to have revived after the Restoration. In 1664 the Glass Sellers of London, who had narrowly failed to achieve incorporation in 1635, succeeded in obtaining a Royal

40. Moorhouse 1971, 64, Fig 27, Nos 11–12
41. Cf two glasses from the Slade Collection in the British Museum, Tait 1979, Nos 31 and 74. A glass with a comparable tripartite stem is shown in a still-life painting by Jacob van Es (1606–66), probably a treasured survivor from an earlier period
42. Oswald and Phillips 1949, 33 and Nos VII–VIII; Ellison *et al*, 1979, 174, No 57; Charleston 1984b, 271, Nos G87 and 93
43. See Charleston 1978, 289, Fig 3; Charleston 1984a, 65–7, 70, Pl 15, d
44. Cf Ellison *et al* 1979, 174, No 57
45. In the Staatliche Kunsthalle, Karlsruhe
46. See eg Heikamp 1986, Figs 42–3, etc
47. *Ibid*., Figs 43, 46, etc
48. Charleston 1984a, 78

Fig. 108 Fine vessel glass: probably Venetian wine-glass ***37****, mould-blown* cristallo *worked to give a twelve-lobed form, early 17th century (cf Fig. 114).*

Charter which gave them virtual complete control of the glass-trade in England. The grip on the trade which this privilege entailed may be well illustrated by the letters written by one of them, John Greene, later to become Master of the Company, to his supplier in Venice, one Allesio Morelli. In these letters, dated between October 1667 and November 1672, Greene lays down exact prescriptions as to metal, shape, fashion, and size of the glasses he orders. Some idea of the scope of the trade may be gleaned from the fact that in this period of five years Greene ordered some 28,000 glasses from Venice. The characteristic feature of these orders, as far as drinking glasses were concerned, was that the vast majority had no more than a spherical knop or a squat inverted baluster (ribbed or plain) for stem, joined to bowl and foot by a single merese or capstan and sometimes not even that (**45**). The bowl shapes were predominantly the conical, the round-funnel and the flat-based conical, and these were combined with the short stems in every possible permutation, forming the overwhelming majority of all types ordered. Wine-glasses were distinguished from beer-glasses purely by size. The type is represented at Nonsuch by a fragmentary goblet with ribbed spherical knop and flat-based bowl (**43**), by a second knop of the same type found at the Banqueting House (**45**), and by a plain, slightly sagging, spherical knop between mereses (**44**). It is impossible to be sure whether these fragments are imports from Venice (or indeed from the Netherlands) or English-made products in the same style. The type is widespread in England[49] as well as on the Continent.

Not all *cristallo* drinking-glasses made for the English market, however, were of stemmed forms. Tall cylindrical beakers for drinking beer, directly derived from German prototypes (*Humpen*, *Stangenglas*, etc.) were naturalised in England probably during the last quarter of the sixteenth century. Sir Hugh Platt, in his *Jewell House of Art and Nature* (1594), refers to 'a Beer glasse of six or eight inches in height and being of one equal bigness from the bottom to the top ...' The type is most frequently found in green glass (see p 229–35), but *cristallo* fragments have been found at Nonsuch (**47**) which show the characteristic inward-sloping rim (derived from the German *Keulenglas* or 'club glass') of the most usual shape (see p 229, below). Even fragments found on English glass-making sites, and probably made there, show considerable variations of shape, and these would be likely to be reflected in the *cristallo* versions. The *cristallo* glass-makers seem, however, to have devised their own variants, as witness the upward tapering glass (**48**) decorated with a milled band round the angle of the base.

It is just possible that such glasses were made in England. In 1608 Edward Salter set up a furnace in Southwark to make shapes not covered by Sir Jerome Bowes's patent, including

49. Cf eg Hurst and Golson 1955, 88, Fig 22, 1 (Norwich); Charleston 1987, 241–2, Nos 14–16 (Canterbury); *idem* 1984b, 273-5, Nos 125–6, 128–31 (Exeter); fragments from Bristol, Oxford, etc. (unpublished)

beakers and cylindrical beer-glasses. At the time, however, Salter's workmen admitted that glasses of these types were made in Venice if bespoke.[50]

A fragmentary beaker (**49**) is of special interest in that it is decorated with horizontal applied bands standing proud of the surface in which a central blue thread is set between two opaque white threads. This general type of decoration is by no means uncommon on glasses of the *façon de Venise*, but this exact formula is in fact widely represented on a series of glass fragments found at Aldgate (London) which evidently formed part of the *débris* of a glasshouse working in the vicinity.[51]

Although drinking-glasses are far and away the commonest types of glass imported from Venice – as John Greene's letters and archaeological finds confirm – many other needs of buttery and pantry were met by this material. The 'banquet' (the sweetmeat course which was the final crown of a dinner) was frequently taken in a separate building (as at Nonsuch) which often partook of the fanciful character of the course itself, of which a high degree of 'conceit' and a visually pleasing effect were expected. During the Tudor period glass came to play an important role in the setting-out of the dessert. When in 1591 the Earl of Hertford entertained Queen Elizabeth, the dessert was borne out from the house into the garden by two hundred gentlemen and consisted of a thousand dishes, all of glass and silver.[52] East India Company records include in "Goods to be brought from England, vendible in India" the item "glass trenchers for sweetmeats".[53] Several fragmentary dishes which probably answer this description have been found on English sites and correspond closely to the examples found at Nonsuch (**50–1**).[54] All these dishes run true to type, with under-turned rim and flat base rising slightly in the centre. It should be recollected that Edward Salter (see p 210 above) included dishes amongst the types made in his crystal furnace.

Further candidates for identification as dessert-glasses are the rim-fragment of a wide dish (**52**), which may have stood on a pedestal-foot, and the fragments (**53–5**) which may have come from such feet. A standing dish of this type is shown in a still-life by the Italian artist Fede Galizia, dated to about 1602.[55] This dish had a plain depressed knop between dish and foot, but many examples survive with the plain pedestal. This dish is shown filled with apples resting on leaves and stuck with flowers, in a manner befitting a dessert. It has to be borne in mind, however, that globular flasks of Italian type and sixteenth century date also rested on low pedestal feet.[56]

It is less easy to be sure of the uses to which the various *cristallo* flasks and bottles at Nonsuch were put, and it is even more difficult to date them. The polygonal flask-rim already referred to (**56**) would appear to be too narrow for any purpose other than pouring liquids, and the same might be said of the plain cylindrical bottle (**57**). The decoration of the former by means of trailed spiral threading can be readily parallelled on a polygonal flask (but with cylindrical neck) in the Museo Vetrario, Murano, and more closely on a lobed flask with frilled rim in the Nystad Collection, Lochem, where the spiral trail is restricted to the orifice of the vessel.[57] Unfortunately, bottles figure far less frequently in the graphic arts than drinking-glasses, and we can draw no help from that source. The use of the turquoise trail and the complicated

50. Godfrey 1975, 45–6
51. Thompson *et al*, 1984, 8, for the context of the *debris*. The glass-working material is unpublished but is now in the London Archaeological Archive and Research Centre, Museum of London site code: AL74, context 1249: pers. comm. Francis Grew
52. Charleston 1986a, 27
53. Charleston 1984a, 70
54. Waltham Abbey, in a pit probably datable to the middle years of the 17th century (Huggins 1969, 86–8); Basing House, destroyed 1645 (Moorhouse 1971, 65–6, No 18); Exeter, with associated late-17th century pipes (Charleston 1984b, 273–4, No 119); Hunsdon House, Herts, more than a dozen glass dishes diamond-engraved in late 16th century style, unpublished (archive and finds with Adrian Havercrift, pers. comm.)
55. R.A. Exhibition *Works by Holbein and other Masters of the 16th and 17th centuries* (1950–1), Cat. No.325
56. See eg *Boy Drinking* by Annibale Caracci (1560–1609) in Christ Church, Oxford
57. Mariacher 1959, 60, A, Pl.VI; Schrijver 1958, Pl 11, c

polygonal form both suggest a date in the first half of the seventeenth century. With the cylindrical flask (**57**) a parallel can perhaps be sought in the small vertical-sided flasks, normally polygonal, which were used to hold effluvia from the relics of St. Nicholas of Bari. These attained notoriety when they were abused by a poisoner who offered his wares as 'manna di San Nicolo' and who was executed for the crime in 1635. The flasks were decorated at the angles with crimped vertical threads of alternately blue-green and colourless glass, supplemented by cold painting showing the Saint.[58] The basic profile of these flasks is very close to that of the Nonsuch bottle, which may accordingly also be reasonably dated to the first half of the seventeenth century. The Nonsuch piece lacks the horizontal thread usually decorating the lower part of the conical neck of the 'S. Nicolo' flasks, but this is found on others of the glasses from the palace (**60–1**). A flask in the Museo Vetrario, Murano, having very much the form of the Nonsuch flask (**60**), is decorated by combed white threading of seventeenth century character; it too has a thread below the rim.[59]

Yet another type of flask, more usually found in green glass (see p 225 below), has been blown into a four-sided mould to give a container of square section (**63**). This was frequently done to enable flasks to be fitted into caskets or chests divided into rectangular compartments ('cellars' in the parlance of the day). Such bottles ('case-bottles') could be used for the transport of spirits, liquid cosmetics, etc., depending on their size. They usually had an out-turned rim, but not always, and some were fitted with pewter screw-caps ('vices'). The cylindrical neck also lent itself well to a silver or glass cap. Although the function of these small flasks was primarily utilitarian, a secondary usage was as flower-vases, as may be seen in an occasional contemporary picture.[60]

Of bowls, apart from the enamelled and gilt example already described (**2**), the Nonsuch excavations brought to light fragments apparently of a bowl of bulging form resting on a coil foot rim, the body with faint mould-blown vertical ribbing (**64**). No illuminating parallel can be adduced. Probably from a bowl of larger diameter comes a rim-fragment with concave outline between radiating ribs (**65**) of a type occasionally seen both in paintings[61] and in the drawings from the Uffizi Collection attributed to the 'Draughtsman of the Medici Glasshouse'.[62] Surviving glasses illustrate the rim type.[63]

The Finsonius painting cited above (in n. 61) shows a bowl with decorative side-handles, and these are commonplace on a long series of surviving bowls, vases, and occasionally also drinking-glasses. The Nonsuch excavations turned up two pairs (**67–8**) and one singleton (**69**) of these decorative handles, made by tooling a vertical thread into a 3-form the outer edge of which was then embellished with a second thread, sometimes in a contrasting material, with an outward kink in the middle, notched decoration, and tooled finials above and below (**68–9**). Most surviving glasses with handles of this general type have the lower finial drawn out into a long appendage, and it is a curious fact that the Nonsuch handles of this type not only lack this feature but find a precise echo in John Green's drawings, always on designs for glasses of bowl- or vase-type.[64] It is difficult to resist the conclusion that this model is peculiar to England, perhaps evolved in the Venetian-style London glasshouses and then adopted by Greene in his orders for glasses from Venice. A pair of smaller handles (**67**) are simpler in structure, being

58. See eg Dreier 1989, 119–21, Nos 123–5
59. Mariacher 1959, 72, B
60. e.g. *Still-Life with a bowl of flowers* by Jan Brueghel the Elder (1568–1625); *Roses and tulips in a glass vase* by Jan van Kessel (*c* 1629–1670), both Leonard Koetser Gallery; *Still-Life with Skull* by Adriaen van Nieulandt, dated 1636, formerly Alfred Brod Gallery
61. eg in the picture of a man playing a recorder attributed to Lodovicus Finsonius (*c* 1580–1617), in the Ashmolean Museum, Oxford, ill. Charleston 1979, Pl VII
62. Heikamp 1986, Figs.49, 58
63. Tait 1979, Nos 69, 73, etc
64. See eg Tait 1979, 48, Figs 6–7

merely an S-coil of colourless glass edged with a short length of opaque-white notched and pulled out with a short point below: these handles were probably for a shallow bowl or dish. A tiny fragment of cobalt-blue glass (**70**) is probably part of a decorative element of this general type. A plainer and commoner type of handle, with a simple scroll at its base, may be seen in **71**.

ii. VENETIAN-STYLE GLASS

Opaque red glass

The knowledge of how to make opaque-red glass by means of reduced copper, whether for mosaics, beads, or entire vessels, is of great antiquity.[65] This reduced copper glass is frequently striated with veins of varying tones of red, giving the effect of a natural stone of the nature of jasper, a desirable quality in a climate of thought where glass was regarded as providing a surrogate for semi-precious stones. Although the medieval concept of the best jasper considered it a green stone, the inventories often make it clear that red jasper was keenly sought after for the treasuries of the wealthiest potentates of the age. Thus in 1363 the Duke of Normandy owned 'a goblet of red jasper' mounted in silver, and his inventory of 1379–80 listed a second goblet of red jasper mounted in gold: the same prince in 1363 also owned a 'chopine' of red glass mounted in silver.[66] The secrets of the manufacture of this opaque-red glass were certainly not lost during the early Middle Ages, for opaque-red is used for decorative purposes on a number of Islamic glasses,[67] and it recurs in Europe in a number of places from the thirteenth century onwards.[68] It was therefore no doubt to this type of glass that the inventory of the Duc d'Anjou (1360–68) referred in its description of 'un picier de voirre vermeil semblable à jaspe'.[69] The 'sealing-wax' red glass seems to have been widespread in sixteenth century Germany [70] and was certainly made there.[71] It was clearly, however, also made in Venice, where it formed an essential element in the 'star' beads which were one of the industry's best-selling lines; and in the inventory of Charles the Bold, Duke of Burgundy (d.1477) the point is made explicit – 'ung Hanap de jaspre garny d'or, a oeuvre de Venise'.[72] Early texts refer to "diaspri" (the medieval Latin form of 'jasper') along with 'calcedonio' (the commonest type of Venetian marbled glass) as one of a number of glass materials made in Venice in imitation of natural semi-precious stones.[73] Venice may in fact have owed Germany a technical debt in this field, for a glass-maker's text-book (the Montpellier recipe-book, dated 1536 but recording earlier formulae) gives one prescription 'A fare Vedro Rosso de la Alamagna, per fare Quarri da fenestre et fare Calcidonio bello' ('To make German red glass for window-quarries and to make a beautiful *calcedonio*'). The mention of window quarries refers to the use of copper-ruby glass for the making of "flashed" window-glass; but the second half of the description seems to relate to the use of reduced copper-ruby glass to imitate the semi-precious stone.[74]

Henry VIII's inventory of his 'Glasse Housse' (see above p 201, 203) contains a considerable number of entries for glasses 'of iasper colloure', including bottles or flagons (two), standing-

65. Charleston 1963, 59-60; Goldstein 1979, 145, No 299, 244, No 707, etc
66. Lightbown 1978, 55–7
67. Corning Museum of Glass 1957, No 352
68. Germany, Baumgartner and Krüger 1988, 172, No 137; England, Charleston 1980a, 69; Italy, Harden 1966, 71–2; France (15th-16th century), Foy and Sennequier 1989, 313–14, Nos 341–2
69. Dreier 1989, 58, No 30
70. Baumgartner and Krüger 1988, 55; 361, No 443; 378, No 468; 382, Nos 475–6; 391, No 490; 417, No 523; 421, No 528
71. e.g. in the Schwarzwald, *ibid*, 37: it was even made in the German-type glasshouses of 16th century Denmark: Jexlev *et al* 1970, 43ff, Pls 4, 3 (Stenhule); 4, 4–5, 2 (Hyttekaer)
72. Dreier 1989, 58, No 30
73. Gasparetto 1958, 90–1
74. Zecchin 1987, 255–6, No 21

cups (two), 'glasses like pottes' (handled jugs with cylindrical neck, three), 'cruses' (two), spice-plates (seven), a candlestick and a ewer; and, more to our purpose: 'Three bolles of Glasse w(ith)oute covers of iasper colloure two of theym havinge feete' and 'ij bolles of Jasper coloure one of theym standinge upon a foote'.[75] There seems every likelihood that the Nonsuch bowl (**72,** Plate 12) fitted into this category of glasses.

Enamelled glass (without gilding)

A considerable number of enamelled glasses have been found in England which are clearly distinct from the Venetian gilt and enamelled glasses of the fifteenth and early sixteenth centuries. They are painted predominantly in white, with the occasional addition of blue and red pigments. A fragmentary goblet-bowl found at Southampton occurred in a context of generally mid-sixteenth century date,[76] and a second goblet bowl, this one enamelled solely in white, occurred in the Gracechurch Street 'hoard',[77] suggesting a date in the early seventeenth century, although some of the glasses in this find seem to straddle the turn of the century (see p 206). The bowl of a goblet of exactly the same form as that from Gracechurch Street was excavated after the War in Lincoln.[78] This was enamelled in white, red, and blue, like the Southampton fragments, but included in its decoration a running border of *fleurs-de-lys* motifs closely echoing the decoration of the Gracechurch Street goblet-bowl. The affinity of this decoration with the motifs often found on the Verzelini glasses with diamond-point engraving attributable to Anthony de Lysle was already remarked on by Oswald and Phillips. On the other hand, these motifs strike an undeniable French note, and the English-found glasses of this character are clearly first-cousins, at the least, of a large family of French sixteenth-century enamelled glasses.[79] The shapes and decoration of the examples cited above, however, taken together with those of other English-found fragments, are difficult to match closely with those found in France, and it may well be that an enameller schooled in France worked in this country.[80] The Nonsuch fragment illustrated (**73**) is painted in white only with a vertical cable motif; comparable guilloche designs are found on French glasses.[81] An accompanying sliver of glass (not drawn) has part of a line painted in blue.

Diamond-engraved glass

The technique of 'diamond-point' engraving on glass was practised in Roman times, although it is impossible to say what hardstone point was actually used. The capacity of the diamond to scratch (and cut) glass was known to glaziers well before 1500, but it is not until 1549 that the technique of diamond-point engraving is mentioned in the records. In that year Vincenzo dal Gallo obtained from the Venetian Senate a privilege for ten years forbidding others to 'use the method discovered by him of cutting glass'.[82] No doubt the technique had been practised for some time before this privilege was granted. It was known in Central Europe by 1562, when Johann Mathesius, pastor of Joachimsthal (Bohemia), referred to 'Venetian glasses decorated with scrolls scratched on them with the diamond-point'.[83] The art appears to have reached England in the 1570s, the earliest of the diamond-engraved glasses attributable to the Verzelini

75. Harleian MS. 1419, A, fols.143v and 149v. See also Hartshorne 1897, 464–5 [see now Starkey (ed.) 1998, Nos. 10894 ('Glasse Housse', p. 244) 10895, 10903, 10907, 10911, 10914, 10917–18, 10927, 10937–8, 10988, 17339, 17355, 17347, 17358, 17361, 17371, 17381–2, 17431, 17451]
76. Charleston 1975, 212, 221–3, No 1553
77. Oswald and Phillips 1949, 33–4, No X
78. Charleston 1973, 6–7, Fig 20
79. See eg Foy and Sennequier 1989, 289–99, Pls XXII–XXIV; Barrelet 1953, 72, Pls XXXVI and XL
80. These glasses have now been studied by Miss Suzanne Gaynor 1991, 42–81
81. Foy and Sequennier 1989, Pl XXII, No 283
82. Zecchin 1987, 225
83. Buckley 1929, 7

glasshouse being dated 1577. The decoration of these glasses is probably to be ascribed to one Anthony de Lysle, 'graver in puter and glasse', mentioned in London records in 1583.[84] The Nonsuch fragment **74** is so small, however, that, although it would be tempting to attribute it to de Lysle, it would be rash to do so. The execution of the lobed arabesque is somewhat neater and more regular than his norm, and the cable border has not quite the idiosyncrasy of the de Lysle running *guilloche*, which is usually done in a continuous wavy line, the point seldom losing contact with the glass. Both motifs are commonplace on the glasses of this period.[85]

Probably French cristallo

A number of tiny fragments (**75,** not drawn) indeterminate in shape, pinky-brown in colour and showing pronounced internal cracking, are probably of French origin and late seventeenth-century date. Produced probably under much the same economic and technical pressures as the English 'crizzled' glasses of the 1670s, the French glass of this type was even more prone to decay.[86] In France this problem lingered on longer than it did in England, and these fragments might well date from the years about 1700 [but before 1688 at Nonsuch:MB].

Opaque glass rod

In the context X14 3 was found a tiny glass rod (**76**, not drawn) consisting of a thin red coating laid over a thicker opaque-white layer, with a thin core of apparently colourless transparent glass. Rods of this character were made by taking a gather of indifferent *cristallo* (quality was of no account in this situation) and dipping it successively into pots of different opaque colours (usually sealing-wax red and white, supplemented by a semi-transparent royal blue). The *pastón* so obtained was held on an iron and if required for bead-making, was perforated. A second iron was then attached to the opposite end of the *pastón* and taken by a second operative (*tirador*) who walked rapidly backwards away from the master (*conzaurèr*), thus producing a long thin rod or tube, as the case might be.[87] These were then chopped into lengths suitable for transport. Tubes were mainly for making small beads, and rods were made for a variety of decorative purposes, often chopped into shorter lengths for attachment to furniture, caskets, etc., sometimes used as the raw material for further glass-working 'at the lamp'.[88] The Nonsuch rod may well have dropped from a decorative casket or the like.

iii. ENGLISH CRYSTAL (GLASS OF LEAD)

The special qualities of Venetian *cristallo*, which had gained it immense prestige in the course of the fifteenth and sixteenth centuries, began to lose their charm as the seventeenth century drew to its close. This change of taste manifested itself in more than one area of northern Europe. In Bohemia and the Germanic countries an indigenous type of potash-lime glass was developed in a direction inspired by the qualities of rock-crystal, a development helped by the growth of a school of wheel-engravers originally trained to decorate rock-crystal and the other semi-precious stones found in the mountains of Central Europe. This aim of producing a robust, colourless, and crystal-clear glass found an echo in England. The London Glass Seller John Greene, whose correspondence with the Venetian supplier Allesio Morelli has already been referred to,

84. Charleston 1984a, 58–9
85. Buckley 1929, Pls 3–6, 14–15, 17–20, 24ff
86. Charleston 1952, 18–19
87. Gasparetto 1958, 180–1
88. See eg Jervis 1990, 350–3

succinctly sums up in his complaints and requirements the unconscious ideals of the English market: '.. that they be made ... of verij good cleer whit sound Mettall; for truelij the last you sent me the Mettall was indifferent good and cleer, but not so sound and strong as they should have bin made ... Therefor S^r I praÿ take such care that these be made of verÿ good sound mettall and thicker and stronger than the last'.[89]

Similar demands were no doubt made of the English manufacturers of crystal glass, and were finally met in the glasshouse of one George Ravenscroft (1632–1683), a London merchant in the Venetian trade.[90] In 1673 he 'built and set on work a Glass House in the Savoy' and in early 1674 petitioned the King for a patent for the making of a 'sort of crystalline glass resembling rock crystal'. An official minute dated 9 March 1674 expatiated on this: '..that the glass is of a finer sort and made of other ingredients than any other glasshouses in England have used, and that the invention may be of considerable public advantage as the glasses thereby made equalize, if not excel, those imported from Venice or France'. The patent was granted, and in the same spring Ravenscroft concluded an agreement with the London Company of Glass Sellers that they would 'take and buy the said Glasses of Ravenscroft' and that Ravenscroft might set up a second furnace at Henley-on-Thames. This episode was recorded by Dr. Robert Plot in his book *The Natural History of Oxfordshire* (1676): 'To which may be added the invention of making glasses of *stones or other materials* at Henley-on-Thames lately brought into England by Seigneur da Costa a Montferratees [i.e. from the glass-making centre of Altare, in the Duchy of Montferrat] ... *The materials they used formerly were the blackest flints calcined* and a white Christalline sand adding to each pound of these ... about two ounces of Nitre, Tartar, and Borax. But the glasses made of these being subject to that unpardonable fault *called crizelling caused by the two (sic) great quantities of the Salts in the mixture*, which ... induce a Scabrities or dull roughness irrecoverably clouding the transparency of the glass ...'. It appears, therefore, first that the inventor may have been Baptista da Costa, Ravenscroft filling the role of entrepreneur; and second that the first attempts had failed with the onset of 'crizzling' in the glasses made, probably some months after the triumphal declarations of early 1674. Crizzling produces a progressive crazing of the glass and a surface roughness, as described by Dr. Plot, and was induced by an excess of alkaline salts in the formula, as he divined; it was a quite unacceptable blemish which can still be seen on many seventeenth-century glasses. By the middle of 1676, it had been (apparently) overcome, the *London Gazette* for 3 June advertising that 'the defect of the flint glasses (which were formerly observed to crissel and decay) hath been redressed severall months ago and the glasses since made have all proved durable and lasting as any glasses whatsoever' and refers to 'ye distinction of sound discernible by any person whatsoever', no doubt the distinctive ringing tone of typical lead-glass. Further advertisements from 3 July onwards refer to 'a Seal or Mark hath lately been set on them', without alluding to any distinctive device; on 29 May, 1677, however, a new agreement between Ravenscroft and the Glass Sellers stipulated that 'a Raven's head shall be made or set in all glasses to distinguish the same from all others', and a considerable series of such sealed glasses has been identified, including one stem- and bowl-fragment from Nonsuch (**77**). The two such glasses which have been scientifically examined reveal a significant lead-content ranging from some 12.5% to 27.5% (the Nonsuch glass), and this, in the light of subsequent developments, can be seen to be their distinctive characteristic. It is uncertain, however, at what point lead-oxide began to be used. On the one hand, no mention was made of it in Dr. Plot's account; on the other, the characteristic sound was mentioned in mid 1676, and all the glasses with raven's head seals, announced in May 1677, seem to be lead-glasses (although

89. Charleston 1984a, 106

90. Rendel 1975, 65–70; Moody 1988, 198–210 and 1989, 191–2

almost always crizzled). Many theories as to the course of developments have been advanced,[91] but until some clinching piece of evidence turns up, they can only be regarded as conjectures. What is reasonably certain is that the raven's head seal denotes a date not much before May 1677.

It seems likely that the revolutionary lead ingredient was added in increasing quantities until by about 1690 the classic ratio for English lead-glasses was established at about 30%.

Other English glass-makers, mainly in London and probably following Ravenscroft's retirement (nominally in early 1679) and the lapse of his patent, entered the field of lead-glass manufacture and in turn sealed their glasses with a variety of devices.[92] A stem-fragment of this sort was found at Nonsuch (**78**). After 1680, and particularly from about 1690, English lead-glass ("flint") is easily recognisable (**79**). [The fragments found at Nonsuch are unlikely to date after 1688 at the latest: MB].

iv. GREEN GLASS, MAINLY UTILITARIAN

Green glass for utilitarian purposes had been made in England from early Medieval times onwards. As was normal in the rest of northern Europe, it was made in small glasshouses usually situated in the woodland which supplied the fuel necessary for this operation. In Roman times glass had been made in Britain by the use for fluxing purposes of imported Mediterranean soda-ash. This trade seems to have come to an end about the turn of the millennium, and thenceforth soda-ash was substituted by the ashes of indigenous vegetation, that most favoured being the ash of beech-trees, which were also the species of choice for the firing of the furnace. Normally, but apparently not always, the furnaces had as their principal product window-glass of varying degrees of colourlessness and clarity, vessel-glass being subordinate in importance.

In medieval England the best-documented glass-making area is the Weald of Surrey/Sussex, with Chiddingfold as its centre; but glass-making is well attested also in other parts of the country, notably Staffordshire, Shropshire, and Cheshire, and probably also Kent and Essex.[93] The glass made was for the most part of poor quality, being particularly prone to a type of beige/brown 'weathering' – presumably accelerated by burial – which eats deep into the substance of the glass, leaving often a mere paper-thin layer of glass in a sandwich of brown decomposition. The situation appears to have been radically changed by the arrival in England in 1567 of John Carré, a man of Arras, with a team of glassmen of Lorraine origin.[94] These men, among whom representatives of the families of de Hennezel ('Hensey'), Tyzack, and Tittery were prominent, brought with them not only the most advanced techniques of making window-glass by the cylinder ('muff') technique, but also an improved technology which made possible the production of a far more durable type of potash-lime glass. This was also at the disposal of the makers of 'menu verre', or vessel-glass, among whom were members of the families of Du Houx, Bigault, Bonnay, and others.[95] Perhaps because the new types of furnace demanded an increased consumption of fuel, the 'Frenchmen' soon became unpopular in the Weald, an unpopularity sometimes expressed by outbreaks of violence.[96] Whether for this reason, or because other areas of England held promise of more ample supplies of wood, the latter part of the sixteenth century witnessed a considerable exodus westwards and northwards of the heirs of the new technology, many of them bearing the names of these famous French families. The first stage appears to have been a migration to Hampshire, where in the registers of the Walloon

91. Watts 1975, 71–83 and 1990, 208–12; MacLeod 1987, 776–803. The glasses themselves are discussed in Hudson 1967, 822–31; Charleston 1968b, 156–67
92. Charleston 1984a, 123–7
93. Charleston 1991, 255–6
94. Charleston 1984a, 53, 71–2, 78–9
95. *Ibid*. 81ff
96. Thorpe 1929, 65; Godfrey 1975, 26; Charleston 1984a, 72

church in Southampton (1576–9) numerous glass-makers are found recorded as of the glasshouse at 'bouque havt' (Buckholt) between Winchester and Salisbury. A glass-furnace was indeed excavated here in 1860, and the pushed-in bases of beakers (see p 229–35) characteristic of this epoch were found there.[97] Further west, several glasshouses are found in Gloucestershire before the end of the sixteenth, and in the early years of the seventeenth century (Newent, Newnham-on-Severn, Woodchester, and possibly Bristol, with an outlier at St. Weonard's in Herefordshire); in Staffordshire (Bishop's Wood and Bagot's Park, near Eccleshall; Oldswinford and Kingswinford, near Stourbridge); in Shropshire (Cheswardine, Ruyton-Eleven-Towns, and Congleton); in Lancashire (Bickerstaffe Hall, near Ormskirk, and Denton, near Manchester); in Yorkshire (Hutton and Rosedale, in the North Riding); and others in Warwickshire, Nottingham (Wollaton), etc. Sometimes these glasshouses are identifiable by references in documents, sometimes by excavation (Newent, Woodchester, St. Weonard's, Bishop's Wood, Bagot's Park, Congleton, Bickerstaffe Hall, Denton, Hutton, and Rosedale).[98] To these may be added the important glasshouse-site of Kimmeridge, in Dorset, excavated in 1980–1.[99]

It would be reasonable to suppose that supplies of utilitarian glassware for an establishment such as Nonsuch Palace would be derived from glasshouses in its vicinity or, more likely, from London, which would in turn have derived its supplies from further afield. In the sixteenth century it is likely enough that the palace drew on the resources of its hinterland in the glassmaking areas of Surrey/Sussex; in the seventeenth century, with the establishment of a glass-making monopoly under the control of Sir Robert Mansell and the prohibition in 1615 of wood-burning furnaces (honoured in the breach as well as the observance), the emphasis probably switched to London. Here Sir Robert Mansell established his own furnaces for the supply of green glass at Ratcliffe in 1616.[100] In the following year he licensed Abraham Bigo to establish the furnaces at Kimmeridge, on the understanding that he would supply the local market and not London. Bigo's partner, however, Sir William Clavell, breached this condition on a legal pretext between 1619 and 1623.[101] There seems throughout this period to have been some shortage of supply, caused mainly by Mansell's pressure on the Wealden glass-makers to close their wood-burning factories, and some importation of glass from abroad was sanctioned, Mansell himself importing 'coarse drinking glasses' from France.[102] This causes a complication when dealing with certain types of green glass which were common to both English and French glass-making (see pp 221, 224, 226, 231–2, 235 below). Further uncertainty is introduced by the fact that at various times Mansell used his glasshouses at Wollaton and Newcastle to supply the London market.[103] There is inevitably, therefore, a high degree of uncertainty as to where a particular glass was made, although it is possible to demonstrate that particular glasshouses produced particular types of green glass as found at Nonsuch.

During the medieval period green glass production had been predominantly aimed at supplying the needs for lamps, simple bottles (globular body with 'kicked' base, and cylindrical neck with out-turned lip), urinals of a few variant forms, solid 'slick stones' for finishing linen-cloth and polishing other materials, and glass for distilling, whether pharmaceutical or alchemical; this equipment (Fig. 109) consisted of the 'alembic' (the domed distillation-head with upturned internal rim to collect the distillate, and applied downward-sloping tube to discharge it), the 'cucurbit' or round-based, usually tapering, vessel which contained the liquid to be distilled, and the 'receiver', into which the distillate was discharged, this last being almost

97. Kenyon 1967, 214–17
98. These developments are sketched out in Charleston 1984a, 83–6
99. Crossley 1987, 340–82
100. Godfrey 1975, 92–3, 95–6
101. Crossley 1987, 346–8
102. Godfrey 1975, 117, see also 92, 96
103. *Ibid*. 92; Crossley 1987, 347

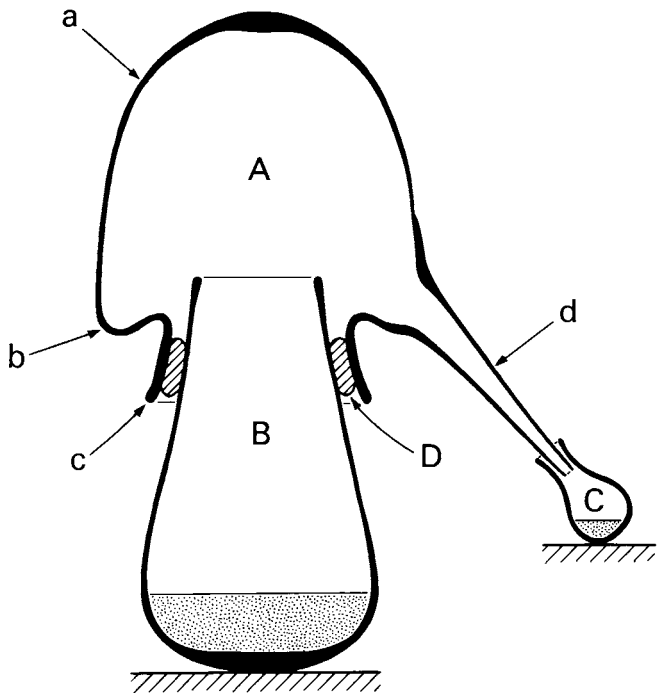


Fig. 109 Diagram of a typical glass still: A, alembic; B, cucurbit; C, receiver; D, lute; a, dome; b, collecting channel; c, rim; d, spout. After Moorhouse 1972.

any vessel that would hold liquid.[104] In the sixteenth century this repertory was extended to include bottles of new shapes (see below, p 219–27) and drinking-glasses. William Harrison in his *Description of England* (1577) wrote: 'the poorest also will have glass if they may; but sith the Venetian is somewhat to deere for them they content themselves with such as are made at home of ferne and burned stone' (that is, fern- or bracken-ash and siliceous material). The types of drinking-glass introduced about this time derive from two sources – the tall cylindrical beaker of German origin, and the footed goblet inspired by Venetian forms but made by the typical northern one-piece method, achieved by pushing in the base of the glass-paraison and working it into a stem and foot of double thickness (see p 235 below). The making of lamps seems to have dwindled away, although examples from sixteenth-century contexts are known.[105] The types of glasses found at Nonsuch are described below.

Bottles

One of the commonest green-glass forms is what may for convenience be called the 'English bottle', for the type is so common in this country as to be almost universal on late-medieval and Renaissance sites which produce a reasonable quantity of glass, whereas it seems to find no exact correspondence on the Continent of Europe. Its universality suggests that it was a useful recipient for liquids of all sorts, and it seems likely that its disappearance after the middle of the seventeenth century was only due to its replacement by the other 'English bottle' in thick green-black glass, evolved by 1650 and destined to conquer the world in the course of the eighteenth

104. Charleston 1991, 256–62

105. Oakley and Hunter 1979, 298, No 53

century (see p 266–301 below). The earlier 'English bottle' was made of usually thin green glass of varying hues, with a roughly globular body having a low basal depression or 'kick', a cylindrical or tapering neck of varying length, and an out-turned, usually roughly finished, pouring lip. While occasionally quite plain, it was more frequently decorated with mould-blown ribbing, sometimes pronounced (**80**) but often almost imperceptible, sometimes left vertical (**80**, **87**) but more often twisted in the working to give a diagonal 'wrythen' effect (**81**, **83–5**). No single example has been preserved intact, but a number have enough of the neck and base remaining to permit a convincing reconstruction.[106] The Nonsuch finds include one such example (**81**). The type had an amazingly long life, surviving apparently virtually unchanged from the fourteenth to the seventeenth century. The necks with 'wrythen' mould-blown ribbing are found on the fourteenth-century glasshouse site of Blunden's Wood, near Hambledon in Surrey,[107] and fragments of the type occur in contexts at Exeter which may well be as early as the fourteenth-century.[108] From that point onward fragments of these bottles are to be found on most English sites of almost every period up to the mid seventeenth century. They were certainly made in the Wealden glasshouses. Apart from Blunden's Wood, cited above, examples crop up at Chiddingfold,[109] Kirdford,[110] and Knightons.[111] A point perhaps worth observing is that the ribbing on the Nonsuch bottles slants from lower left to upper right, having been twisted in an anti-clockwise direction. The majority of bottles were twisted clockwise, and this seems universally true of such proven Wealden fragments as have been observed (e.g. those at Knightons and those on the illustrations published by Kenyon and Winbolt in the works cited in nn. 109–11). Whether the point is of diagnostic significance remains to be established, perhaps by further finds on glass-making sites.[112] It is worth bearing in mind that a palace such as Nonsuch is likely to have obtained at least a proportion of its supplies from London merchants, who, until Sir Robert Mansell's monopoly of the industry (1615), would have been free to buy where they chose; even after this time strenuous efforts were made by the 'forest' glassmakers to circumvent the monopoly and evade the prohibition against wood-burning in glass-furnaces.[113]

Ribbed Flasks

Important among the smaller types of recipient was a flask made with a 'second gather' which was blown into a ribbed mould, then 'wrythen' to give diagonal ribbing, the flask being then extended by blowing and finally flattened and given a low 'kick'. The cylindrical neck was finished with a narrow out-turned lip. The drawings show the overlap of first and second gathers at the base of the neck (**91**, **94–5**). The type seems to have had its origins in Germany, where examples are usually dated 'sixteenth century'.[114] It is uncertain in which area the type was developed, but the heavily wooded Spessart region of Lower Franconia, with its neighbouring glass-making area of Hesse, is the most likely; and one widespread type of bottle with twisted ribbing on a second gather was certainly made there, for fragments have been found on a seventeenth-century glass-making site at Bischbrunn.[115] These bottles, however, are

106. Hume 1957a, No 5
107. Wood 1965, 65–7
108. Charleston 1984b, 265–6, Nos 14–15, 24–6
109. Kenyon 1967, Pls XII–XIII; Winbolt 1933, Figs on 10–11
110. Kenyon 1967, Pl XVII
111. Wood 1982, 36, Fig 23; see also Kenyon 1967, 162, 166, 170, 183, 199
112. Two fragmentary necks found at Bagot's Park, Staffordshire (16th century) display the anti-clockwise twist (Crossley 1967, Fig 20, Nos 1, 4)
113. Godfrey 1975, 91–6, 126ff
114. Rademacher 1933, 56, Pl VIII, c and e
115. Tochtermann 1979, 58–60

larger (some 230mm high), flattened on one side, and have side-handles and a neck bent at an angle to the body. They are, in fact, pilgrim flasks, and may be traced back to the medieval period.[116] Although the fragments found at Bischbrunn date from the second quarter of the seventeenth century, an analysis of the morphology of this pilgrim-flask suggests a development throughout the sixteenth century up to the early part of the seventeenth century.[117]

The type of flask under discussion is a variant of this shape, smaller and without the inclined neck. Rademacher's examples (see p 00, above) were considered German, no doubt on account of their provenance, and probably correctly. The type, however, also occurs in France[118] and Holland,[119] and although there seems to be no direct evidence for their manufacture in France, this is probable enough, for the glasshouses of Alsace and Lorraine lie very close to those of the Rhineland and Spessart and probably form part of a single "Waldglas" tradition. There is, however, direct evidence that this type of flask was made in the glasshouses of what is now the Belgian province of Brabant, at Dion-le-Val, near Wavre, and at Savenel in Hainault, a little further to the north, the former datable to the early sixteenth century,[120] the latter to the early years of the seventeenth century.[121] If, therefore, these flasks are imports to England, there is very little firm ground for attributing them to any given centre. The earliest finds in England are unfortunately ambiguous as to origin, although certain as to date. These are three small examples, two approximately 115mm high, the third a miniature of 50mm, found in the surgeon's chest of the *Mary Rose* (sank 1545). If the ship's surgeon had been a foreigner, he might have acquired his flasks in his country of origin, and it is possibly of significance that his equipment included a good many examples of Siegburg stoneware. It is also a possibility that the drugs which formed his stock were bought in the containers in which they were found. In fact, the only recorded holder of the post of surgeon on the *Mary Rose* was an Englishman, but that was in 1513. It seems that sadly little is to be deduced to throw light on the origins of these utensils.[122]

No fragments of this type of flask appear to have been found on any of the 'early' (that is, pre-1570) glasshouses of the Weald or elsewhere in England, but they do turn up at Woodchester (Gloucestershire),[123] Blore Park (Staffordshire),[124] Rosedale (Yorkshire), and Hutton (Yorkshire).[125] All these glasshouses probably date from the years straddling 1600. Two fragments occur at the unquestionably early seventeenth-century furnace-site at Kimmeridge (Dorset).[126] Fragments, and some whole flasks, are recorded on other sites in England – Oxford,[127] London,[128] Exeter,[129] Ipswich (unpublished), and Oatlands Palace, Weybridge (publication forthcoming), the latter contemporary with Nonsuch.

It seems probable that these flasks were used for medicaments, as the *Mary Rose* finds indicate. This evidence is supported by a picture of *The Good Samaritan* painted by Jan van Scorel in 1537 (Rijksmuseum, Amsterdam). Here, the Samaritan is seen applying the contents of a flask of this shape to the victim's wound. Although the *Mary Rose* finds, the Delft finds, and the van Scorel painting suggest that this type of flask was well established in the first half of the sixteenth century, the English evidence suggests that in England at least it was commoner in the latter part of the sixteenth and the early years of the seventeenth century. The Nonsuch finds comprise

116. Baumgartner and Krüger 1988, 327, Nos 393–4, etc
117. Tochtermann 1984, 77–90; also Baumgartner 1987, 67–9, Nos 55 and 57
118. eg Waton *et al* 1990, 232, Fig 5, No 66 (Metz); Foy and Sennequier 1989, 303, No 328 (Sedan)
119. eg Renaud 1962, Fig 4, 3 and Abf.1, 4 (Carthusian monastery, Delft, datable pre-1571); Ruempol and van Dongen 1991, 131, b (Eeemstein monastery, Zwijndfrecht)
120. Chambon 1961, 43, 45–6, Fig 7, No 31
121. Terlinden and Crossley 1981, 183, 192, No SL23
122. Rule 1982, 186–96
123. Daniels 1950, Pl VI, 41 and Pl V, 30
124. Pape 1933, 172–7
125. Crossley and Aberg 1972, Fig 60, Nos 11–12; 63, Nos 44, 57, 60
126. Crossley 1987, Fig 7, Nos 44–5
127. Charleston 1984a, Pl 18, a; Leeds 1938, Pl XII, D2 and 157
128. Hume 1956a, No 12, from a context of *c* 1590–1630
129. Charleston 1984b, 268, No 68, found with pottery of *c* 1550–80

three fragments showing the wrythen decoration (**91–3**), while a more complete specimen (**94**) displays vertical ribbing with negligible twisting. A smaller flattened flask (**96**) lacks the ribbing on a second gather but follows the flattened section of the ribbed specimens.

Piriform flasks

A second bottle-type of Continental origin is represented by the fragment **97**. Its characteristics are a piriform body with long tapering neck, usually with out-turned lip, standing on a slightly 'kicked' base formed by a 'cut-out' foot-ring (made by pinching out a fold of glass at the junction of body and re-entrant base). This type too has its roots in Continental Europe in the fifteenth century. Examples from Cologne and Speyer[130] have been reasonably dated to the fifteenth century, and a further excavated bottle from Göttingen was found in company with fifteenth-century pottery.[131] Representations of these flasks are found in German pictures of as early as 1480 – a self-portrait of a young artist, and a wood-cut illustration to Hans Folz's poem *Gedicht vom Branntwein* (*c* 1479).[132] By far the most prolific find-spot for this type of flask, however, is Strasbourg, where on one site alone 147 examples were found, at least three preserved intact.[133] One example from this site preserves its contents, and is apparently stoppered with wax and (?) cloth. The site (a waste pit at 15, Rue des Juifs) is probably to be dated *c* 1525–1600. A further five specimens were excavated at the 'Istra' site in Strasbourg, datable to the second half of the sixteenth century by accompanying pottery and a jeton of *c* 1570.[134] A third site producing a flask of this type, however, is datable, like the German contexts already cited, to the fifteenth century.[135]

It is perhaps no coincidence that a wood-cut illustrating one of these flasks as part of a doctor's equipment comes from a book published in Strasbourg in 1533;[136] and a second cut showing these glasses used for various drugs was also published there two years earlier.[137] This cut well illustrates the modulations of shape through which these flasks may range. It is likely enough that these piriform flasks were made at the Alsatian end of the great Franco-German forest glassmaking area, as well as in Germany itself (of which indeed Alsace was at this time a part). It is also likely that, as with the ribbed flasks dealt with above (p 220–1), the piriform flasks were also made further north in the territory of the Holy Roman Empire, in Brabant and Hainault: on the glass-making site at Savenel was found a base with 'cut-out' foot-rim which in all likelihood came from such a flask, albeit at a somewhat later date.[138] The glasshouses of this area may well have supplied piriform flasks to the Dutch market, such as that found at the Charterhouse at Delft, deposited before 1571.[139] The pattern-book, datable to *c* 1550–55, of the Colinet family glasshouse at Beauwelz, near Chimay in Hainault, illustrates a flask of this type among 'boutelles quy se font chez nous en verre noir qu'on dit verre boutelles' ('bottles made by us in black (i.e., dark green) glass, which is called 'bottle glass'). It is described as 'bouteille a panse avecq socle' ('bellied flask on a base').[140] Slight variants are included on the same page under the rubrics 'flasque diste amande avecq socle') ('so-called almond flask with base', and 'boutelle a panse a long col' ('bellied bottle with long neck').

130. Rademacher 1933, Pls 14, b and 15, b; see also Ruempol and van Dongen 1991, 87, a
131. Schütte 1979, 110, Fig 7,7
132. Rademacher 1933, 72, Fig 11, and Pl XIV, a picture now in the Art Institute of Chicago
133. Waton *et al* 1990, 40, 51–8, Fig 33, 15–24; 4, 25; also Baumgartner and Krüger 1988, 419–20, No 526
134. Waton *et al* 1990, 75, 81, Fig 2, 7–11
135. Rieb 1971, 116, 121–2, Fig 6
136. Hero, *Schachtafeln der Gesundheit*, Strasbourg (1531)
137. H.Vogtherr the Elder, *Tacuini Sanitatis Elluchasem...*, Strasbourg (1531), *cit*. Baumgartner 1987, Fig 10
138. Terlinden and Crossley 1981, 192, No SL28, Fig 5, 9
139. Renaud 1962, 110, Fig 4, 6
140. Chambon 1955, Pl R(b)

The 'Strasbourg' type of bottle seems not to occur on English glass-making sites, although examples turn up occasionally on occupation sites. At Exeter, an almost complete flask was excavated together with two identically similar bases, and bottle necks which might very well have belonged to them.[141] They probably stood some 230mm high, and were thus perhaps likely to have been used for wine. They were excavated in a context which suggested a date about 1600. At Sandal Castle (Yorkshire), the neck and foot fragments of a piriform bottle were found in a context of the first half of the sixteenth century.[142] Base fragments of this particular formation are occasionally found in association with neck fragments which may belong to them, on sites such as Chichester (N.W. quadrant)[143] or Hunsdon House (Hertfordshire; unpublished), the proximity of Chichester to the Sussex Wealden glasshouses tempting the speculation that they might have been made there. The Nonsuch fragmentary foot (**98**) might well belong in this category, although its glass is remarkably free of colour. The glossy and well-preserved glass of the small Nonsuch flask (**97**) raises a presumption of Continental origin. This small bottle suggests by its size that it may have had a medical use, especially in the light of the evidence adduced above suggesting the employment of these flasks for pharmaceutical purposes (p 222).

Small flasks

A similar function and origin may probably be predicated of the small flask represented here by a neck-fragment only (**99**). These small containers are characterised by a somewhat dumpy body, almost widest at its base, where the glass is pushed abruptly upwards with a deep, usually dome-shaped re-entrant 'kick'; the neck is narrowest at its base, swelling slightly towards the top and narrowing again at the orifice. The best-preserved example found in England appears to be that from Northampton.[144] The characteristic shape of the neck and the fact that none seems to preserve a finished rim suggest that these small flasks were simply knocked off the blowing-iron once the 'kick' had been formed, much as described by the twelfth century monk Theophilus.[145] A further characteristic of these necks is that their thickness varies at opposite points of their circumference. As with the 'Strasbourg' flask described above, this type is found, although rarely, on the Continent, both in eastern France[146] and in the Low Countries.[147] The Northampton example was found in St Peter's Street, in a context suggesting a date in the second half of the sixteenth, or early seventeenth, century.[148] No doubt the type is to be considered as one among the numerous small containers, carelessly made, which occur frequently among German finds.[149] A few further Nonsuch fragments may possibly belong to this general class (**100–105**, not drawn).

Flasks with long necks (wickered bottles)

Of larger format than these small containers, but not yet fitting into the category of the typical English bottle are flasks with longish necks the rims of which are roughly trimmed, with very little out-turning of the lip (**106–7**). The shoulder of the first has been noticeably flattened, and

141. Charleston 1984b, 270–1, Fig 149, Nos 81–2, 84–6
142. Moorhouse 1983, 223, Fig 100, No 36
143. Charleston 1981a, Fig 8, 54, Nos 18–20, 22
144. Oakley and Hunter 1979, Fig 132, No 87
145. Dodwell 1961, xviii ff. and 44
146. Waton *et al* 1990, 244 and Fig 2, No 21 (from Metz) specifically noted as lacking pontil mark
147. Renaud 1962, 114 and Afb. 1, No 3. The type was probably also made at Savenel: see Terlinden/Crossley 1981, 193, Fig 5, 18
148. Oakley and Hunter 1979, Fig 132, No 87. Comparable examples, with minor variants, occur on London sites – see Hume 1957a, 107, No 7, datable to the late 15th century, and *id*. 1956a, 100, Nos 4c and d, with spherical body and 'small conical kick', these dating from *c* 1590–1630
149. Rademacher 1933, Pl 6; Tochtermann 1979, Figs 27–8

the base of the second is emphatically oval. It seems clear that these were bottles deliberately flattened in section. A comparable container has been miraculously preserved in the wreck of the *Mary Rose*, complete with its wickerwork covering and still stoppered with its cork. Comparable wickered bottles occur commonly in the still-life paintings of the seventeenth century, and are referred to in English sources. Thus, at Cockesden (Coxden) in 1610 there were 'In the Buttery' 'Item, 2 wicker bottles of glasse';[150] and in the Marton Hall Inventory of 1605, 'Upon the top of the .... Cupborde' was 'It. one great wanded bottle of glasse', while elsewhere there were '4 glasse bottles wanded'. That such wicker-covered bottles persisted in use well into the seventeenth century is demonstrated by William Dobson's painting of Prince Rupert and Colonel Murray persuading Colonel Russell to rejoin the Royalist cause during the Civil War.[151] This shows the self-same pairs of side-loops (to take a sling-strap) as appear on the *Mary Rose* flask. On this evidence it would seem that this type of bottle persisted in use from before 1550 to at least 1650. Other examples in England have been found in London,[152] at Canterbury (neck only)[153] and, unidentified, no doubt on many other sites. The question of their origin is unclear. The fact of their being 'wickered' suggests they were intended for travel, and in later times Chianti was transported, as it is today, in bottles protected by a jacket of woven rushes.

The true Florentine bottle, however, seems to have been round-based, without a kick, and therefore requires its rush jacket as much for stability as for protection. It is impossible to say whether a particular bottle has once had a wicker cover, except in the rare instances where some imprint survives; but the slightly flattened flask does seem to have invited this treatment, as the representations in some French seventeenth century still-life paintings suggest (cf Fig. 75).[154] Fragments of bottles with similarly finished necks also occur on French archaeological sites at Besançon[155] and Metz,[156] the Besançon context dating from the late sixteenth century, the Metz contexts from the late fifteenth to early sixteenth century and the sixteenth century more generally. Such evidence might seem to tilt the argument towards a French origin for these bottles, but not dissimilar neck-fragments have been found on English glass-making sites, at Knightons, Alfold (*c* 1550), Rosedale (late sixteenth-early seventeenth century), and Kimmeridge (early seventeenth century, after 1617).[157]

Somewhat akin to these flasks in the rough trimming of the neck is the fragment **109**, which in turn links in diameter and curvature with the neck/shoulder fragment **108**; the full green colour and the quality of the glass of both are very similar. Necks of this type have been found at Southampton,[158] Plymouth,[159] and Canterbury,[160] at the last-named site with body fragments having the flattened globular form associated with the 'betties' used for imported Florentine wine in the early years of the eighteenth century, a dating supported by the finds mentioned above and by body-fragments excavated at Exeter.[161] A still-life painting by the Hungarian-born artist Jakob Bogdani (active *c* 1670–1724), showing a typical wickered Chianti bottle with characteristic slender neck, may well have been painted before 1700; and a date before the turn of the century for these flasks may not seem out of the question, although the weight of the evidence suggests rather the early eighteenth century [but before 1688 at Nonsuch: MB].[162]

150. Halliwell 1854, 75
151. Charleston 1957, Pl 62a
152. Hume 1956a, 99, No 6, where it is suggested that these flasks may have been wickered
153. Charleston 1987, 245, Fig 95, No 28
154. eg L. Baugin (*c* 1630) in Barrelet 1953, Pl XLIII, a; S. Stoskopff (dated 1633) in Musées Municipaux, Strasbourg; J. Linard (dated 1627) Private Collection, Paris
155. Waton *et al* 1990, 149 ff, Figs 10–11, Nos 41–2, 48
156. *Ibid*. 241 ff, Fig 2, No 24; Bourger and Cabart 1990, 132, Fig 19, No 34
157. Wood 1982, Fig 22, Nos 46–9; Crossley and Aberg 1972, Fig 60, No 4; Crossley 1987, Fig 6, No 30
158. Charleston 1975, 225–6, Nos 1067–8
159. Charleston 1986b, Fig 16, No 60
160. Charleston 1987, Fig 98, No 65
161. Charleston 1984b, 278, Fig 154, G176, associated with pottery of *c* 1700–30
162. See also McNulty 1971, Figs 33–4

Square bottles (case-bottles)

At some time in the sixteenth century in England, whole-size moulds were brought into use for the blowing of bottles of polygonal or square section. No polygonal bottles have been found at Nonsuch, but small bottles of square section are not uncommon (**111–15**), made in many tones of green glass, from the mild mid-green of the mid-sixteenth century Wealden glass to a dark olive-green, singularly glossy, material which suggests a seventeenth- rather than a sixteenth-century date. Such bottles were normally made for carriage and storage in compartmented chests or caskets, the larger for wines or spirits, the smaller for medicaments or toilet preparations, and are often called 'case-bottles' (cf. p 220–3 above). Some were made to take pewter screw-caps ('vices' in the parlance of the age), some had simple rolled-over rims to receive cork or paper stoppers. Fragments of such bottles, with pewter screw-caps, found at Jamestown, in Virginia, show that these containers safely crossed the Atlantic in the seventeenth century; and James Howell, the author of *Epistolae Ho-elianae* and an informed observer of the glass scene, wrote to Sir Sackville Trevor in 1625: 'I send you my humble thanks for the curious Sea-chest of Glasses you pleas'd to bestow on me'. The inventory of Cockesden (Coxden), already cited for its possession of wickered bottles, also contained 'Item, a very fine seller (i.e. cellar) for wyne, with eight glasses' kept in the Lower Parlour (1610).[163] The bottles in such a 'cellar' would be of some size, and great square bottles of wine are to be seen being cooled and decanted in Dutch genre paintings.[164] The Nonsuch fragments, however, are with some exceptions (**115–17**, not drawn), relatively small, and presumably contained spirits, medicines, or perfumes. Parallels may be found at Basing House (terminal date 1645),[165] Sandal Castle in Yorkshire (Civil War period),[166] Newcastle-upon-Tyne ('sixteenth to late seventeenth century'),[167] Waltham Abbey, Essex (*c* 1640), [168] and Exeter (one deposited *c* 1660, but probably old when discarded; another with pottery deposited shortly after 1680).[169] Four base fragments found on the site of the Rosedale furnace and an almost complete bottle found at Hutton, both in the North Riding of Yorkshire, suggest that such bottles were made there (late sixteenth–early seventeenth century).[170] A comparable base fragment was found on the Sidney Wood furnace-site at Alfold in the Weald (late sixteenth–early seventeenth century) and a complete distorted flask at Brookland Farm, Wisborough Green (*c* 1570–1600);[171] and, in the era of coal-firing, examples were found in profusion on the furnace-site at Kimmeridge (*c* 1617–23).[172] Both these furnaces were probably manned by men of French origin, and it may well be that the techniques of making these case-bottles derived from the East French industry. Examples have been found on French sites.[173]

'Apothecary's vials'

Probably somewhere about the middle of the seventeenth century began the wholesale production of the 'apothecary's vial', a small green glass bottle developed from the more or less cylindrical flasks of the early seventeenth-century glasshouses, of which Kimmeridge is the most illuminating example, being limited in date (effectively 1617–23).[174] Unfortunately, very few of the examples found on the site can be reconstructed in their entirety, but enough neck fragments survive to show that the great majority were either tubular with a slight flare at the

163. Halliwell 1854, 74. 'Glasses' here implies 'bottles'
164. McNulty 1971, Figs 11 ff
165. Moorhouse 1971, 68, Fig 29, Nos 43, 46, 53
166. Moorhouse 1983, 226, Fig 101, Nos 60, 72
167. Ellison *et al* 1979, 173, Fig 7, No 45
168. Charleston 1969, 61, 81, Fig 31, Nos 5–8
169. Charleston 1984b, 271, 274, Figs 150, No 103 and 152, No 140
170. Crossley and Aberg 1972, 125–7, Fig 60, No 14; 144, Fig 63, No 48
171. Kenyon 1967, 182–3, Pl XVI, 3; 203–4, Pl XIV, 2
172. Crossley 1987, 343–8, 356, Fig 6, No 6
173. Foy and Sennequier 1989, 422 (F8), Pl V, 16
174. Crossley 1987, Fig 6, Nos 13–28; Fig 7, Nos 48–53

rim, or spread more gradually outwards towards the usually roughly finished lip (**119–20**, **125**, **127**). Similar formal tendencies are evident at Rosedale and Hutton,[175] and London finds of the first quarter of the seventeenth century illustrate these features.[176] Probably about the middle of the century, the trend sets in whereby the neck is reduced to a short cylinder, surmounted by a sharply out-turned horizontal lip, often quite wide (**132**); and the foot tends to be formed by a quite deep conical 'kick' (**122**, **124**, **130**) instead of the usually shallow dimple of the earlier flasks.[177] Unfortunately, this development cannot as yet be easily followed from a series of closely datable finds, and the limits of the dating are inevitably wide. The body-forms of the new type of vial range from a rough cylinder with rounded shoulder, by way of a shape tapering from base to shoulder, culminating in the tall 'steeple' bottle.[178] The ideal for which these forms seem to be striving, however, is the plain cylinder, drawn in sharply to a tubular neck surmounted by a horizonal pouring lip. This shape seems to have become standardised before the end of the seventeenth century and dominates the eighteenth. An illuminating picture may be obtained by comparing the cross-section of types found in the Civil War levels of Sandal Castle[179] with the range of shapes displayed by the stock of flasks from the Almshouse dispensary at Temple Balsall (Warwickshire), comprehensively jettisoned there owing to a change of regime, probably in 1740. The hospital received its first almswoman in 1679.[180]

The glass of the earlier vials is mainly the plain pale-green common to the glasshouses straddling 1600 in date; many variants of colour and weathering, however, are distinguishable. There is also occasionally a brilliant brown-toned glass (**121–2**)[181] which recurs elsewhere (**103**, **135**) and which by its distinct characteristics suggests that it may have been made abroad. There is evidence enough that 'viols' were imported into England in the seventeenth century. The Book of Rates of James I (1604) includes among imports 'Vialls the C' (i.e. hundred),[182] while Charles II's (1660) records 'viols the hundred'.[183] Contrariwise, English vials were exported. Mrs. Godfrey records '19 cases of glass vials' dispatched to Dublin in 1640.[184] It is, of course, impossible to determine exactly what the word 'vials' means in these contexts, but the 1640 reference sandwiches the vials between 'Apothecaries wares' and 'urinals', which suggests a generally medical function. Certainly, English pharmacists held large stocks of these small containers: thus, as early as 1551 the inventory of a physician's shop included 'nine dozen phials'.[185]

Albarello-shaped jars

The self-evident suitability of glass for pharmaceutical purposes was soon exploited in vessels other than bottles. In particular, the prototypical storage-jar in pottery – the waisted *albarello* – was soon copied in glass; and at Nonsuch occurred one of the best preserved of these vessels, permitting a complete reconstruction (**143**).[186] Such vessels could be closed with paper or parchment caps secured with string. Less well recognised as a shape occurring in glass is the larger vessel **144**, reconstructed from various fragments occurring in different parts of the same

175. Crossley and Aberg 1972, Fig 60, Nos 2, 3, 13; Fig 63, Nos 49–56
176. eg Hume 1956a, No 4
177. cf Crossley 1987, Fig 6, Nos 1–5 and Fig 7, Nos 33–40
178. Hume 1957a, 107, No 8
179. Moorhouse 1983, 226, Fig 101, Nos 59–68
180. Gooder 1984, 149, 151, 221–6, Figs 38–40
181. cf Gooder 1984, 221, Type 2 [The glasses (**121–2**, **103** and **135**) described here as 'briliant brown-toned glass' by R.J.C. are described in his catalogue entries as 'dark green' or 'olive green' but identified (as suggested here) as 'perhaps' or 'possibly' imported: MB]
182. Godfrey 1975, 248
183. Hume 1956a, 99, citing Buckley 1914
184. Godfrey 1975, 248
185. Hume 1956a, 101
186. Comparable fragments may be noted at Exeter (Charleston 1984b, Nos 111, 139); Sandal Castle (Moorhouse 1983, Fig 101, Nos 69–70, of Civil War date); Beeston Castle (unpublished)

site. Parallels for this shape, however, may be identified in France.[187] Vessels of a similar shape are seen on the shelves of a pharmacist in an engraving by Thomas Cecill ornamenting the frontispiece of a book published in London in 1634.[188] The first type of *albarello* is also frequently found in France,[189] and was no doubt a form readily assimilated in the French-influenced English glasshouses of the second half of the sixteenth century. At Rosedale (Yorkshire), fragments of ribbed bodies and bases were found which, although not so markedly waisted as the Nonsuch *albarello*, **143**, correspond closely with surviving jars of this general kind.[190] The Kimmeridge glasshouse too produced at least one *albarello* neck- and shoulder-fragment, and a number of base-fragments which might have belonged to jars of this sort.[191]

Distilling apparatus (Fig. 109)

The contents of these flasks and jars were often no doubt imported exotic substances, but the art of the pharmacist in the sixteenth and seventeenth centuries subsumes the activity of what today would be called pharmaceutical chemistry; and one of chemistry's main aids was the apparatus of distilling. This took the traditional form of the alembic, a piece of apparatus going back to the medieval Arabic civilisation from whose language its name was derived. The characteristic apparatus for distilling, seen in many seventeenth-century paintings and prints, is shown in Fig 109, the alembic for the actual condensation and drawing-off of the distillate, the cucurbit to contain the original liquid for distillation, and the receiver into which the distillate was discharged. This last could be of almost any shape, and an existing urinal or bottle could be pressed into service if the need arose; but the cucurbit had to be a vessel which was closely adapted to the alembic mounted on it, and its characteristic shape was a rough cylinder tapering slightly upwards, and round-based to enable it to sit snugly in the sand-bath which heated it. The Nonsuch finds included no identifiable fragments of an alembic, although it is not impossible that one or another of the base fragments identified as urinals (see **173** ff. below) actually formed the apex of an alembic, which, although sometimes finished with a pronounced knob on top,[192] occasionally had a simply broken-off pontil-scar.[193] Nonsuch produced no tapering tubes or the rims of S-section which normally betray the presence of an alembic. The palace did, however, throw up an almost complete cucurbit (**149**), which could naturally have been used for a secondary function of some kind.[194]

Distilling apparatus was certainly made in the English glasshouses, although evidence from excavated furnace-sites is slight. That such apparatus was made in the Weald of Sussex is indicated by an often-quoted verse from T. Charnock's *Breviary of Philosophy* (1557);[195] but more concrete evidence was found on the site of the sixteenth-century glasshouse of Knightons, near Alfold (Sussex), where unmistakable fragments of alembics were excavated.[196] The same site also produced a probable cucurbit rim.[197]

187. Foy and Sennequier 1989, 388, Fig 4, No 101 (from the Louvre); 403–4, No 46 (from Sedan), both datable 16th/17th century
188. Charleston 1984a, Pl 17,b
189. Waton *et al* 1990, 42 and Fig 10, Nos 75–8 (from Strasbourg, after 1525); 163, Fig 10, No 40 (from Besançon, 16th century)
190. Charleston 1972, Fig 60, Nos 5, 8, 9; cf. Charleston 1984a, Pl 18, d and Charleston 1987, Fig 95, Nos 40–1
191. Crossley 1987, Fig 6, No 29; Fig 7, Nos 41–2; and Fig 8, No 69
192. See eg Charleston 1984a, Pl 19, c
193. eg Moorhouse 1972, Figs 27 and 30; Biddle *et al* 1959, Fig 18, No 17
194. See the example from Chester in Charleston 1984a, Pl 19, b; cf. Moorhouse 1973, Fig 99, Nos 12–17; Ellison *et al* 1979, Fig 7, No 49 (alembic fragments also were found here)
195. See Thorpe 1929, 55
196. Wood 1982, 33, Nos 37–9
197. *Ibid*. Fig 22, No 41

Urinals

One of the commonest glass vessels in the Middle Ages was the urinal. Uroscopy was one of the most commonly practised methods of diagnosis available to the medieval physician, and the urinal was the symbol of the doctor-saints, Cosmas and Damian.[198] It was a common domestic article, kept – because, being round-based, it was unstable – in a cylindrical basketwork holder with a cover and carrying handle. When not in use, it hung by the handle, usually at the end of a piece of furniture; when the owner visited the doctor, he took his basket with him.[199] The urinal was a commonplace object, and some people had several. Edward I had two, and Henry VIII no less than seven,[200] while the domestic accounts of John, first Viscount Scudamore (1601–71), record the purchase of fourteen urinals, in pairs, in 1632.[201] It is perhaps small wonder that so many examples have been found in English excavations.

The doctor professed to being able to judge minute differences in colour, texture, sediment, and smell,[202] and a seventeenth-century print in the British Museum portrays a doctor named Morton with his urinal by his side and book in hand, accompanied by a verse '(You) doe cast our Water by your Almanack/Physick inventions have giv'n many Name/But this of Urine gives our Morton Fame'.[203] Nevertheless, some scepticism as to the efficacy of uroscopy seems already to have shown itself much earlier, for Andrew Boorde (?1490–1549) 'Trusted not the single witness of the water if better testimony be had'".[204] Despite these doubts, William Vaughan, as late as 1602, recommends in his *Naturall & Artificial Directions for Health*: 'In the morning make water in a urinal: that by looking on it, you may ghesse some what of the state of your body'. Uroscopy as a diagnostic method lasted well into the eighteenth century,[205] and no doubt later.

From an early date the standard form of the urinal comprised a more or less spherical body connected by a tubular neck to a wide spreading lip, usually with a slightly upturned rim. The excavations at Winchester produced an example in a fourteenth century context[206] and the type seems to have continued from that time right into the seventeenth century, and possibly later. The probability of this fourteenth-century date is confirmed by finds of closely comparable examples of thirteenth–fourteenth century dates in France.[207] Most of the Nonsuch urinals were probably of this form (eg. **150**).

A variation on this shape was provided by a piriform vessel where the tapering neck came to its narrowest point directly below the spreading lip. The best-preserved example was found in London in a late fifteenth–early sixteenth century context,[208] but graphic illustrations provide further evidence that the form was current in the late-medieval period.[209] At least one Nonsuch example seems to belong in this category (**157**, cf.**158**). Each of the preceding types of urinal was made as thin as possible, to facilitate uroscopy.

Yet another type of urinal, however, has been identified of recent years,[210] differing from the two previous types in being of thick glass and therefore impracticable for uroscopy. This type may perhaps represent the vessel referred to as a 'jordan' in medieval texts. More amorphous than the preceding types, it is bag-shaped with wider neck spreading at the top into a funnel-shaped orifice in place of the broad horizontal rim. The shape is widely attested in medieval

198. Zigrosser 1959, 54–5
199. *Ibid*. 26–7, No 61
200. Charleston 1984a, 33
201. Morgan 1950, 182
202. Zigrosser 1959, 54
203. B.M. 1868, 3–28, 718
204. *cit*. Woodfield 1981, 108
205. Picture by J.C. Fielder (1697–1765), ill. Antall 1972, Pl viii
206. Charleston 1990, 940, No 3279
207. Waton *et al* 1990, 123–36, Fig 7, No 29; Foy and Sennequier 1989, No 370 (early 13th century).
208. Hume 1957a, 106, Fig 2
209. See eg Zigrosser 1959, 22, 66, No 47, and probably 47, No 127
210. Charleston 1985, 139–141

illustrations.[211] It may perhaps have rather had the function of the modern chamber-pot than of a medical accessory. Nonsuch turned up several neck and rim fragments of these thick glasses (**171–2**). It is usually impossible, however, to distinguish the bases of this type from those of the preceding two categories (see **173** ff.)

v. BEAKERS

The first production of drinking-glasses in English glasshouses seems to belong to the second half of the sixteenth century. The comment by William Harrison in his *Description of England* (1577), quoted above (p 200), refers to the new-fangled taste for glass among the common people. The novelty of this concept is hinted at in the wording of the royal proclamation of 1615 forbidding the use of wood in the melting of glass: '... it were the lesse evill to reduce the times unto the ancient manner of drinking in stone [i.e. stoneware jugs] .... then to suffer the losse of such treasure [i.e. the nation's stock of timber] .... '.[212] Nonsuch has its fragments of such native-made glasses, but also others which contributed to the range of models used by English glass-makers. Most significant among these is a tall slender beaker (**181**) with a pedestal foot made by the pushed-in technique, body drawn in slightly at the rim, and decoration of close mould-blown ribbing twisted in an anti-clockwise direction. The slightly greenish-grey, almost colourless, metal might tempt identification as some form of *cristallo*, but the weathering is not of a type usually found on Venetian-style glasses, and the pushed-in foot is a characteristic feature of glasses in the Bohemian/German tradition. Such glasses seem to be descendants of the very tall slender beakers characteristic of Bohemian glass-making of the fourteenth century,[213] with the technical difference that the feet of these beakers were widened by the application of a spiral thread tooled smooth, probably to give stability to these exceptionally tall glasses, sometimes over 500mm in height.[214] These astonishing beakers were normally decorated with dozens of beads of self-coloured glass, applied haphazard in a field bounded above the foot and below the rim with a turn or two of applied thread: occasionally, however, the decoration consisted of parallel threads applied diagonally and notched.[215] Sometimes the cylindrical body is drawn in towards the rim,[216] and this characteristic is often found in shorter beakers of various types excavated in Bohemia and dating from the same period (late fourteenth-early fifteenth century).[217] The tradition of the tall drinking-beaker with incurved rim is continued in the later fifteenth century and into the sixteenth century in Central Germany. These glasses are of light-green material in place of the greenish-colourless metal of the tall Bohemian beakers, and are usually decorated with a few turns of applied thread, sometimes notched. Sometimes the glasses, starting very narrow above the foot, spread rapidly to a maximum diameter at about three-quarters of the bowl-height, being then drawn in almost as sharply to the rim (*Keulengläser* or *Club Glasses*);[218] such glasses are to be seen in use in drawings by both Dürer and Hans Baldung – in the latter with four bands of applied horizontal threads, in the manner of a *Passglas*; in the former (which shows explicitly the tall pushed-in foot) with an alternation of zones of diagonal ribbing (?), applied prunts, and horizontal threading. The Dürer drawing is datable to about 1502–4, the Baldung to about 1510.[219] Glasses of these tall slender proportions

211. See sources cited *ibid*. 141
212. Charleston 1984a, 75, 86–7
213. Hejdova 1975, 146 (Group II, 2); Baumgartner and Krüger 1988, Nos 367–71
214. Baumgartner and Krüger 1988, Nos 485–7
215. Hejdova 1975, Fig 14 (Group III, 5); Baumgartner and Krüger 1988, No 371
216. e.g. Hejdova 1975, Fig 14 (Group III, 6a)
217. *Ibid*. Fig 14
218. Baumgartner and Krüger 1988, Nos 485–7
219. Rademacher 1933, Figs 13–14

are often also referred to generically as *Stangengläser* ('pole-glasses') and seem to run parallel with a second type in which the cylindrical form has been turned into a polygon by the insertion of a ribbed clay tool of star-section with the appropriate number of points (usually eight).[220] These glasses (called also *Spechter*)[221] are usually decorated with close spiral mould-blown ribbing and spirally or horizontally applied notched threads, often of blue glass. All these glasses share the pushed-in foot and tend to be made in greenish-colourless or pale-green metal[222] contrasting with the deep blue-green glass of the contemporary prunted *Stangengläser* current in South Western Germany and perhaps Switzerland.[223] At Höxter, some 45 kilometers to the North of Kassel, but in the territory of Westphalia (former Brunswick), excavation has brought to light in one place the fragments of an estimated 20–30 of the octagonal *Passgläser* or *Spechter*, mostly decorated with diagonal mould-blown ribbing and applied horizontal (sometimes notched) threading; the find also included the remains of some 10–15 *Keulengläser* and tall narrow beakers, mostly undecorated and of less good material than the octagonal *Passgläser*. The circumstances of the find suggest a date in the first half of the sixteenth century.[224] Although the *Keulengläser* and tall narrow beakers at Höxter were mainly undecorated, fragments of *Keulengläser* with mould-blown decoration are known.[225] Apart from the excavated finds, a print by Hans Weiditz of 1533 (perhaps significantly, published in Strasbourg)[226] clearly shows a glass of *Keulenglas* form evidently decorated by 'wrythen' ribbing which continues over the foot, thus unambiguously indicating all-over mould-blowing on a one-piece glass. The accompanying caption reads 'Byer' (i.e. 'Bier') and other evidence suggests that the shape was used both for wine- and beer-drinking, probably with variations in capacity.[227]

The closest parallels to the Nonsuch beaker are found among glasses excavated in the city of Göttingen (in Hesse), where a *Stangenglas* was found which exactly corresponds in shape to our glass, together with rim-fragments of two similar glasses, all with close mould-blown ribbing. At 330mm the more complete glass is almost half as big again as the Nonsuch beaker (for beer perhaps, rather than wine); the mould-blown ribbing is in the opposite sense, but one of the Göttingen rim-fragments also shows ribbing twisted anti-clockwise; all are of a similar light-green glass material. The most complete glass was found in a latrine-pit which dates from a slightly later period than the pit containing the rim fragments, this being placed in the first half of the fifteenth century.[228] Other examples have been found in Brunswick, Lübeck, and Kiel, and this general distribution suggests centres of production mainly in central and northern parts of Germany. Finds on glasshouse-sites at Grossalmerode (nr. Kassel, Hesse) and Eichsfeld (Thuringia) strengthen this suggestion.[229] Numerous finds of these glasses in Strasbourg, however, indicate that there may have been a production of *Keulengläser* also further to the west. These Strasbourg finds seem to indicate a distinct evolution from the earlier to the latter part of the sixteenth century, the bulge of the body growing ever more pronounced and the foot growing progressively taller, the method of construction changing from the 'pushed-in' one-piece technique to the application of a tall foot made from a second paraison.[230] None of these glasses, however, has a close affinity with the Nonsuch beaker, and an origin in Central Germany and a

220. Schlüter 1978, 235–41
221. Schmidt 1922, 148–9; for a contrary view, see Tait 1967, 106–8
222. e.g. Baumgartner and Krüger 1988, Nos 507–8, dated to the first half of the 16th century
223. eg *ibid*. Nos 492–9; Rademacher 1933, Pls 50–5
224. Stephan 1972, 165–6
225. Baumgartner and Krüger 1988, No 487, b; Waton *et al* 1990, Fig 18, Nos 154–5, and 82, Fig 3, Nos 17–23 (all Strasbourg finds)
226. Diederichs 1908, 185, Fig 614
227. Baumgartner and Krüger 1988, 386
228. Schütte 1979, 106–7, 111, Figs. 5 and 6, 1–2
229. Baumgartner and Krüger 1988, 286
230. Waton *et al* 1990, 51 and Fig 18, Nos 150–5; contrast ibid. 76–7 and Figs 3–4

date in the first half or middle of the sixteenth century seems more likely for this striking and elegant glass. It should not be forgotten, however, that the taste for tall slender drinking-glasses continued into the seventeenth century, as finds from a fountain-cistern at Breisach-am-Rhein (nr. Freiburg) suggest.[231] This impression is confirmed by occasional still-life paintings, such as a breakfast-piece by Gerrit Heda (1642–before 1702) in the National Gallery, showing a prunted *Stangenglas* which would on its own showing normally be accorded a sixteenth-century date;[232] or a tall narrow polygonal beaker of the type described above (p 230) in a still-life by Gerrit van Vucht (1610–1697).[233] Tall slender polygonal beakers of this type have been made in Germany and the Netherlands in the first half of the seventeenth century and more than thirty depictions on paintings dating between 1643 and 1661 are known.[233a]

The beaker with pushed-in foot assumed many forms in the Teutonic lands, as has been made clear in the foregoing pages. Among them was a cylindrical beaker of greater diameter than the *Stangenglas*, usually of pale- green glass decorated with trailed threads, sometimes in spirals, sometimes in horizontal bands, to mark the prescribed draughts to be drunk from the *Passglas*.[234] This model seems to have been taken over by the English glassmakers, substituting the applied thread decoration by mould-blowing. These glasses may have a uniformly cylindrical shape, or may draw in slightly towards the rim in the manner of a *Keulenglas*; more rarely, they may have a slightly spreading lip (**187**).[235] The type is specified by Sir Hugh Platt in his *Jewell House of Art and Nature* (1594): 'Take a Beer glass of six or eight inches in height and being of one equal bigness from the bottom to the top'. One almost intact example of this type has been preserved.[236] The foot is always made in the same way, and foot fragments (**185–6**) are the most regularly found remains of these glasses, recurring in great variety as a kind of type-fossil on the English glass-making sites of the later sixteenth-early seventeenth century.[237] Usually plain, these bases occasionally show traces of mould-blowing (cf. **183** here). Unfortunately, only one more or less completely reconstructable beaker is known from a furnace-site.[238]

Among the Nonsuch finds there are several beaker-fragments about which doubt must remain as to whether they are imports or English made (**182–4**). The greyish-green, almost colourless, glass shows an affinity with that of the almost certainly German tall *Spechter* **181**. It is not beyond the bounds of possibility, however, that this more colour-free glass was made at one or other of the more sophisticated English houses making potash-lime glass of high quality (e.g. London?). Reticulated and "bird's-eye" mould-blown patterns are certainly found on English furnace-sites.[239] A second type of beaker is uniquely represented by Nonsuch **191**. Made by the same pushed-in technique, it differs from those described above in its much shorter form. It echoes in its shape the numerous replicas made after the First World War by Messrs James Powell of the Whitefriars glasshouse, basing themselves on the fragments found at the Woodchester glasshouse.[240] The Woodchester find, however, provided no completely reconstructable glass, and the reproductions involved some guesswork. The shape is one which finds echoes on the Continent of Europe. Recent excavations in France have turned up many glasses

231. Biegel 1985, 16–20, Fig 15. 3 and 5
232. cf eg Isings 1966, Pl 35
233. Grimm 1984, Fig on 184, Cat. No 25 (355)
233a. Henkes 1994, 157–61
234. Ohm 1973, Nos 250–4; Heinemeyer 1966, Nos 120–3
235. Crossley and Aberg 1972, Fig 61, Nos 23, 26; Fig 64, Nos 65 67, 69, 72, 74 etc
236. Charleston 1984a, Pl 17, c
237. Winbolt 1933, 39 (Sidney Wood, Sussex); Kenyon 1967, 183, 191 (Wisborough Green); 198 (Vann Copse); 204, Pls XIV, XVI (Sidney Wood); Pl XVII (Kirdford); Wood 1982, Fig 18, No 28 (Knightons Alfold); Daniels 1950, Pls VII, IX, Nos 76, 82 (Woodchester); Crossley and Aberg 1972, Fig 60, Nos 16–17 (Rosedale); Figs. 64, No 64; 66, Nos 93–9, 102–7 (Hutton); Hogan 1970, Fig 2 (Denton); R. Hurst 1970, Fig 2 (Bickerstaffe); Crossley 1987, Fig 7, Nos 56–63 (Kimmeridge)
238. Crossley and Aberg 1972, Fig 64, No 64 (Hutton)
239. eg Woodchester (Daniels 1950, Pl VI, No 44); Denton (Hogan 1970, Fig 1); Bickerstaffe (R. Hurst 1970, Fig 1); Rosedale and Hutton (Crossley and Aberg 1972, Fig 6, Nos 64–5); Kimmeridge (Crossley 1987, Figs 8, 10)
240. Daniels 1950, Pls I–III; Powell 1923, 21, 24, Figs 20–22

of this shape in sixteenth-century contexts, although these glasses are mostly of almost colourless glass of varying nuances of yellow, grey, blue, etc.[241] Their sixteenth-century contexts are consonant with the early sixteenth-century dating of a coloured print preserved in the Bibliothèque de l'Arsenal in Paris, showing an itinerant glass vendor. He holds a glass of this general type in his hand and others are to be seen in his baskets.[242] A number of the excavated glasses are embellished with mould-blown ribbing. In Belgium a number of intact glasses of this type have been preserved in Church Treasuries and elsewhere.[243] These are predominantly of green-toned or greyish "verre de fougère" and some show mould-blown decoration. They are considered to date from the sixteenth century, mainly the first half of that century, and the genre is thought to have died out before 1600.[244] As with the tall cylindrical beakers, this type may well have been copied in England, and may be represented among the many excavated bases and funnel-shaped bowl-fragments which cannot be fitted into a definitively reconstructed form.

The beakers just described, with their pushed-in bases, belong to a Central and Northern European forest-glass tradition. Another type, of which only one example was found at Nonsuch (**192**) derives from the Venetian tradition transposed into the potash-lime glass of the forest glasshouse workers. It consists of beakers, sometimes cylindrical, sometimes with flaring rim, the foot formed by a low 'kick' and finished with an applied trail laid about the basal angle and usually notched, either with the edge of the glassman's tongs (*pucellas*) or with a special toothed tool like a pastry-cook's wheel (*rigaree*).[245] These beakers may be plain, but are more usually decorated, sometimes in the 'chequered spiral trail' technique (in which a spiral trail is laid externally from the centre of the base to a point below the rim, being then forced into a vertically ribbed mould which indents the trail)[246] sometimes by applied motifs of various kinds, or by mould-blowing with various patterns. The form (the flared version perhaps originally derived from silver) is equally found in Venetian and *façon de Venise* crystal,[247] and was certainly popular in England in both 'green' and crystal variants.[248] The milled feet of these beakers, and sometimes the flared rims, are found on a number of English glass-making sites,[249] sometimes with the broken spiral trail,[250] sometimes with mould-blown decoration,[251] sometimes plain. This is evidence enough that, although attempts have been made to attribute the 'chequered spiral trail' glasses more or less *en bloc* to the South Netherlands, the technique was in fact widely practised elsewhere.[252] In the Netherlands two sites have been excavated which provide evidence that beakers of the type under discussion – that is, those with mould-blown decoration in addition to the milled foot-rim – were made there. The first is Dion-le-Val, the second Savenel (see p 231 and n. 233a, above). At Dion-le-Val, on a glasshouse site provisionally dated to the first half of the sixteenth century,[253] thirty-five beaker-bases with milled cordons were found. Of these a considerable number were ornamented with mould-blown patterns, either vertical

241. e.g. Waton *et al* 1990, 54, Fig 17, No 149 (Strasbourg); 164, Fig 8, Nos 18, 26 (Besançon: cf Nos 19–25); 226, Fig 2, Nos 15–17 (Metz)
242. Barrelet 1953, Pl XXXII
243. Chambon 1955, 310–11, Pl V, Nos 19–21; Chambon and Courtroy 1951, 117–18, Pl VI, Nos 18–21
244. Chambon and Courtroy 1951, 119
245. For a late-17th or early 18th-century example of this implement, see Noreen and Graebe 1964, 82 (from Henrikstorp glasshouse, Skåne, Sweden)
246. Tait 1967, *passim*
247. eg Tait 1967, Figs 1, 4–10; Chambon 1955, Pl IX, Nos 33–4
248. Oswald and Phillips 1949, 4–6, Nos XV and XVI; Charleston 1986b, Figs 9–10, 15
249. Wood 1982, 24, No 12 (Knightons); Crossley and Aberg 1972, 150, Fig 67, Nos 111–12 (Hutton); Daniels 1950, Pl IX, Nos 77–9 (Woodchester); Bridgewater 1963, Fig 4, No 15 (St. Weonard's); Crossley 1987, Fig 8, Nos 66–7 (Kimmeridge); Vince 1977, Fig 2, Nos 12–15 (Newent); R. Hurst 1970, Figs 1–2 (Bickerstaffe)
250. eg Crossley and Aberg 1972, Fig 60, Nos 18–20, 22 (Rosedale); Vince 1977, Fig 2, No 14 (Newent)
251. eg Daniels 1950, Pl IX, No 79 (Woodchester)
252. Cf Waton *et al* 1990, 123ff, Fig 1, Nos 2–4 (glasshouse in the Argonne)
253. Chambon 1961, 46. It seems likely that the site is later than suggested there

ribbing (sometimes 'wrythen'), or a diaper of raised lozenges.[254] At Savenel, where work appears to have been in progress in the early seventeenth century, far fewer finds were made, but these included two bases of the kind which concern us here. One was decorated with a diaper of relief lozenges, the other apparently with ribbing; wall- and rim-fragments from the same site confirm the use of these moulds.[255]

The Nonsuch fragment (**192**) is decorated with a mould-blown design which appears on the base as a series of angular "petals" radiating from the central point (now obscured by the pontil-mark); the raised lines which delineate these petals divide at their extremities and rejoin to form a series of enclosed lozenges. Unfortunately, no trace of the body survives, but it is reasonable to suppose that the lozenge design continued in a trellis over the body, since this is one of the commonest of mould-blown motifs. A base-fragment of a beaker of the type under discussion, showing a version of this design, was found at Woodchester.[256]

Beakers of this general type (but with the basal thread more often left plain) have been found in some numbers in Eastern France, and there the formula of a diaper-pattern rising from a central rosette under the foot is commonplace,[257] although the decoration is most frequently a diaper of raised bosses.[258] The dating of these glasses in France ranges from the second half of the sixteenth century into the seventeenth, and this is consistent with the English evidence (see n. 249). Roughly datable examples from this country include base-fragments, one from seventeenth-century layers in a farmyard at Denny Abbey;[259] several base- and wall-fragments (with mould-blown ribbing and diaper-patterns) at Canterbury in a mid-seventeenth century context;[260] a base (with abnormally high 'kick', at Exeter associated with pottery of a date *c.* 1556–65,[261] the glass here probably later than the pottery; a base at Newcastle, datable by context to the first half of the seventeenth century.[262] A similar picture is to be seen in the Netherlands,[263] where, apart from the archaeological finds, the still-life paintings which show comparable cylindrical beakers of these proportions and general style usually date from the first half of the seventeenth century – e.g. Hendrick Terbruggen's *Jacob und Laban* of 1627 (National Gallery, London); a flower-piece by Peter Binoit (d.1632) in the Hallsborough Gallery in 1968; another by Alexander Adriaenssen (1587–1661) dated 1635, in the Leonard Koetser Gallery in 1971; another by Jacob van Hulsdonck (1582–1647), in the Terry-Engell Gallery in 1973; a breakfast-piece by Nicolaes Gillis, of Haarlem, who signed paintings between 1601 and 1629;[264] another by Pieter Claesz, dated 1636, in the Boymans Museum, Rotterdam;[265] another by Willem Claesz. Heda, perhaps datable to about 1635;[266] and another by AE van Rabel, in the Museum of Fine Arts, Ghent, dated 1653.[267] This list includes both the purely cylindrical beakers and those with turned-out lip, both types having the applied basal thread; a wide range of decorative treatments is used on both. The gradual disappearance of the relatively tall cylindrical beaker is perhaps best documented in the famous Greene manuscript (see pp 210, 215–6, above). Here, amidst orders for literally hundreds of dozens of drinking-glasses comes, on 10th February 1670/71, an entry for two dozen 'beakers', illustrated in the drawings by an unmistakable glass with out-turned lip and basal thread, inscribed '2 doz made very thick and strong'.[268] On the

254. *Ibid*. 41–2, Figs 3–4
255. Terlinden and Crossley 1981, 189–91, Fig 5, Nos 2–5, 7 (SLI-4, 8–9, 12–13)
256. Daniels 1950, Pl IX, No 79
257. It is also found in Germany: Tochtermann 1979, Fig 22
258. Waton *et al* 1990, 47, Figs 12–14 (Strasbourg); 77, Fig 5, Nos 37–40 (Strasbourg); 86, Fig 3, Nos 14–16 (Strasbourg); 123–33, Fig 1, Nos 2–4 (Chatrices, Marne); 195, Fig 11 (Montbéliard, first quarter of the 17th century)
259. Charleston 1980c, 210–11, Fig 24, Nos 30–1
260. Charleston 1987, 239–41, Fig 93, Nos 12–12c
261. Charleston 1984b, 269, 271, Fig 148, No 72
262. Ellison *et al* 1979, 173, Fig 42, b
263. eg Ruempol and van Dongen 1991, 192–3; J.M. Baart in Grimm 1984, 34–47 and 335–8
264. Bergström 1956, 100, Fig 91
265. *Ibid*. 114–23, Fig 106
266. *Ibid* 123–34, Fig 110
267. *Ibid*. 139, 142, Fig 123
268. B.M. Sloane MS. 857, fol. 33, *recto* (=Hartshorne (1897), 444–6)

same sheet, ironically enough, is an order for three times that number of 'Brandij tumblers', the type of glass which was to supplant the 'beaker'.[269]

This new type of tumbler-like glass seems to be entirely a product of the seventeenth century, although it is a timeless form and has forerunners in both Venetian and 'forest-glass' tumblers of the early sixteenth century. There was nothing to it but a shortish cylindrical body and a flat, or flat-seeming, base; in reality, many had a low kick. There seem to have been two predominant shapes, one taller in relation to its diameter, the other virtually square in its proportions. Unfortunately, none of the Nonsuch examples (**193–5**) is sufficiently preserved to show its complete shape. **193** however, with its kicked base, raises the suspicion that it may have risen above the square proportions of the others. All are decorated with mould-blown designs, and this feature agrees well with the details given in Greene's papers. There the beakers, if not entirely plain, are shown as having vertical or horizontal ribbing, or a diaper of lozenges. Furthermore, they came in different sizes, the largest for beer, a probably slightly smaller size for French red wine, smaller still for 'sack' (sherry), and smallest of all for 'brandij or strong waters'. They also came (plain) in nests of twelve or of six stacking one inside the next, 'well fitted'. Absolute measures are unfortunately not given, but such tumblers are not infrequently seen in use in Dutch still-life painting. Most show the large size, some clearly containing beer, for the foam is visible on the surface: these include a Pieter Claesz breakfast-piece date 1636 in the Leonard Koetser Gallery, London (1966); a Willem Claesz. Heda (1594–?1680) breakfast-piece dated 1634 in the Boymans Museum, Rotterdam; another by the same artist dated 1635, in the Rijksmuseum, Amsterdam; another in the possession of Richard Greene Ltd., London (1968); an interior still-life dated 1660, by C. Paudiss, in the Hague; a breakfast-piece by Jan van der Velde (1619/20–1660+) in the Broad Gallery, London (1965). Less definitely beer glasses, but of the requisite size, occur in two further 'breakfast-pieces', one by Jan Davidsz. de Heem, dated 1660, in the possession of John Mitchell, London (1954), the other by Pieter Claesz (1596–1661), in the Mauritshuis, the Hague; perhaps purely by coincidence, both these glasses have mould-blown decoration, the former horizontal ribbing, the latter a diaper of raised bosses (?lozenges). The second of these glasses is emphatically taller than it is wide, and the same is probably true of the first. It is unclear whether any significance is to be attached to this coincidence.

The evidence of contemporary paintings, supplemented by that provided in the Greene manuscript is borne out by excavated material. A beaker with horizontal mould-blown ribbing matching that shown in the Jan Davidsz. de Heem picture cited above, and measuring some 80mm at the rim, was excavated in the seventeenth–century building rubble in Canterbury;[270] and the base/wall fragment of a beaker with mould-blown decoration of apparently alternating vertical ribbing and projecting bosses, was found at Newcastle in a probably post-Civil War context, together with a base fragment of a plain beaker some 100mm in diameter.[271] The scheme of alternating ribs and bosses of the first of these glasses seems to be favoured in England, an intact example occurring in a find in Cannon Street, London.[272] Lastly, it remains to cite a series of beakers excavated in an important find of pottery and glass from a deposit in Nottingham, containing material mostly of the third quarter of the seventeenth century.[273] This rich find yielded four beakers of the type under discussion, one strictly cylindrical, three curving in varying degrees in towards the foot; their average rim-diameter measuring 90mm; the cylindrical beaker was decorated with horizontal mould-blown ribbing (like the Canterbury example cited above) and one of the others with a diaper of raised bosses, irregularly formed

269. *Ibid*
270. Charleston 1987, 242, Fig 94, No 17
271. Ellison *et al* 1979, 174, Fig 8, Nos 58–9
272. Charleston 1984a, 105, Pl 21, c
273. Alvey 1973, 53–72

but in many instances of drop-shape.[274] It is of particular interest that the greater number of the accompanying stemmed drinking-glasses in the Nottingham deposit were of types illustrated in John Greene's drawings.[275] The diameters of these English-found beakers (80–100mm) suggest that they were all beer-glasses (or possibly red-wine glasses) rather than sherry or spirit tumblers. The diameter of the Nonsuch glasses, however, ranges between 55 and 70mm, dimensions more compatible with Greene's 'brandij tumblers'.

The dating evidence of the English finds is interestingly reflected in French excavations. A small latrine pit excavated at Strasbourg contained pottery and glass identified as of seventeenth-century, and probably mid seventeenth-century, date.[276] Among the glass were tall cylindrical beakers with mould-blown diaper designs of raised drop-shapes or lozenges and with applied thread foot-rims (not indented), of a type for which a date in the earlier part of the century has been suggested here (p 233). These occurred side by side with low tumblers, one of which was decorated with parallel horizontal lines (indented), and two with diaper-designs of lozenges or tears in relief, all of the type under discussion. With them were found beakers of the same proportions but mounted on three bun-feet and decorated with a calyx of vertical ribs and then tooled, in one instance with NDW ('nipped diamond-ways') decoration – well-recognised characteristics datable mainly to the last quarter of the seventeenth century. Since the tall beaker with ring-foot can certainly be traced back into the sixteenth century, the 'brandij tumblers' are firmly documented *c* 1670, and the bun-feet beakers seem to belong essentially to the last quarter of the seventeenth century, we seem to have here an overlapping series of beaker types exemplifying the changing tastes of the second and third quarters of the seventeenth century.

vi. MISCELLANEOUS

A small fragment of the wall of a vessel, decorated with one thick and one thin encircling thread, might seem too insignificant an item to merit attention (**196**), but it is evidently of English "forest" material, and is unusual in the massive character of the applied decorative cordon. This does not fit well with any of the beaker types already discussed. It does, however, have a close affinity with one type of glass found in England which seems distinctive. The most common example is to be found in the "Gracechurch Street hoard" (see p 208, above),[277] where it was found in the company of a second fragment of the same type. It was correctly pointed out at the time of its publication that these fragmentary glasses had affinities with others found on English glass-making sites. The shape concerned was the forest glass-maker's answer to the Venetian goblet, but whereas the latter was a three-piece glass (bowl, stem and foot), the former exploited with consummate skill the one-piece technique, with pushed-in base, which produced the tall beakers already described (cf. p 231). The deeply pushed-in base was tooled into a tall pedestal stem, sometimes even with the added flourish of a knop.[278] These goblets are found on a number of English glass-making sites;[279] but the variety with the applied tooled threads of the Nonsuch fragment seems only to have occurred so far at Woodchester.[280] Like the Nonsuch beaker **191**, this type has its cousins on the Continent.[281]

274. *Ibid*. 69–70, Fig 10, Nos 16–19
275. *Ibid*. 10, Fig 10, Nos 1–13
276. Waton *et al* 1990, 85–91, Fig 3, Nos 14–17, 19–23
277. Oswald and Phillips 1949, 30–1, No II
278. See eg Hogan 1970, Fig 2, d, with mould-blown ribbing (Denton, early 17th century)
279. eg Rosedale and Hutton (Crossley and Aberg 1972, Fig 61, No 36; Fig 66, Nos 100–1 and Fig 67, No 122); Newent (Vince 1977, Fig 2, No 18); Kimmeridge (Crossley 1987, Fig 8, Nos 83–4)
280. Fragments in the Gloucester Museum (unpublished)
281. eg Waton *et al* 1990, 110, Fig 4, Nos 22, 32 (Nevers); 136, Fig 3, No 55 (Chatrices, "Pologne" furnace); 219, Fig 1, No 21 (Poligny, Jura); cf Barrelet 1953, Pls XXXII–XXXIII

The fragmentary neck of a handled jug or measure (**197**) appears to be unique in this country, although its material is entirely acceptable as English. The rim has no pouring lip, and this feature is unusual for a vessel with a handle. There are, however, a number of vessels with flaring neck and no handle which appear to be for the service of wine, in the manner of the decanter in the famous picture by Velazquez of an *Old woman frying Eggs*, now in the National Gallery of Scotland.[282] Here the neck has a less sharply flared formation, but a ribbed neck/shoulder fragment found in Nottingham[283] in a context of about the third quarter of the seventeenth century is closely akin. A much earlier French vessel in plain green glass contains the feature of a spreading lip and a side-handle;[284] and later French green flasks with flaring lip but no side-handle are identified as measures for oil.[285] No doubt the Nonsuch 'jug' served some such practical function. Its vertical ribbing is commonplace in English-made glasses of the late sixteenth and seventeenth centuries, and the facture of the handle can be roughly matched on English glass-making sites.[286] It is just possible that this vessel had a tubular pouring-spout springing from the widest part of the body.

The flat-based dish **198** is the exact counterpart of the *cristallo* dishes **50–1** (see discussion, p 211) and it is not impossible that it is itself a soda-glass, although the distinct greenish tinge mitigates against this supposition.

The fragmentary vessels **199–200** suggest purely utilitarian functions. The exceptionally large(?) bowl **199** (diam. 370 mm) may perhaps be the forerunner of the great milk-pans of the eighteenth-nineteenth centuries, used for setting cream in the dairy. No early parallels for these dishes can be cited. The smaller, but perhaps deeper, vessel **200** has a number of parallels, but none throw clear light on its function. A somewhat larger vessel (diam. 160 mm) with flat base and vertical sides turning out at the rim has been identified in Germany as a milk-pan, but is probably of nineteenth-century date.[287] A bowl of similar form and size, but apparently of *cristallo* glass, was found at Oatlands in a context datable to the first half of the seventeenth century;[288] and a comparable bowl, but with more sloping sides and a folded rim, and of thicker glass, is in the Museum of London, having been found in Rosemary Lane.[289]

vii. THE CHEMICAL COMPOSITION OF A FRAGMENT OF NONSUCH GLASS

Julian Henderson

The sample and analytical technique

The pale grey nearly colourless vessel sampled was a tall drinking glass (**181**). Its weathering characteristics are flaking, silvery and iridescent which might suggest that, rather than being purely potassium-rich, the glass had a soda composition.

A minute fragment (less than 1mm) of the glass vessel was mounted in a block of epoxy resin and polished down to 0.5um grade diamond paste. The glass sample was analysed using electron-probe microanalysis. This technique allows one to analyse a small sample such as this several times and to express the result as an average of the analyses. In the cases where multiple

282. Frothingham 1941, Fig 58 (detail)
283. Alvey 1973, Fig 10, No 15
284. Barrelet 1953, Pl XXVIII, a, dated 15th century
285. *Ibid*. Pl XLVII; cf Klesse 1963, No 150; Rückert 1982, Nos 68–9
286. See eg Wood 1982, 24, Fig 11, No 13 (Knightons); Crossley 1987, Fig 8, Nos 86–8 (Kimmeridge); Kenyon 1967, Pl XIII, 2 (Chiddingfold)
287. Wendt 1977, Fig 1
288. Cook and Poulton forthcoming
289. J. Charleston 1968, No 131

samples have been taken and analysed it has been found that the analysis of a single fragment was representative. The system used was a Cambridge mark 9 (M9) electron microprobe with two wavelength-dispersive spectrometers and was run at 20kV and 40nA. A ZAF program was used for correcting the intensities obtained.

The results are set out in Table 15. This is an average of three analyses on the sample removed from the vessel and expressed as weight percent of the element oxide. These results show that the glass is essentially of a high calcium oxide-silica composition with mixed alkalis but at apparently low levels. The low total (96.4%) for the composition of the glass probably indicates that the glass composition obtained is slightly weathered, and one might, as a result, expect to find slightly higher alkali contents than those detected, though, nevertheless, the alkalis are low. The other characteristics of interest are relatively high magnesia, alumina, and phosphorus pentoxide levels.

*Table 15. Fine vessel glass: results of an electron-probe microanalysis of tall beaker **181**.*

Oxide	Weight (%)	Oxide	Weight (%)
Na_2O	2.3	MnO	0.7
MgO	3.0	Fe_2O_3	1.2
Al_2O_3	3.1	CoO	ND
SiO_2	60.0	NiO	ND
P_2O_5	2.0	CuO	ND
SO_3	ND	ZnO	ND
Cl	0.6	As_2O_3	0.1
K_2O	3.2	SnO_2	ND
CaO	19.8	Sb_2O_3	ND
TiO_2	0.2	BaO	0.2
Cr_2O_3	ND	PbO	ND
		Total	94.6%

Interpretation

The glass impurities indicate that a vegetable-ash source of alkali was used, but that it was not a potassium oxide glass. Indeed the glass with its high calcium oxide level and mixed-alkalis is more typical of a sixteenth-century European composition than one made in the Italian tradition. Certainly one might expect to find a clearly soda-dominated composition for Italian cristallo glass, with significantly lower calcium oxide and aluminium oxide levels than those detected. One might expect a glass made in Germany to be of a high potassium composition, though it is difficult to make hard and fast rules about possible variations in the supply and use of alkali raw materials through the sixteenth and seventeenth centuries. Late sixteenth century English glass has been found to contain mixed-alkalis, but at this stage it would be unwise to state that this was the origin of the glass. An analytical study of French medieval glass compositions[290] has shown that a range of glass compositions existed and that it is rather difficult to relate glass vessel form to composition.

Note by R. J. Charleston

With the values obtained by Dr Henderson may be contrasted those elicited by Dr M. Verità from the analysis of fragments found in the immediate vicinity of Venice itself.[291] The analyses are on the whole consistent within the group, although there are occasional anomalies. The picture presented by these mainly late fifteenth- to seventeenth-century glasses is totally different from that of the Nonsuch fragment. For SiO_2 the Venetian readings range between 65.7 and 68.7; for Na_2O between 12.2 and 14.9; for K_2O between 2 and 4.1 (not so different); for CaO between 8.6 and 12.3. A second series, apparently optically superior, ranged within the limits: SiO_2 68.5–73; Na_2O 14.3–19.2; K_2O 2.30–3.25; CaO 3.90–6.40. Crystal glasses from the famous Gnalic wreck gave readings for these elements ranging from 71 to 72 for SiO_2 (by difference); from 12.3 to 13.7 for Na_2O; from 2.36 to 2.88 for K_2O, and from 6.53 to 8.80 for CaO. There is every reason to

290. Barrera and Velde 1989

291. Verità 1985

suppose that these were Venetian glasses of sixteenth-century date.[292] By contrast, the more or less contemporary glasses from the Prague Castle find identified as Bohemian by the late Karel Hetteš showed the following range, among the Venetian style glasses (28, 30, 31, 33, 34), for the selected elements: SiO_2 58.95–63.99; Na_2O 4.3-5.01; K_2O 8.76–13.22; CaO 15.72–19.81.[293] We have here perhaps an indication of the way things were going in the Germanic countries which strove to emulate Venetian *cristallo*, leading in due course, as Hetteš himself pointed out, to the full potash-lime crystal for which Bohemia and the Germanic countries were to become famous in the late seventeenth century.

viii. CATALOGUES

VENETIAN AND *FACON DE VENISE* GLASS

1 Fragmentary goblet, greyish-colourless *cristallo*, painted in enamel colours and gilt, with an applied notched cordon round the lower edge of the bowl, and a pedestal foot with thickened rim. The enamels used are a brownish iron-red, white, pale-blue and black, painted in part over square patches of gold leaf, the rim border consisting of blue dots within ovals etched on the gold leaf, the lower edge of which is scratched into a dentil border, the whole bounded by upper and lower lines of white dots. Round the lower part of the foot is a border of large blue dots surrounded by smaller white dots, alternating with square patches of gold leaf enlivened with enamel dots at the corners and sides. The main decoration is of floral and leaf motifs, in part painted in black over the white and blue enamels.
The shape of this glass may be matched in many surviving examples.[294] Comparable decoration may be seen on a covered goblet in the C.L. David Collection, Copenhagen.[295]
Venetian, first third of 16th century.
AM9411; W5 4=D1**; Phase 5 (Plate 8)*

2 Fragmentary bowl, greyish-colourless *cristallo*, painted in red and white enamels and gilt, the lower part of the bowl with ribs probably moulded on a second gather, the upper part with an applied horizontal thread, above which the enamels form a rim-border consisting of a central zone where the gold leaf has been scratched in an imbricated design, each scale marked by a red enamel dot; the border is enclosed between an upper and a lower line of smaller white dots and below the lower line runs a series of larger red dots more widely spaced.
This glass is in an extremely fragmented state, but whereas the upper part can be reconstructed accurately (apart from the rim), the shape of the lower part is problematic. Bowls of this type are usually wider and shallower. The width may have been augmented by an outward-turning thickened rim, and the base may have been shallower and curved in more sharply.
Bowls with this general formula of decoration have been found at Winchester and Southampton.[296] A bowl of this general type (but not enamelled) is shown in a painting by Piero di Cosimo (d.1521) in the Swedish Royal Collection.
Venetian; first third of 16th century.
AM9410; W5ext 6=G5**; Phase 4*

3 Fragmentary goblet, greyish *cristallo*, the round-funnel bowl with decoration of applied twisted *lattimo* canes applied over gold leaf. The whole paraison then blown in a ribbed mould (presumably that used for stem and foot).
The applied canes are of two types: (A) a gauze of five or six threads with a two-strand twist running through the middle, and (B) a 5-strand spiral with a two-strand twist running through the middle. The top band of decoration has nine parallel bands running alternately from the top BAB... etc: the lower register has seven bands running in the same sequence. It is not clear how the bands were applied – possibly laid parallel in a sheet joined at a single vertical seam, as individual composite cables not infrequently were. The expansion of the upper part of the bowl, and the extension of the lower in working no doubt

292. Brill 1973
293. Hetteš 1963
294. see eg Charleston 1977, No 15 and parallels cited there. A picture attributed to A. Altdorfer and dated 1537, shows a glass of this shape (*ibid*. 84)
295. Zahle 1958, Pl on 107
296. Winchester: unpublished. Southampton: Charleston 1975, Nos 1526 and 1528, from late-15th/16th century contexts; and Holdsworth 1976, Pl VII (found with mainly late-15th century material). A deep bowl is in the Fitzwilliam Museum, Cambridge (Schnitzer *et al* 1978, 66, No 141)

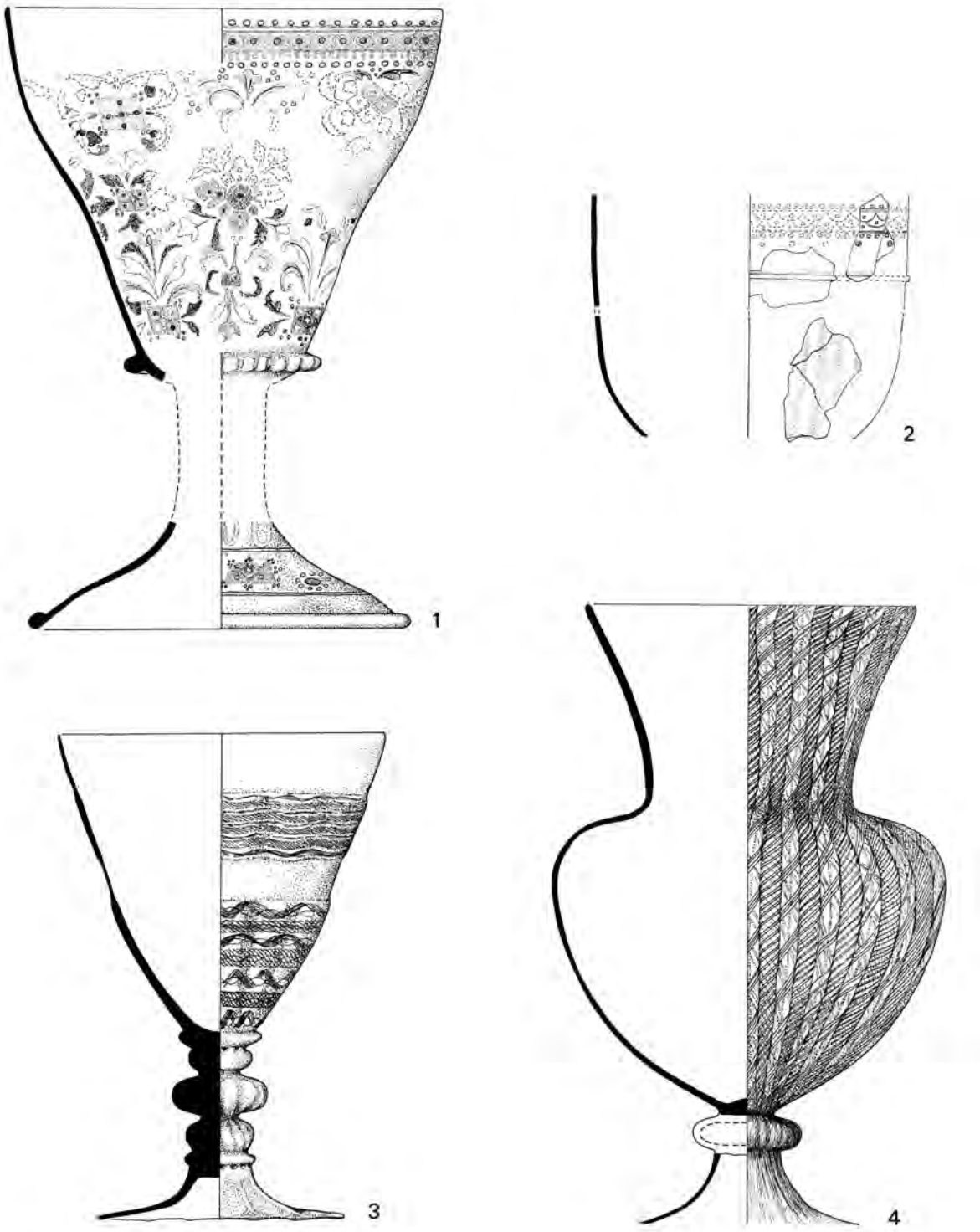


Fig. 110 Fine vessel glass: Venetian and façon de Venise, ***1–4*** *(1:2).*

account for the distortion and consequent different appearance of the two decorative bands.
The stem and foot have apparently both been formed in the same 16-ribbed mould, the stem being of a type commonly found on the enamelled and gilt goblets.[297] This seems to suggest an early date for this type of glass, a suggestion supported by the apparently experimental nature of the decoration. A parallel for the use of 'sandwiched' gold-leaf is furnished by a beaker in the British Museum. [298]
Venetian; early 16th century.
AM9409; W5ext 2d=G5**; W3ext 3=**G5**; Phase 4*

4 'Goblet vase' of greyish-colourless *cristallo* with decoration of opaque-white twisted threads ('de retortoli'). Piriform body with wide flaring neck, spreading pedestal foot (incomplete) joined to the body by a wide depressed knop with collar above. The decorative canes consist of (A) spiral gauze of probably 8 threads, alternating with (B) two pairs of threads about a central thread. This scheme of decoration runs through the whole vessel.
Probably Venetian; late 16th century.
W5ex 2d=G5**; Phase 4 (Plate 9)*

5 Knop and part of foot of biconical goblet, greyish-colourless *cristallo*, the depressed knop mould-blown with heavy vertical ribbing (12 ribs) diagonally 'wrythen', joined by thin mereses, below to a conical foot, itself mould-blown with twelve vertical ribs; and above to the base of the bowl; pontil-mark inside foot. Thin white/iridescent weathering.
Venetian; first half of 16th century.
**G34; S8 2; Phase 5*

6 Fragmentary cover of (?) a large goblet (cf. **5**), greyish-white heavily striated *cristallo* with some iridescent weathering, with folded rim and indeterminate overall mould-blown pattern. The inward slope of the flange indicates that the cover was intended for a vessel with outward-sloping sides.[299]
Venetian; 16th century.
*G123; W5 4=**D1**; Phase 5

7 Top portion of a ribbed stem, greyish *cristallo*, consisting of the upper part of an inverted baluster from which has been worked a collar and a merese joining it to the base of the bowl. Ribbed (apparently solid) in a 15-rib mould.
Probably Venetian; second half of 16th century.
**G13; W2 1; Phase 8*

8 Stem and fragmentary bowl of a wine- or beer-glass, of greyish-colourless *cristallo*, the round-funnel bowl blown in a dimpled mould, the hollow-blown 'ladder-stem' of inverted baluster form moulded with four notched ribs alternating with four plain ribs; the stem is joined to the bowl by a short neck and a merese. Overall creamy weathering.
Probably English (London); late 16th-early 17th century.
G114; W2 5d=G11**; Phase 4 (Fig. 105)*

9 Stem- and foot-fragment of a goblet of greyish-colourless *cristallo*, the hollow-blown 'ladder-stem' of inverted baluster form moulded with four notched ribs alternating with four plain ribs, the lower end terminating in a merese joining it to the slightly rising foot, below which is a sharp pontil-scar. The stem is joined to the base of the bowl (which shows traces of mould-blowing) by a collar and a merese. Some pearly weathering.
Probably English (London); late 16th-early 17th century.
G165; Y4 34=Well**; Phase 4*

10 Fragmentary bowl, greyish-colourless *cristallo* of round- funnel shape, mould-blown with an overall mesh-design. Overall buff/iridescent weathering.
Perhaps English (London); late 16th-early 17th century.
G136; U7 8=G9**; Phase 4; G135; U7 2; Phase 5*

11 Fragmentary goblet, greyish-colourless *cristallo*, the slightly curved spreading funnel-bowl mould-blown with an overall mesh-pattern, and stem and foot with ribbing produced in an 18-rib mould. The stem consists of a ribbed inverted baluster joined to the foot by a plain merese, and drawn out above with a tall neck and merese (showing traces of ribbing) joining it to a rib-moulded depressed knop, which in turn is united to the bowl by a capstan. Below the foot is a small but jagged pontil-scar. Overall pearly weathering.
Probably Venetian; about 1600.
G148; T7 III 3=G26**; Phase 4*

12 Foot-fragment from a drinking glass (cf. **11**), greyish-colourless *cristallo* with a film of creamy/iridescent weathering, mould-blown with radiating relief ribbing.
Probably Venetian; late 16th-early 17th century.
*G82; X15 10=**D2**; Phase 5*

13 Upper part of a composite stem (?) of markedly dark-grey *cristallo*, consisting of a solid inverted baluster between mereses, joined above to a rounded bowl, and below to what may be the

297. See eg Corning Museum of Glass 1958, Nos 15–18, 21; Charleston 1977, 87–90, No 16 and parallels cited there; Schmidt 1922, Fig 59

298. Tait 1979, 40, No 33

299. For a parallel, *ibid.* 1979, No 153

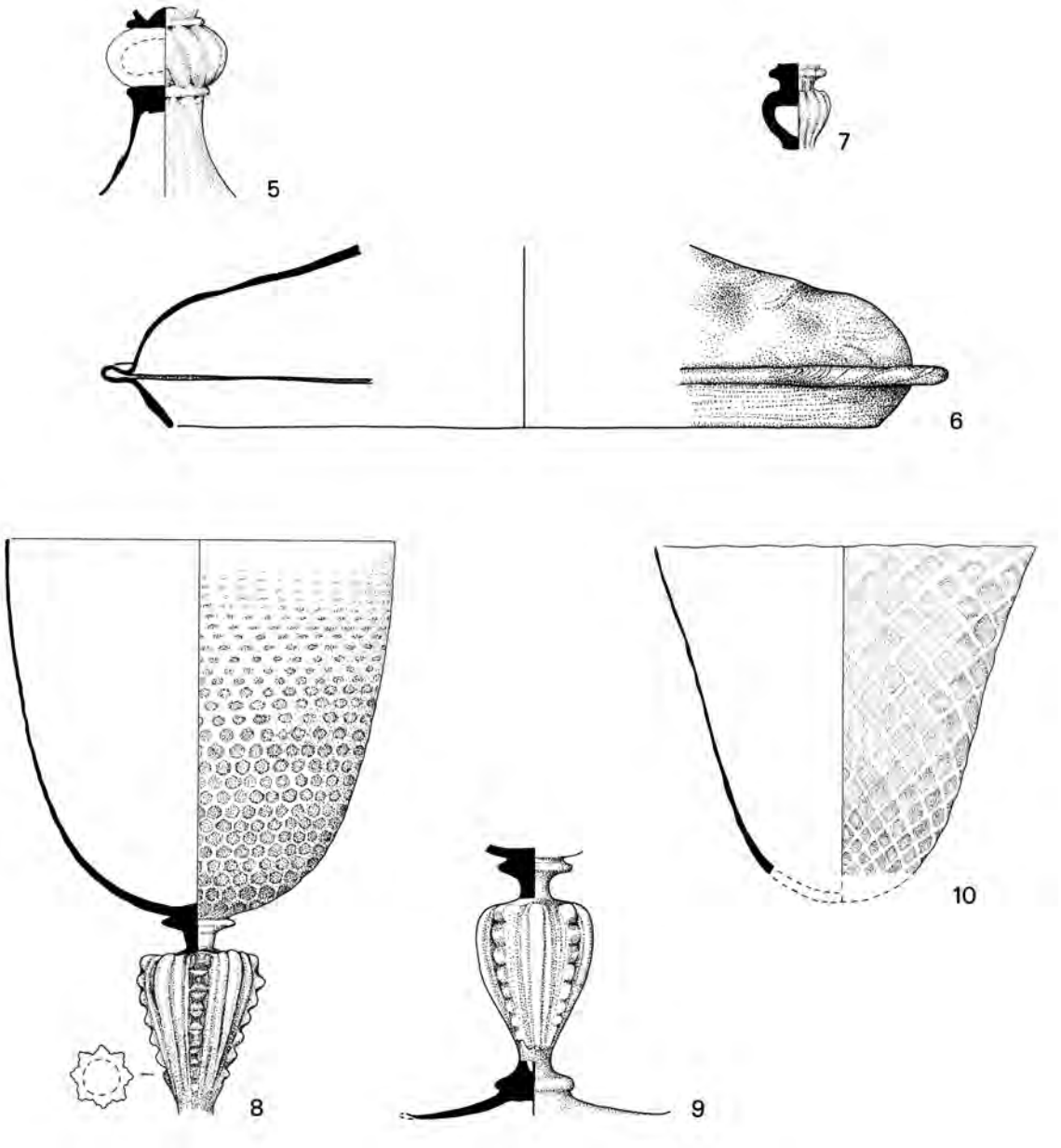


Fig. 111 Fine vessel glass: Venetian and façon de Venise, ***5–10*** *(1:2).*

upper part of a hollow-blown baluster stem. (What has the appearance of a pontil-mark below this layer of glass may indicate that this was part of the foot, but the proportions would be unsatisfactory and the sharp downward curvature of this layer of glass would not be natural for a foot of this period).
Perhaps English (London); late 16th-early 17th century.
G85; W13 8=SA B**; Phase 5*

14 Upper part of a composite stem (?), of markedly dark-grey *cristallo* consisting of an inverted baluster joined to the base of the bowl by a collar and merese. The glass material is strikingly similar to that of **13**.
Perhaps English (London), late 16th-early 17th century.
**G530; BH BV VI 2; BH. Unphased*

15 Fragmentary goblet, greyish-colourless *cristallo*, with plain round-funnel bowl and composite stem consisting of a hollow-blown inverted baluster joined by a collar and a merese to a broad disc which is in turn connected to the base of the bowl by a capstan section; the inverted baluster

is joined by a broad merese to a flat foot. Overall creamy weathering.
Probably English (London); first half of 17th century.
W1 5a=G2**; Phase 4; W1 5c; Phase 5 (Fig. 106)*

16 Stem of a goblet (?), greyish *cristallo* with opaque coating of weathering, hollow-blown inverted baluster stem; pontil-mark below foot. See **15**.
Probably English (London); first half of 17th century.
G181; P/Q 15/16 16=G19**; Phase 4*

17 Stem of a goblet (?), greyish *cristallo* with opaque coating of weathering, hollow-blown inverted baluster stem, with part of a capstan below. See **15**.
Probably English (London), first half of 17th century.
LM230; P/Q 15/16 16=G19**; Phase 4*

18 Fragment of upper part of stem and bowl of a goblet, greyish *cristallo* with iridescent weathering. See **15**.
Probably English (London), first half of 17th century.
**G12; W1 1; Phase 8*

19 Stem/bowl fragment of a flat-based drinking-glass, greyish *cristallo*, the stem formed of a solid baluster joined by a wide merese to the bowl above, and below by a much narrower merese to a vertically-ribbed depressed knop, below which the rest of the stem is missing. From a glass perhaps resembling the 'Vickers' glass in the Royal Library, Windsor.[300]
Perhaps English (London); late 16th-early 17th century.
**G53; X4 1; Phase 8*

20 Stem/bowl fragment, presumably of a drinking-glass, greyish *cristallo* with an overall film of iridescent weathering. The rounded base of the bowl is joined by a thin wide merese to a stem of uncertain type, or possibly direct on to the foot (see **35**).
Probably Venetian, late 16th-early 17th century.
**G2355; Unprovenanced*

21 Shouldered stem of lightly tinted brown/grey *cristallo*, hollow-blown, with part of a (?) capstan merese below.
Probably English (London); first half of 17th century.
**LM 272; W4 II/IV 2; Phase 5*

22 Shouldered stem and foot-fragment of lightly tinted grey *cristallo*, hollow-blown, with capstan merese below; pontil-scar below foot.
Probably English (London); first half of 17th century.
G169; Y4 34=Well**; Phase 4*

23 Fragmentary stem, greyish *cristallo* with faint iridescence, hollow-blown inverted baluster, broken off above and below at points of attachment.
Venetian or perhaps English (London); late 16th/early 17th century.
**G523; BH G8 I 4; BH Phase 2*

24 Fragmentary stem, greenish-grey *cristallo* with overall iridescent weathering, hollow-blown inverted baluster drawn out above into a short neck and narrow merese, above which is a broad disc with a merese above, the remainder of the stem above broken off; at the base, a capstan merese broken off.
Venetian or perhaps English (London); late 16th-early 17th century.
**LM273; R8 3; Phase 5*

25 Fragmentary goblet, greyish *cristallo*, composed of round-funnel bowl with mould-blown mesh design, lion-mask stem joined by a long neck and merese to the base of the bowl, and by a thick merese to the slightly rising foot with narrow rim-fold. In the apex of the foot is a neat pontil-scar. A closely similar fragment was found in the 'Gracechurch Street hoard'.[301]
Probably English (London); first half of 17th century.
AM9430; W2 5c=G3**; Phase 4 (Fig. 107)*

26 Fragmentary top of a lion-mask stem, greyish *cristallo*, showing the gadrooning round the shoulder and part of an indecipherable design below.
Venetian or English; probably first half of 17th century.
**G79; X16 2b; Phase 6*

27 Fragment of a large lion-mask stem, greyish-colourless *cristallo*, showing the gadrooning round the shoulder and the ear and eye of the lion; on top is part of the neck joining stem to bowl. Overall whitish weathering.
Venetian or English; probably first half of 17th century
**G14; Q1 3; Phase 5*

28 Fragment of lion-mask stem, greyish-colourless *cristallo*, showing the gadrooning round the bottom of the stem and part of a (?) floral festoon (fragment probably distorted by fire).

300. Charleston 1984a, Pl 14, b

301. Oswald and Phillips 1949, Fig IX

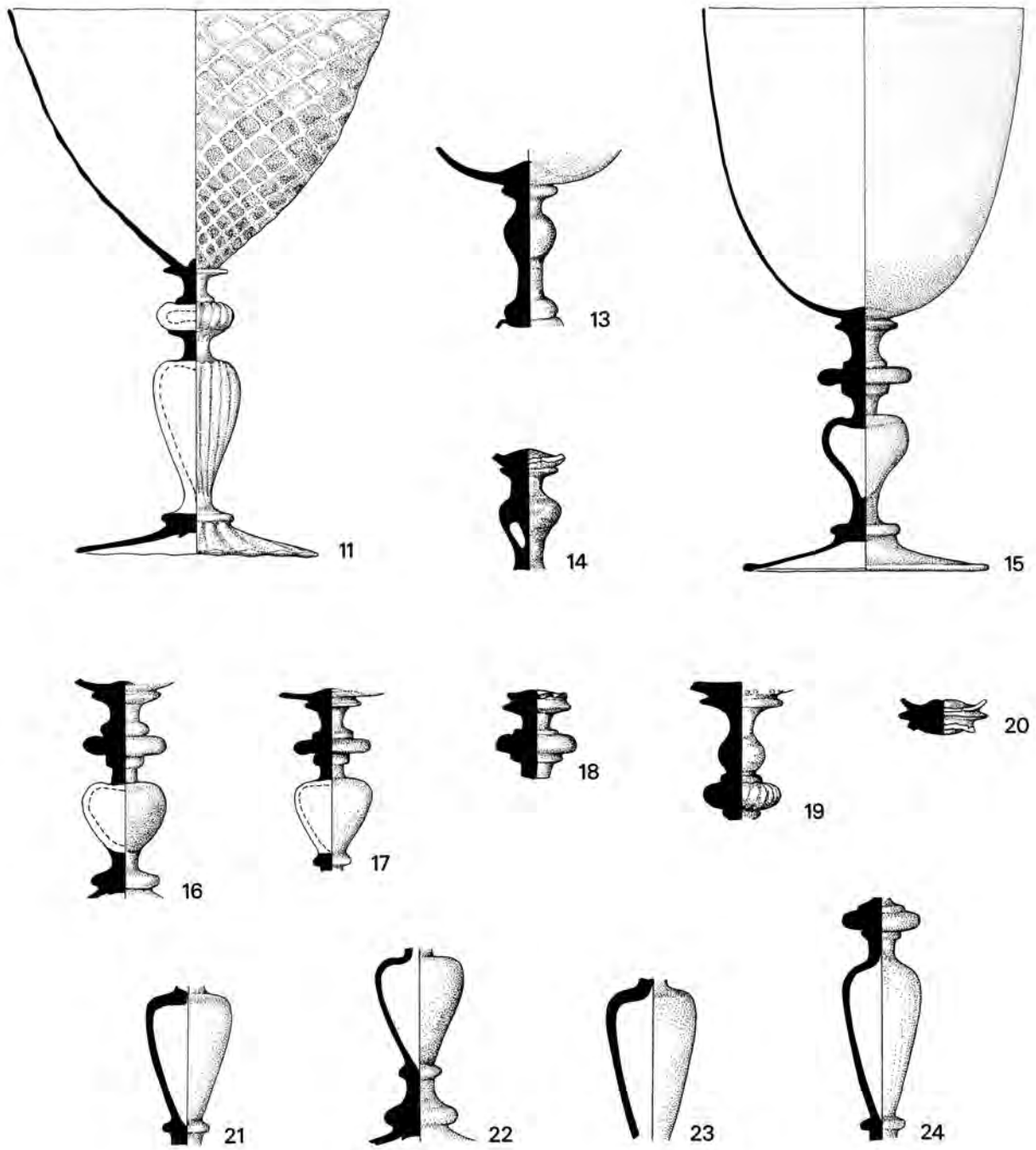


Fig. 112 Fine vessel glass: Venetian and façon de Venise, ***11, 13–24*** *(1:2).*

Venetian or English; probably first half of 17th century.
Q7 III 2; Phase 6

29 Stem and foot fragment of a wine- or beer-glass, greyish-colourless *cristallo* with a dense coating of buff-white weathering. The hollow-blown stem shows some slight gadrooning, almost effaced by working, at the base, and traces of a (?)lion-mask above, the stem attached to the rising foot by a merese worked up over its lower extremity.
Venetian or English; probably first half of the 17th century.
**LM315; X14 5; Phase 5*

30 Fragment of bowl and stem of a wine-glass, made from a single paraison, with a swelling at the

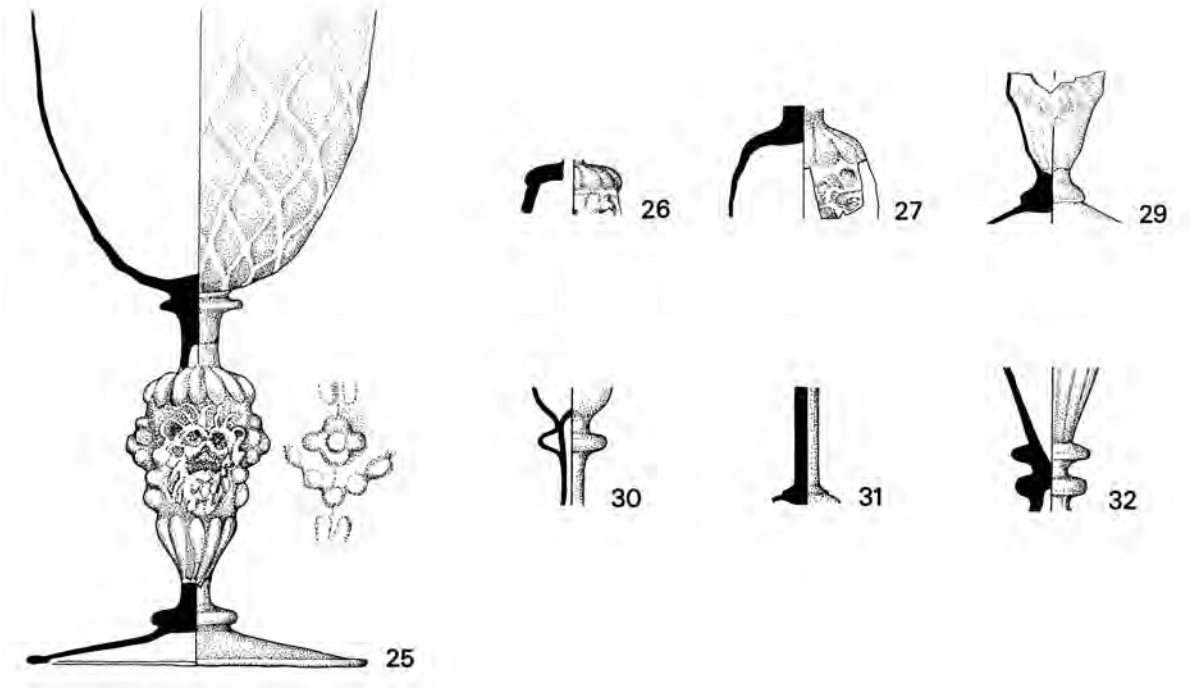


Fig. 113 Fine vessel glass: Venetian and façon de Venise, ***25–7, 29–32*** *(1:2).*

base of the bowl, greyish-colourless *cristallo* with an overall buff/iridescent weathering.
Perhaps English (London); mid-17th century.
*G91; X14 4a=**D2**; Phase 5

31 Stem and foot fragment of a wine-glass, greyish-colourless *cristallo* with overall film of iridescent weathering. A smooth pontil-scar is clearly visible under the foot.
Perhaps English (London); mid-17th century.
**G88; P/Q 15/16 4; Phase 6*

32 Fragment of a bowl and stem of a wine-glass with conical bowl, joined to the top of a hollow stem by a small and a larger merese, greyish *cristallo* with some dull iridescent weathering. The bowl is decorated with vertical mould-blown ribbing from a 20-rib mould.
Probably English (London); early 17th century.
**G84; X14 3; Phase 6*

33 Stem of a goblet, fine colourless *cristallo*, with tripartite openwork element above knops and a capstan merese.
Probably Venetian; late 16th/early 17th century.
G186; P/Q 15/16 16=G19**; Phase 4*

34 Fragment of twisted solid rod, with iridescent weathering, perhaps part of a stem 'of extraordinary fashion'.
Probably English; first half or middle of 17th century.
**G38; X6 2; Phase 6*

35 Fragmentary wine or beer glass, fine-quality apparently almost colourless *cristallo* with overall creamy/iridescent weathering. The wide conical bowl is joined by a single bladed merese to a wide thin foot, with small pontil-scar below. (The rim diameter and original height are taken from a drawing made shortly after the original excavation).
Probably Venetian; second quarter of 17th century.
G149; T7 III 3=G26**; Phase 4*

36 Fragmentary wine-glass, virtually colourless *cristallo*, consisting of incomplete pointed round-funnel bowl, virtually complete rising foot, and capstan stem consisting of a depressed knop below with neck and merese above. The foot has a narrow folded rim and neat pontil-scar in the apex. Overall beige weathering.
Probably Venetian; early 17th century.
G156; W5ex 2d=G5**; Phase 4*

37 Fragmentary wine-glass, greyish-colourless *cristallo*, consisting of fragmentary twelve-lobed bowl of ogee profile, narrow thin rising foot, and stem composed of an inverted baluster terminating above in a collar and wide merese, and below in a capstan merese. The bowl has been mould-blown with an overall pattern of dimples, then worked with a series of vertical indentations

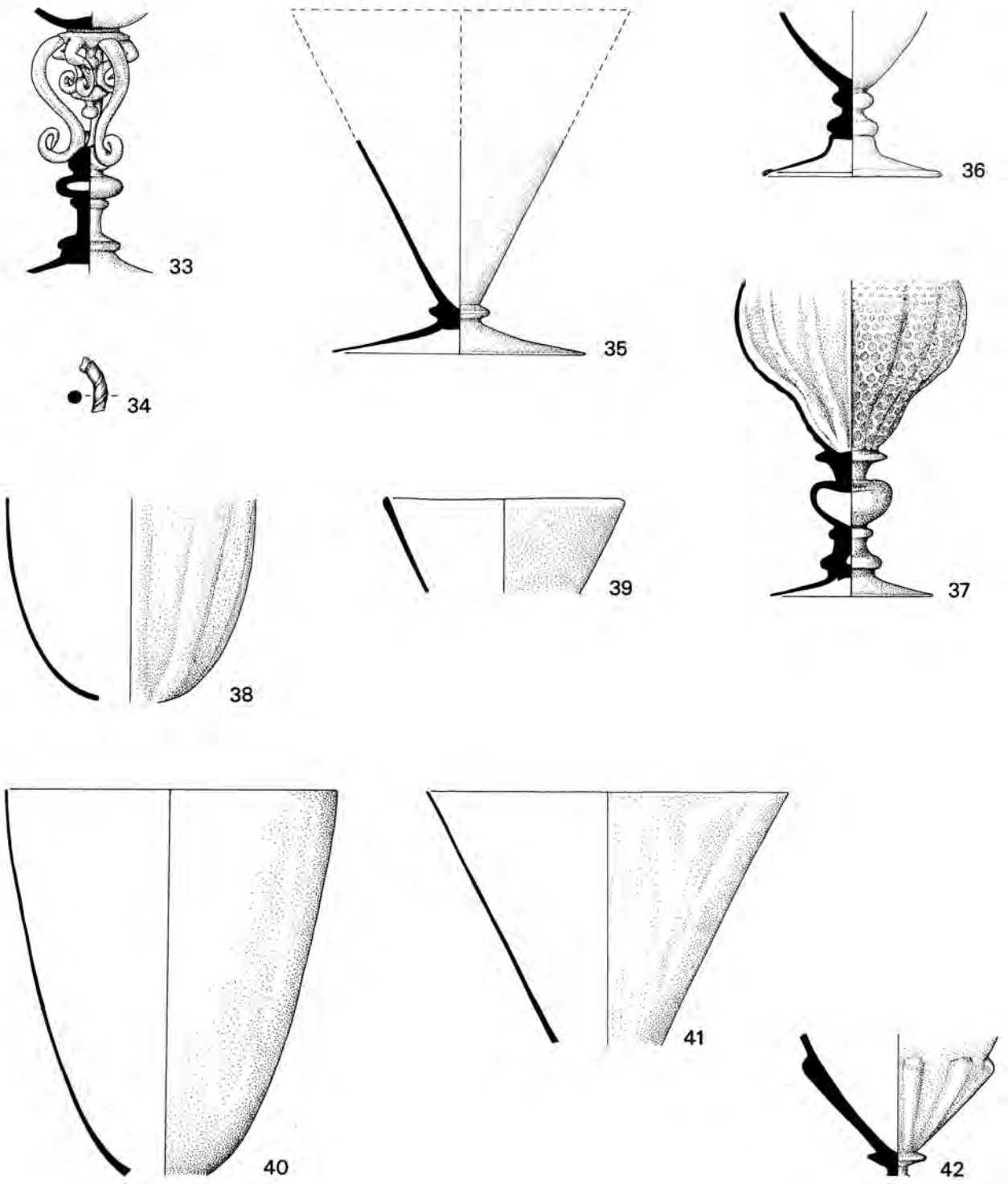


Fig. 114 Fine vessel glass: Venetian and façon de Venise*,* ***33–42*** *(1:2).*

to give a twelve-lobed form. Pontil-scar in apex of foot. Overall buff weathering.
Probably Venetian; early 17th century.
G155; W5ex 2d=G5**; Phase 4 (Fig. 108)*

38 Fragmentary round-funnel bowl of a goblet, virtually colourless *cristallo* with overall buff weathering, with vertical mould-blown ribbing. See **16** and **17**.
Probably English (London); first half of 17th century.
G183; P/Q 15/16 16=G19**; Phase 4*

39 Incomplete bowl of a goblet, almost colourless *cristallo*, with encrusted weathering, black in places. The inclination of the sides suggests a conical bowl.
Probably Venetian; late 16th/17th century.
G1140; W5ext 2d=G5**; Phase 4*

40 Fragmentary round-funnel bowl of a goblet, probably a beer-glass, greyish-colourless *cristallo*, with patchy iridescent weathering.
Venetian or English; late 16th-early 17th century.
G140; W7 8; Phase 3. G139; U7 8=G9**; Phase 4*

41 Fragmentary funnel-bowl of a wine- or beer-glass, greyish-colourless *cristallo* with patchy iridescent weathering (cf. **26**).
Venetian or English; late 16th/early 17th century.
G149; T7 III 3=G26**; Phase 4*

42 Fragmentary bowl of a drinking-glass, virtually colourless *cristallo* with overall white/iridescent weathering. The base of the bowl has a calyx of heavy ribbing mould-blown on a second gather (12 ribs), and is joined to the top of the stem by a bladed merese.
Probably Venetian; mid 16th–mid 17th century.
G102; U8 3=Great cellar**; Phase 4. G111; W8 7=**Great cellar**; Phase 4*

43 Fragmentary wine- or beer-glass, greyish-colourless glass with overall iridescent weathering. Flat-based conical bowl with rigaree-trail round basal angle, mounted directly on a hollow spherical ribbed (14 ribs) knop which is in turn joined by a merese to a rising foot, below which is a small neat pontil-scar. (Description based on drawing made soon after excavation, together with surviving stem and bowl fragments).
Probably Venetian; about 1670.
**LM314; X14 4; Phase 6*

44 Stem- and foot-fragments of a wine- or beer-glass. Hollow-blown sagging spherical stem with merese above, joined to the foot below by a thin bladed merese.
Probably Venetian; about 1670.
G126; W5 4=D1**; Phase 5*

45 Spherical hollow stem of a wine- or beer-glass, greyish *cristallo* with iridescent weathering, mould-blown with 14 ribs, and apparently backed direct on to the base of the bowl, whilst being joined to the foot below by a bladed merese; although the periphery of the foot has completely disappeared, a small pontil-scar is visible below the centre.
Probably Venetian; *c* 1670.
**G503; BH D5 II 4; BH Phase 4*

46 Fragment from the basal angle of a flat-based bowl of wine- or beer-glass, brownish-grey *cristallo*, with applied rigaree trail. Cf. **43**.
Probably Venetian; *c* 1670.
G133; S1 14=G31**; Phase 4*

47 Rim-fragment of a beaker, virtually colourless *cristallo* with overall white/iridescent weathering forming a black crust in patches.
Probably Venetian; but possibly English (London), late 16th/early 17th century.
G101; U8 3=Great cellar**; Phase 4*

48 Rim- and base-fragments of a beaker, virtually colourless *cristallo* with overall creamy/iridescent weathering, the base with a low kick, in the apex of which is a small pontil-scar, the basal angle with an applied rigaree trail.
Probably Venetian, but possibly English (London); late 16th/early 17th century.
G118; W1 5a=G2**; Phase 4. G115; W2 5c=**G3**; Phase 4*

49 Fragments of a cylindrical beaker, greyish-colourless *cristallo* decorated with horizontal applied bands formed of a blue thread between two opaque-white threads. A folded foot-fragment found in the same context and of approximately the same diameter as the beaker, probably comes from this glass (not drawn).
Venetian or possibly English (London); first half of 17th century.
G107, 109; W8 7=Great cellar**; Phase 4*

50 Fragmentary dish, greyish-colourless *cristallo* with overall brown/iridescent weathering, slightly sloping rim with under-turned edge, shallow *cavetto* and flat base rising slightly in the centre underneath to a small but rough pontil-scar.
Probably Venetian, but possibly English (London); first half of 17th century.
G239; S1 14=G31**; Phase 4*

51 Rim-fragment of a dish, greyish *cristallo*, slightly sloping rim with underturned edge (cf. **50**).
Probably Venetian, but possibly English (London); first half of 17th century.
**G138; U7 2; Phase 5*

52 Rim-fragment of a dish or salver, greyish-colourless *cristallo* with overall film of creamy/

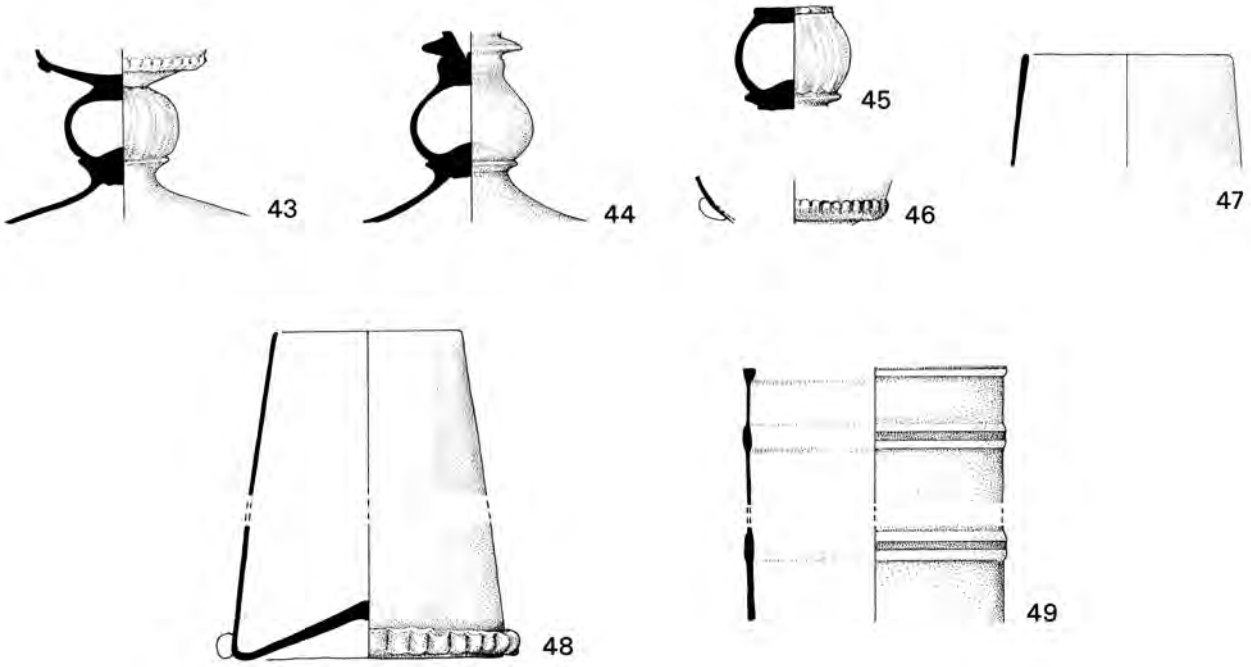


Fig. 115 Fine vessel glass: Venetian and façon de Venise, ***43–9*** *(1:2).*

iridescent weathering.
Probably Venetian; late 16th-early 17th century.
G161; W5ex 2c=G5**; Phase 4*

53 Pedestal-foot and fragmentary base of a standing bowl or dish, greyish-colourless *cristallo* with overall whitish/iridescent weathering. The rim of the foot is turned under in a flat fold, and in the apex is a small but sharp pontil-scar.
Probably Venetian; late 16th-early 17th century.
G132; S1 13=G31**; Phase 4*

54 Pedestal-foot of a salver or flask, virtually colourless *cristallo* covered by brilliant iridescent weathering.
Probably Venetian; late 16th-early 17th century.
**G19; Q8 3; Phase 5*

55 Part of the base and pedestal-foot of a salver or flask, greyish-colourless *cristallo* covered by iridescent weathering
Probably Venetian; late 16th-early 17th century.
G108; W8 7 Bay 8=Great cellar**; Phase 4*

56 Rim-fragment of a polygonal flask-neck, greyish *cristallo* with filmy iridescent weathering, decorated with a trailed spiral of blue-green.
Probably Venetian; first half of 17th century.
G104; U8 3=Great cellar**; Phase 4*

57 Neck and shoulder of a flask, greyish *cristallo* with an overall film of beige/iridescent weathering.
Probably Venetian; first half of 17th century.
G59; W4 III/IV 3a=G4**; Phase 4*

58 Fragmentary base of a cylindrical bottle or bowl, brownish-colourless heavily striated *cristallo* with an overall film of iridescent weathering.
Probably Venetian; first half of 17th century.
**G35; X8 4; Phase 5*

59 Wall/base fragment of a cylindrical bottle or bowl.
Probably Venetian; first half of 17th century.
G173; W4 II/IV 4=G4**; Phase 4*

60 Neck and shoulder-fragment of a flask, greyish-colourless *cristallo* with patchy beige/iridescent weathering, the neck with an applied thread of self-coloured glass at half-height.
Probably Venetian; late 16th-first half of 17th century.
G157; W5ext 2c=G5**; Phase 4*

61 Neck and shoulder-fragment of a small flask, greyish-colourless *cristallo* with an overall film of silvery iridescence, the neck with an applied thread of self-coloured glass at half-height.
Probably Venetian; late 16th-first half of 17th century.
**G2355; Unprovenanced*

62 Fragmentary neck of a (?) bottle, greyish-colourless *cristallo* with patchy iridescent weathering.

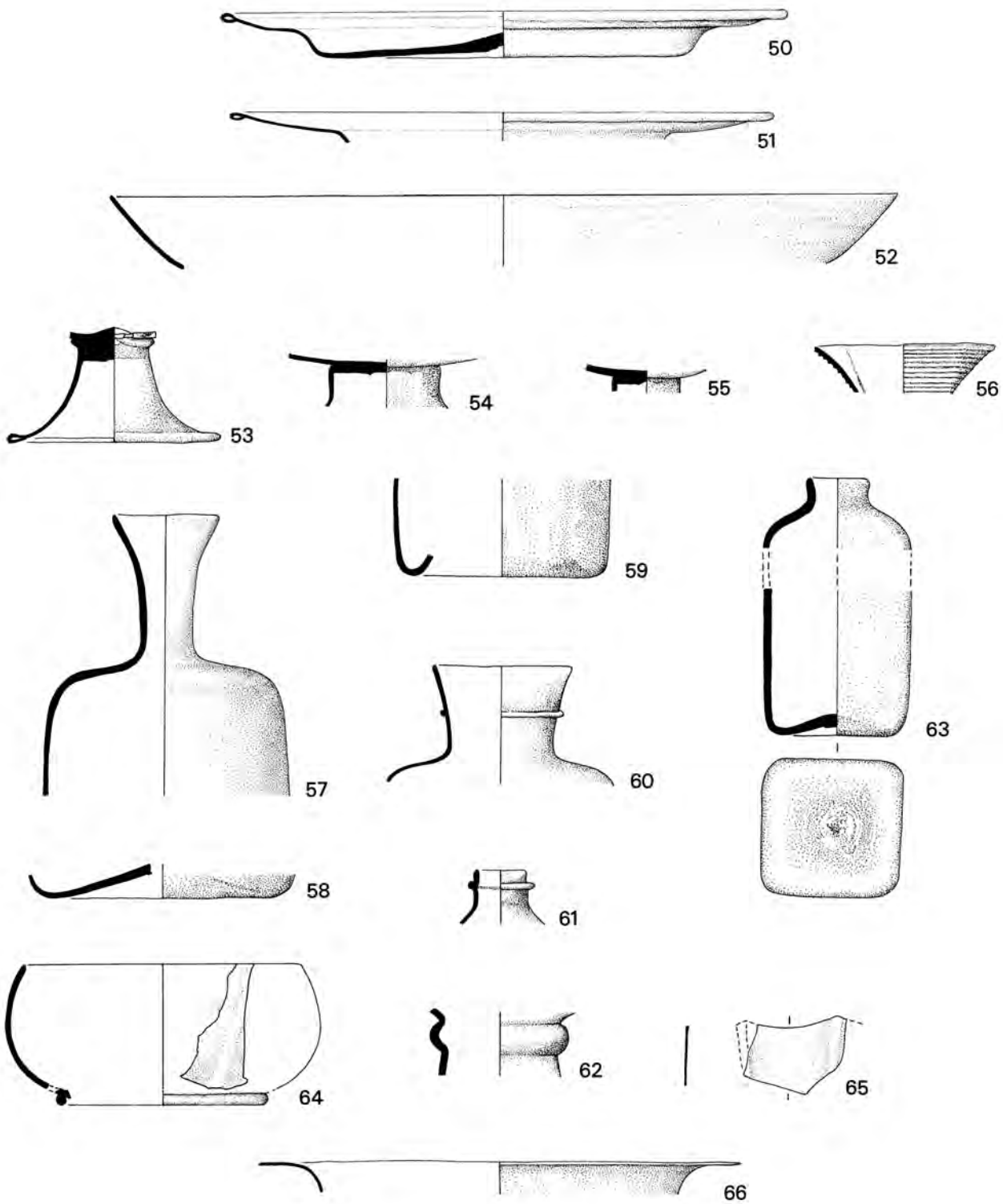


Fig. 116 Fine vessel glass: Venetian and façon de Venise, ***50–66*** *(1:2).*

Probably Venetian; first half of 17th century.
**G86; W9 2; Phase 8*

63 Neck- and shoulder-fragment, and body and base-fragments, of a small flask blown in a square mould, greyish-colourless *cristallo* with an overall film of silvery iridescent weathering.
Probably Venetian; first half of 17th century.
G2007; X4 I/III / W4 I 2; Phase 6. G175; W4 II/IV 4=G4**; Phase 4. G155; W4 II/IV 4c=**G4**; Phase 4*

64 Rim- and base-fragments of a bowl, colourless *cristallo* with brilliant overall iridescent weathering, the body with vertical mould-blown ribbing, the foot in the form of an applied thread.
Probably Venetian; late 16th-first half of 17th century
G199; Q14 III 5a=SA G**; Phase 5*

65 Rim-fragment of a (?) bowl with (?) mould-blown radiating ribbing, greyish-colourless *cristallo* with a patchy iridescent weathering.
Probably Venetian; first half of 17th century.
**G141; U7 2; Phase 5*

66 Rim-fragments of a bowl or deep dish, greyish-colourless *cristallo* with patchy beige/iridescent weathering, the vessel vertical-sided with out-turned horizontal rim. It is possible that the two sets of fragments come from two virtually identical vessels.
Probably Venetian; late 16th–early 17th century.
G150; T7 III 3=G26**; Phase 4. G6; R8 7; Phase 5*

67 Pair of side-handles probably from a shallow bowl or dish, greyish *cristallo* with decorative addition in opaque-white (*lattimo*) glass. Small ear-shaped handles formed by a single scroll of *cristallo* outside which is trailed a thread of *lattimo* which has been notched, flattened, and drawn out into a pointed tag above and below.
Probably Venetian; 17th century.
G152; T7 III 3=G26**; Phase 4 (Plate 10)*

68 Pair of side-handles from a cylindrical bowl or posset pot, greyish-colourless *cristallo* with decorative additions in greenish-blue glass. Handles formed by a double loop above the point of application, roughly in the form of a '3', the upper sticking-part finished with a scroll; to the outer curves of the main scrolls has been added a greenish blue thread notched and flattened above and below an outward-pointing kink, the upper and lower ends drawn out into decorative tags.
Probably Venetian, or perhaps English; 17th century.
G151; T7 III 3=G26**; Phase 4 (Plate 11)*

69 Side handle from a vertical sided vessel, virtually colourless *cristallo* with brilliant overall iridescent weathering. Formed as **68**, but the added decorative trail in the same glass as the handle itself.
Probably Venetian, or perhaps English; 17th century.
G89; Q14 III 5=SA G**; Phase 5*

70 Part of a decorative element, cobalt-blue glass.
Probably Venetian; first half of 17th century.
**G299; Unprovenanced.*

71 Handle, *cristallo* somewhat decayed and with overall beige weathering, with a lower point of attachment from which the S-shaped handle has been drawn upwards with a scroll at its lower end.
Probably Venetian; late 16th-first half of 17th century.
G127; W5 4=D1**; Phase 5*

VENETIAN-STYLE GLASS: SPECIALISED TYPES

Opaque red glass

72 Fragmentary bowl of opaque-red marbled glass, the surface slightly iridescent.
Probably Venetian; early 16th century.
G131; S1 13=G31**; Phase 4 (Plate 12)*

Enamelled glass (without gliding)

73 Curved fragment, probably from the bowl of a drinking-glass, greyish-colourless glass, with enamelled painting in white, showing a vertical loose cable motif, originally between line-borders. Encrusted white weathering with block patches where thickest. An accompanying sliver of glass shows part of a line in blue enamel.
Probably English, or perhaps French; late 16th century.
G179; W4 II/IV 4=G4**; Phase 4*

Diamond-engraved glass

74 Curved fragment, greyish-colourless *cristallo*, line-engraved with a diamond-point.
Probably Venetian, but perhaps English (London); last quarter of 16th century.
**G93; X14 5; Phase 6*

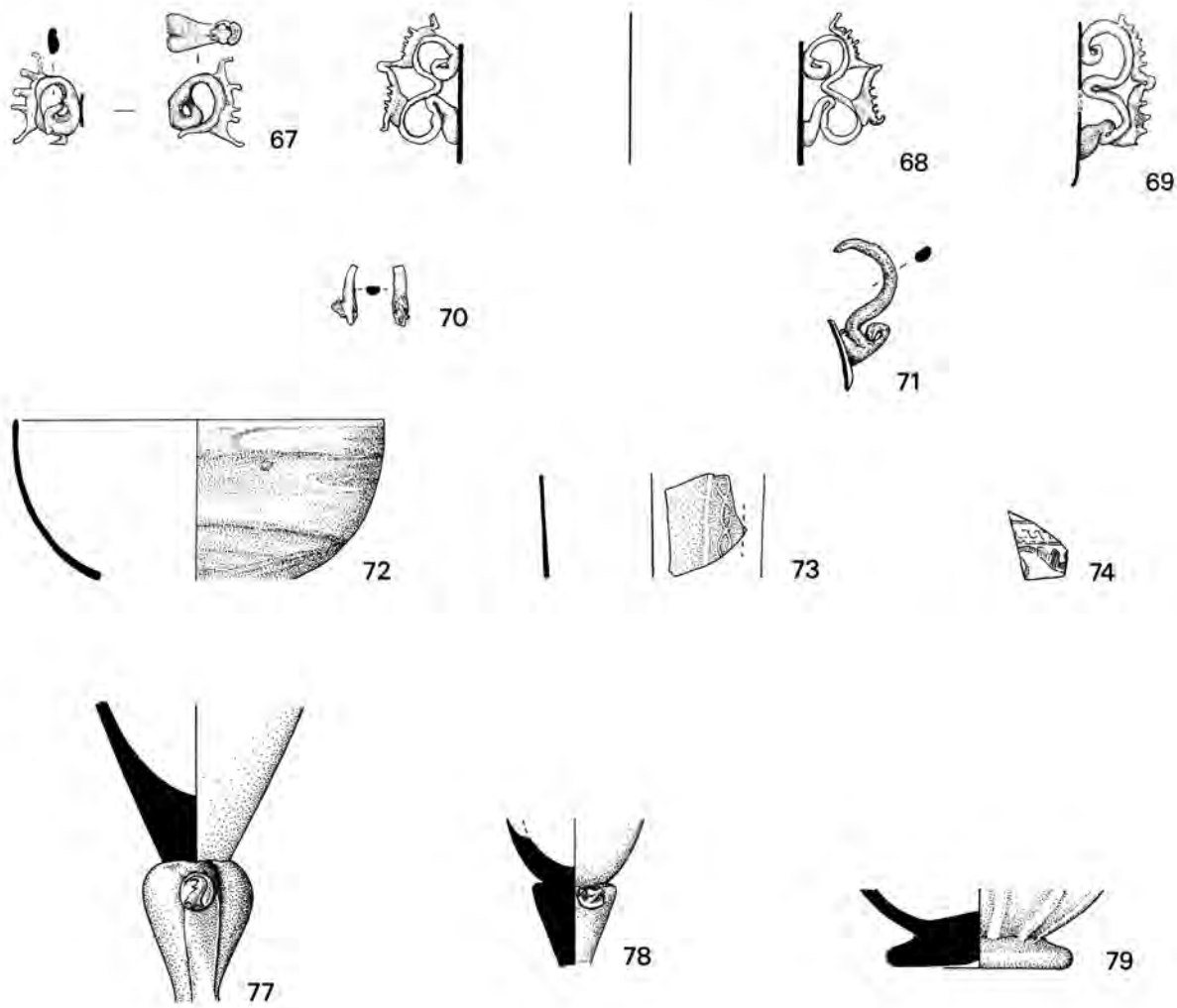


Fig. 117 Fine vessel glass: Venetian and façon de Venise, ***67–71****; Venetian-style specialised types,* ***72–4****; English crystal,* ***77–9*** *(1:2).*

Probably French cristallo

75 Indeterminate small fragments, presumably of a vessel, pink bubbled and 'crizzled' glass.
Probably French; later 17th-early 18th century.
*G185; P/Q 15/16 16=**G19**; Phase 4*

Opaque glass rod

76 Glass rod, consisting of red, opaque-white and colourless *cristallo* in concentric layers. L. 43mm. Diam. 4mm.
Probably Venetian; second half of 16th-17th century.
G297; X14 3; Phase 6.

ENGLISH CRYSTAL: GLASS OF LEAD

77 Bowl and stem fragment of a wine- or beer- glass, with fragmentary conical bowl and four-lobed stem of inverted baluster profile with small affixed seal stamped in relief with a raven's head, erased. The virtually colourless metal is a lead glass with a probable lead content of 27.5%.[302]
English (glasshouse of George Ravenscroft in the Savoy, London, or at Henley-on-Thames); about 1676–8.
**G32; R8 3; Phase 5*

78 Bowl- and stem-fragment of a wine- or beer-glass, with remains of round-funnel bowl and conical stem of 'crizzled' colourless glass with small affixed seal (damaged) stamped in relief with an

302. Watts 1975, 76–7, Fig 4

indecipherable motif, possibly an arm holding a bow.[303]
English (probably London); about 1680.
G58; X5 III/IV 19; Phase 5

79 Base fragment of a small bowl or jug, heavily 'crizzled' colourless glass, with solid flat pad-base. The vessel is decorated with ?14 vertical ribs, mould-blown in high relief. The flat base shows a small pontil-scar.
English (probably London); about 1680.
G50; X5 III/IV 6; Phase 6

GREEN GLASS, MAINLY UTILITARIAN

80 Neck/shoulder fragment of a bottle, greenish-colourless glass with heavy black weathering. Blown in a ribbed mould. Examples with comparable ribbing occur at London and Chichester. [304]

English; ? late 15th – 16th century.
G1033; X4 I/III /W4 I/II 2; Phase 5

81 Neck- and base-fragments of a bottle, thin pale-green glass with patchy black/beige weathering, decorated with mould-blown ribbing which has been twisted ('wrythen') in subsequent working. Domed irregular kick with ring-pontil mark in apex. Further examples are known from London, Canterbury, and Exeter. [305]
English (probably Wealden); *c* 1550–1650
*G1176; W8 5**=G6/7**; Phase 4*

82 Neck-fragment of a bottle, thin pale-green glass encrusted with patchy beige/black and some grey weathering. Blown in a ribbed mould, the ribs 'wrythen' in subsequent working. Bottle base, pale blue-green glass with black/brown spotted weathering. Blown in a ribbed mould, the ribs 'wrythen' in subsequent working.
English (probably Wealden); *c* 1550–1650.
*G1194; W4 II/IV 4**=G4**; Phase 4*

83 Bottle-neck, pale-green glass, encrusted with patchy beige/black weathering. Blown in a ribbed mould, the ribs 'wrythen' in subsequent working.[306]
English (probably Wealden); *c* 1550–1650.
G1090; W1 5a; Phase 5

84 Bottle-neck, pale green glass, encrusted with beige/black weathering. Blown in a ribbed mould, the ribs 'wrythen' in subsequent working. For parallels, see **81**.
English (probably Wealden); *c* 1550–1650.
*G1187; W4 II/IV 4**=G4**; Phase 4*

85 Bottle-base, pale blue-green glass with black/brown spotted weathering. Blown in a ribbed mould, the ribs 'wrythen' in subsequent working. For parallels, see **81**.
English (probably Wealden); *c* 1550–1650.
*G1029; W4 II/IV 4c**=G4**; Phase 4*

86 Further examples of bottles with 'wrythen' ribbing. **86a**: bottle-neck fragment, pale now opaque glass with overall black weathering. **86b**: bottle-neck in pale-green glass, with black/brown and some grey weathering. **86c**: bottle-neck with out-turned lip, in pale blue-green glass. **86d** comprises bottle fragments, pale green glass, with black/brown spotted weathering. **86e**: fragmentary base of a bottle-neck, in thick, now opaque, glass, with black/brown spotted weathering. **86f**: bottle-neck with out-turned lip, and part of shoulder; pale green almost colourless glass with patchy black/beige weathering. **86g**: shoulder-fragment of a bottle, in pale yellowish-green thick glass coated with a beige weathering.
***86a** G1118; W1 5d**=G2**; Phase 4. **86b** G1187; W4 II/IV 4**=G4**; Phase 4. **86c** G1210; W4 II/IV 4**=G4**; Phase 4. **86d** G1232; W4 II/IV 4**=G4**; Phase 4. **86e** G1134; W5 4**=D1**; Phase 5. **86f** G1211; W4 II/IV 4**=G4**; Phase 4. **86g** G1059; V8 5a; Phase 5*

87 Neck/shoulder fragment, pale bluish-green glass, with patchy black/brown weathering. Blown in a ribbed mould.
English (probably Wealden); *c* 1550–1650.
*G1213; W4 II/IV 4**=G4**; Phase 4*

88 Bottle-neck and base, pale-green glass, irregularly encrusted with black/brown weathering. Comparable plain neck- and base-fragments occur at Knightons, and similar neck fragments, from the post-Dissolution period, occur at Battle Abbey.[307]
English (probably Wealden); *c* 1550–1650.
*G1212 (neck), G1214 (base); W4 II/IV 4**=G4**; Phase 4*

89 Bottle-neck, pale blue-green glass, with some black/brown weathering. For parallels, see **88**.
English (probably Wealden); *c* 1550–1650.
*G1249; P/Q 15/16 16**=G19**; Phase 4*

303. Buckley 1925, 28–9; Charleston 1984a, 123–6
304. Hume 1957a, 105, No 4 (London, late 15th century); Charleston 1981a, 221, No 11 (Chichester)
305. Hume 1957a, 106–7, No 5 (London, late 15th century context); Charleston 1987, 243–4, No 29 (Canterbury, 17th century pit); Charleston, 1984b, Nos 14–15, 62, 66, 100 etc (Exeter)
306. See n. 305, especially the Exeter fragment No 100
307. Knightons: Wood 1982, 36, Nos 53–5, 37, No 59. Battle Abbey: Charleston 1985, 142, Nos 30, 33

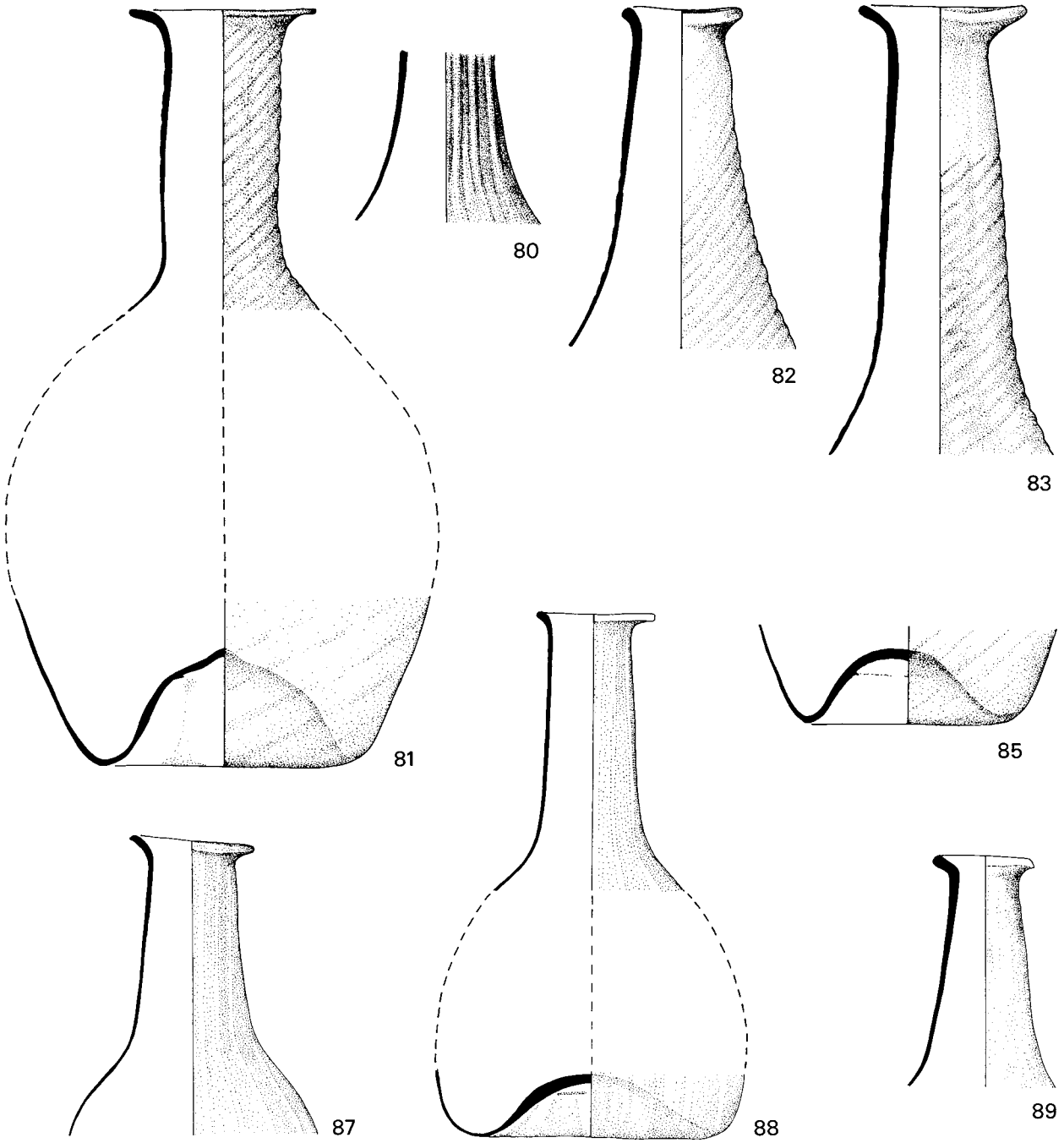


Fig. 118 Fine vessel glass: green bottles, ***80–3, 85, 87–9*** *(1:2).*

90 Further examples of plain bottles. **90a**: fragment of bottle-neck with out-turned lip, pale-green glass with black/beige encrusted weathering. **90b**: three neck-fragments, pale green glass with patchy beige/silvery weathering. **90c**: orifice of a bottle-neck with out-turned lip, pale-green glass coated with black weathering. **90d**: Low domed bottle-base, yellowish glass completely encrusted with beige and some black weathering. Pontil-scar (?ring-pontil) in apex of 'kick'. **90e**: fragment of bottle-neck with out-turned lip, the glass completely encrusted with black/buff weathering and virtually denatured.

90a *G1178; W8 5=**G6/7**; Phase 4.* ***90b*** *G1082; U7 8=**G9**; Phase 4.* ***90c*** *G1134; W5 4=**D1**; Phase 5.* ***90d*** *G1168; W8 3: Phase 5.* ***90e*** *G1158; W8 1; Phase 8*

91 Neck- and base-fragments of a flattened flask, pale-green glass with an overall coating of black weathering. Blown in a ribbed mould on a second gather and then twisted ('wrythen').
Probably English; *c* 1550–1625.
G1120; W2 5d=G3**; Phase 4*

92 Flask-fragment, very pale green glass, patchy brown weathering. Blown in a ribbed mould on a second gather and then twisted ('wrythen'), the body of the flask flattened.
Probably English; *c* 1550–1625.
G1143; W5ex 2d=G5**; Phase 4*

93 Base fragment of a flattened flask, pale glossy green glass, virtually unweathered. Blown in a ribbed mould on a second gather and then twisted 'wrythen'.
Probably English; *c* 1550–1625.
G1142; W5ex 2d=G5**; Phase 4*

94 Flattened flask, pale green glass with extensive patchy black weathering. Blown in a ribbed mould on a second gather.
Probably English; *c* 1550–1625.
**G?; W2 3; Phase 7*

95 Neck-fragment of a flattened flask, pale-green glass with overall black weathering. Blown in a ribbed mould on a second gather and then twisted ('wrythen').
Probably English; *c* 1550–1625.
**G1253; V14 5; Phase 5*

96 Flattened flask, pale-green glass with extensive patchy black-beige weathering.
Probably English; *c* 1550–1625.
**G1094; W2 5a; Phase 5*

97 Small piriform flask, with 'cut out' footrim, pale-green glossy glass with patchy black weathering.
Perhaps German or East French; 16th century.
**G1108; W1 5c; Phase 5*

98 'Cut-out' foot fragment, perhaps of a piriform flask, almost colourless glass with overall beige weathering.
Perhaps English; 16th century.
**G1011; W1 5b; Phase 5*

99 Neck/shoulder fragment of a small flask, almost colourless greyish-green glass, with overall spotty black weathering.
Perhaps German or East French; second half of 16th or early 17th century.
G1028; W4 II/IV 4=G4**; Phase 4*

100 Neck-fragment of small flask, almost colourless greyish-green glass, with overall spotty beige/black weathering.
Perhaps German or East French; second half of 16th or early 17th century.
*G1185; W4 II/IV 4=**G4**; Phase 4*

101 Neck/shoulder fragment of small flask, pale-green glass with spotty brown weathering in patches.
Probably English; 16th-17th century.
*G1165; W8 3=**G6/7**; Phase 4*

102 Neck-fragment of small flask, almost colourless green glass with patchy brown weathering.
Probably English; 16th-17th century.
*G1170; W8 3=**G6/7**; Phase 4*

103 Neck/shoulder fragment of small flask, glossy dark-green glass, unweathered.
Probably English; 17th century.
G1262; W12/13 3; Phase 6

104 Neck- and base fragments of small flask almost colourless greenish glass with spotty brown weathering. Domed base, apparently without pontil-mark.
Probably English; 16th-early 17th century.
*G1175; W8 11=**G6**; Phase 4*

105 Neck- fragment of small flask, pale-green glass with some beige/black weathering.
Probably English; 16th-17th century.
*G1173; W8 6=**G6**; Phase 4*

106 Neck-, shoulder-, and base-fragments of a large flask, pale-green glass with patchy black/beige weathering. Neck roughly sheared off, domed 'kick' with large flat pontil mark (neck and base may not belong together).
Probably East French or English; *c* 1550–1650.
G1182 (neck), 1203 (shoulder and base); W4 II/IV 4=G4**; Phase 4*

107 Neck- and base-fragments of a large flask, pale-green glass with patchy black/beige weathering. Neck roughly sheared off, base with broad flat pontil-mark.
Probably East French or English; *c* 1550–1650.
G1136 (neck), 1137 (base); W5ext 2d=G4**; Phase 4*

108 Neck-fragment of a tall flask, blue-green glass with slight iridescent weathering.
Perhaps Florentine; *c* 1680.
**G1004; R1 7; Phase uncertain*

109 Neck-fragment of a tall flask, blue-green glass with some iridescent weathering, the rim carelessly sheared off.
Perhaps Florentine; *c* 1680.
**G1007; R8 6; Phase 5*

110 Neck-fragment of a tall flask, blue-green glass with some iridescent weathering, the rim carelessly sheared off. Perhaps Florentine; *c* 1680.
G1003; Q8 3; Phase 5

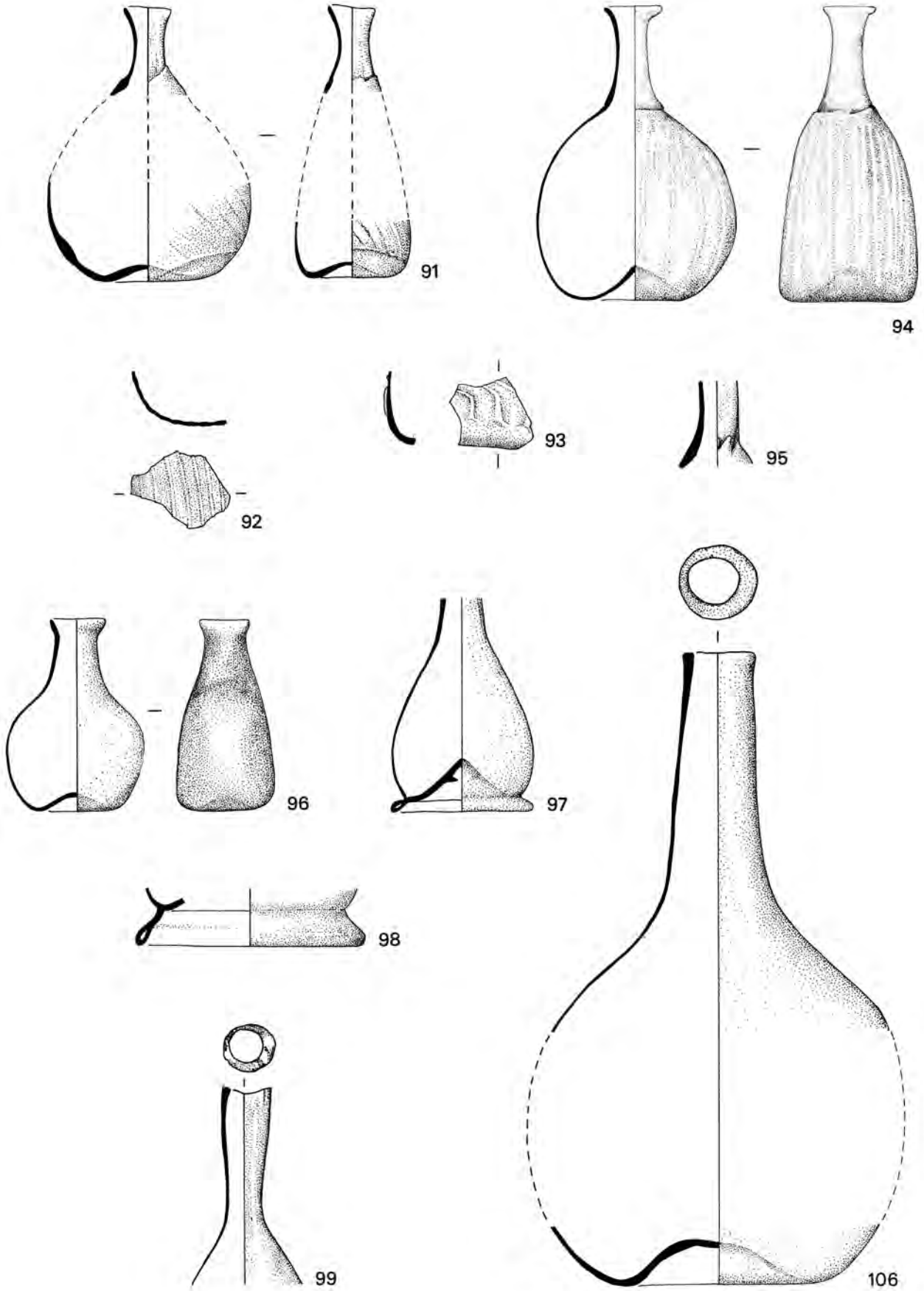


Fig. 119 Fine vessel glass: green flasks, ***91–9, 106*** *(1:2).*

111 Fragmentary case-bottle of square section, thin pale grey-green glass with encrusted overall beige/black weathering.
Probably English; late 16th-mid 17th century.
G1102; W1 5a=G3**; Phase 4*

112 Fragmentary case-bottle of square section, thin pale grey-green glass with encrusted patchy beige/iridescent weathering.
Probably English; late 16th-mid 17th century.
*G1251; P/Q 15/16 16=**G19**; Phase 4*

113 Base of a case-bottle of square section, thick green glass with overall black glossy weathering.
Probably English; late 16th-mid 17th century.
**G2293; W12 6; Phase 5*

114 Fragment of side of a case-bottle of rectangular section, pale green glossy glass, estimated minimum width of sides 58mm, thickness 1mm.
Probably English; late 16th-mid 17th century.
*G1261; W12/13 8=**G11**; Phase 4*

115 Fragments of a case-bottle of square section, yellowish-green glass with encrusted patchy beige/iridescent weathering, leaving pitting where it has flaked off.
Probably English; late 16th-mid 17th century.
G5; W5 8; Phase 5

116 Fragments of a large case bottle, pale-green glass with beige and black patchy weathering, glass approx. 2mm. thick. Possibly part of **117**.
Probably English; late 16th-mid 17th century.
G1319; U7 2; Phase 5

117 Fragments of a large case-bottle, pale-green glass with overall beige or black weathering. Glass approx. 2mm. thick.
Probably English; late 16th-mid 17th century.
*G1085; U7 8=**G9**; Phase 4*

118 Base- and neck-fragments of a small bottle, almost colourless greenish glass with overall black weathering. Pontil-mark in apex of base.
Probably English; mid-17th century.
**G1022, G1023; W4 II/IV 3; Phase 5*

119 Neck-fragment of flask, green glass. Associated fragments suggest a rounded body.
English; mid-17th century.
G2092; T1 1; Phase 8

120 Neck-/shoulder-fragment of flask, pale-green glass with encrusted buff weathering.
English; first half of the 17th century.
**G26; S8 2; Phase 5*

121 Base-fragments of a small bottle, glossy olive-green glass.
Perhaps imported (?Netherlands); third quarter of the 17th century.
G1259; 12/13 8=G11**; Phase 4*

122 Apothecary's vial, dark olive-green glossy glass. Small pontil-scar in kick.
Possibly imported (?Netherlands); third quarter of the 17th century.
**G1069; U7 2; Phase 5*

123 Neck-fragments of a small flask, mid-green unweathered glass.
English; mid-17th century.
G1308; X16 I/III 1; Phase 8

124 Apothecary's vial, pale-green glass with overall iridescent weathering. Traces of (?ring-) pontil mark on edge of base.
English; third quarter of the 17th century.
**G2356; Unprovenanced*

125 Neck-/shoulder-fragment of an apothecary's vial, pale-green glass with patchy beige weathering.
English; mid-17th century.
**1001; P/Q 2/3 2; Phase 5*

126 Neck-fragment of an apothecary's vial, with applied thread at rim, pale-green glass with some beige weathering.
English; third quarter of the 17th century.
G1215; W4 II/IV 4=G4**; Phase 4*

127 Neck-/shoulder-fragment of an apothecary's vial, almost colourless glass with overall silvery-beige weathering.
English; mid-17th century.
**G3; Q8 11; Phase 5*

128 Neck-fragment of an apothecary's vial, pale-green glass with overall blackish weathering, and carefully in-folded rim.
English; third quarter of the 17th century.
G1122; W5 4=D1**; Phase 5*

129 Base-fragment of an apothecary's vial, almost colourless glass with encrusted powdery white/grey weathering.
English; third quarter of the 17th century.
G1013; W4 3; Phase 5

130 Base-fragment of an apothecary's vial, pale blue-green glass with overall black/iridescent weathering. Small pontil-scar in apex of kick.
English; third quarter of the 17th century.
**G1038; X8 4; Phase 3*

131 Neck-fragment of an apothecary's vial, pale-green glass with overall opaque beige weathering, the neck strengthened by an additional thread of glass.
Probably English; third quarter of the 17th century.
**G1058; U8 1; Phase 8*

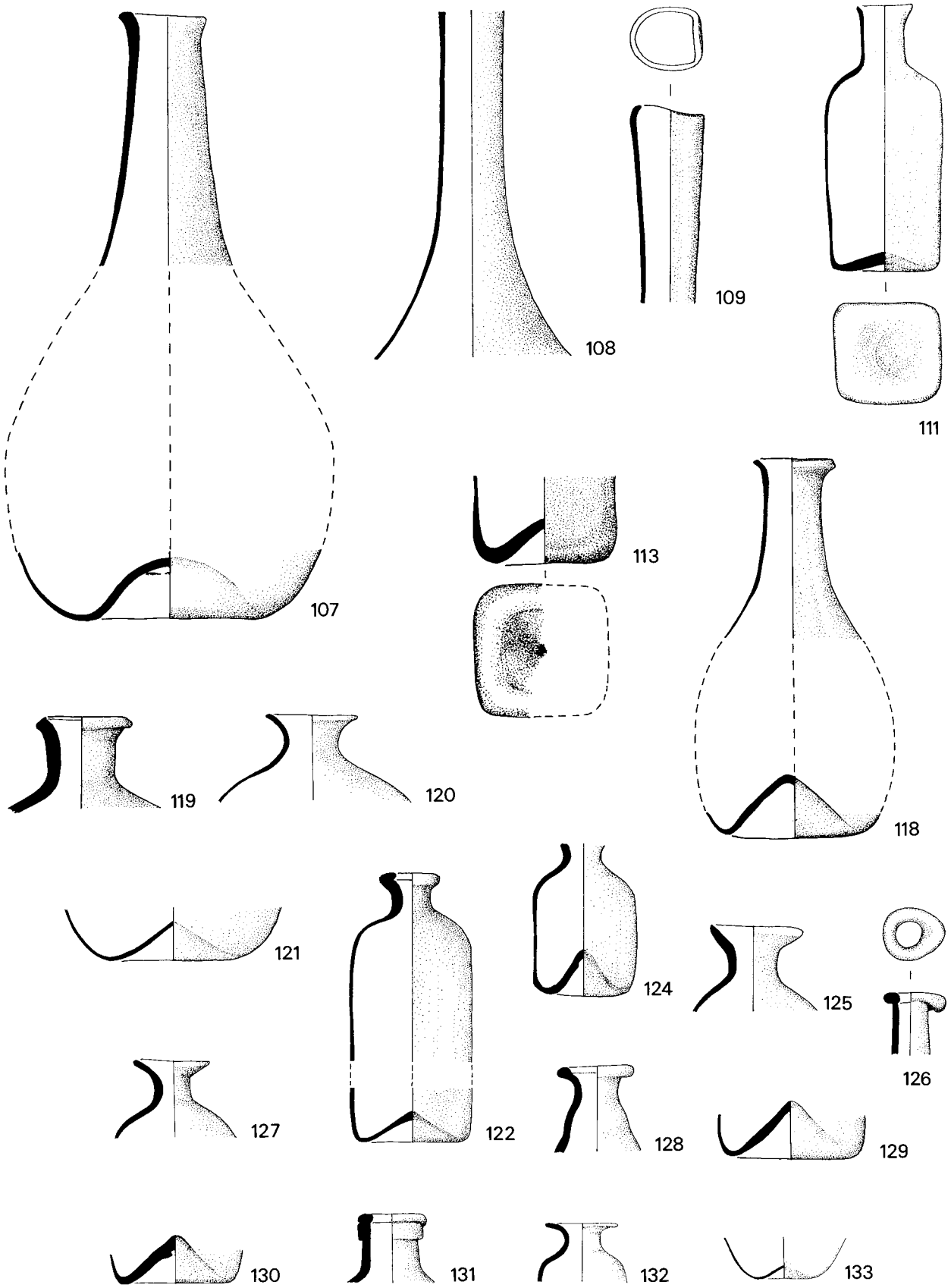


Fig. 120 Fine vessel glass: green flasks, ***107–9,*** *case bottles,* ***111, 113,*** *small bottles, flasks, and apothecary's vials,* ***118–22, 124–33*** *(1:2).*

132 Neck-/shoulder-fragment of an apothecary's vial, light bluish-green glass with overall blue-toned iridescent weathering.
English; third quarter of the 17th century.
**G1006; R8 3; Phase 5*

133 Base-fragment of an apothecary's vial or small flask, almost colourless yellowish thin glass with patchy black weathering.
English; mid-17th century.
G1027; W4 II/IV 4c=G4**; Phase 4*

134 Neck-fragment of an apothecary's vial (cf. **120**, and **127**), pale-green with silver weathering.
English; third quarter of the 17th century.
G1035; X4 8; Phase 5

135 Base-fragment of a small flask, glossy olive-green glass, low domed kick with a large pontil-mark in the apex.
Perhaps imported (?Netherlands); mid-17th century.
*G1222; W4 II/IV 4=**G4**; Phase 4*

136 Base-fragment of an apothecary's vial, pale blue-green glass with patchy brown/silvery weathering eating deep into the glass. Tall, conical kick with traces of (?ring-) pontil-scar half-way up, the glass distorted by the application of the pontil-wad.
English; third quarter of the 17th century.
G1018; W5 8; Phase 5

137 Base-fragment of an apothecary's vial, glossy pale-green glass with slight sandy weathering. Low domed base with no trace of pontil-scar.
Probably English; mid-17th century.
*G1228; W4 II/IV 4=**G4**; Phase 4*

138 Base-fragment of an apothecary's vial, pale blue-green glass with silvery/iridescent weathering. Conical kick without trace of pontil-scar.
English; third quarter of the 17th century.
G1062; S1 11; Phase 5

139 Base-fragment of an apothecary's vial, pale blue-green glass with overall iridescent weathering. Kicked base.
English; third quarter of the 17th century.
G41; X6 2; Phase 6

140 Base-fragment of an apothecary's vial or small flask, pale yellowish-green with spotty beige weathering. Kicked base without trace of pontil-mark. Base diam. *c* 35mm.
English; third quarter of the 17th century.
*G1190; W4 II/IV 4=**G4**; Phase 4*

141 Four base-fragments of apothecary's vials, pale-green glass with various buff and black weathering, all with domed base. **114a**: estimated diam. 50mm. **141b**: estimated diam. of base 35mm. **141c**: estimated diam. of base 45mm. **141d**: estimated diam. 45mm.
English, mid-17th century.
***141a** G1047; W9 4; Phase 3. **141b** G1097; W1 5a=**G2;** Phase 4. **141c** G1166; W8 3; Phase 5. **141d** G1036; X4 11; Phase 5*

142 Base-fragment of an apothecary's vial, almost colourless glass with coated black weathering, low domed base. Estimated diam. of base, 30mm.
English, mid-17th century.
*G1226; W4 II/IV 4=**G4**; Phase 4*

143 Base- and body-fragments of an *albarello*, pale-green glass with heavy encrusted black/beige weathering. Small but thick pontil-mark in apex of base.
Probably English, perhaps French; second half of 16th-early 17th century.
**G1252; Q13 IV 5; Phase uncertain*

144 Rim-, body-, and base-fragments of an *albarello*, pale-green glass with patchy superficial brown weathering. Small rough pontil-mark in apex of base.
Perhaps French; second half of the 16th-early 17th century.
G1088, G1092, G1322; W1 5a=G2**; Phase 4*

145 Neck-fragment of an *albarello*, almost colourless greenish glass with encrusted beige weathering.
Probably English; second half of the 16th-early 17th century.
G1227; W4 II/IV 4=G4**; Phase 4*

146 Neck-fragment of a small *albarello*, apparently pale-green glass rendered almost opaque with dark encrusted weathering.
Probably English; second half of the 16th-early 17th century.
G1129; W5 4a=D1**; Phase 5*

147 Base-fragment of a small *albarello* or flask, pale yellowish-green glass, with overall brown/iridescent weathering.
Probably English; second half of the 16th-early 17th century.
**G1040; R14 I/II 2; Phase 6*

148 Further *albarello* fragments. **148a**: Rim-fragment, bluish-green glass with slight silvery weathering. Rim diam. approx. 90mm. **148b**: Rim-fragments, pale-green glass with overall brown/black encrusted weathering. Rim diam. approx. 90mm. **148c**: Rim-fragment, pale-green glass with slight patchy beige weathering. Rim diam. approx. 100mm. **148d**: Rim fragment, pale-green glass with overall thin grey/beige weathering. Rim diam. approx. 83mm. **148e**: Rim-fragments, blueish-green glass with slight spotty brown weathering. Rim diam. approx. 90mm. **148f**: Base-fragment, pale-green glass with overall encrusted

black weathering. Low domed base with wide pontil-mark. Diam. of base 75mm.
***148a**: G1067; T7 III 3=**G26**; Phase 4. **148b**: G1112; W1 5a=**G2**; Phase 4. **148c**: G1223; W4 II/IV 4=**G4**; Phase 4. **148d**: G26; Q5 III 3; Phase 5. **148e**: G1012; W1 5; Phase 5. **148f**: G1109; W1 5c; Phase 5*

149 Curcurbit, pale-green glass with patchy brown/black weathering, with wide flattened pontil mark under base.
Probably English (perhaps Wealden); late 16th to early 17th century.
G1193; W4 II/IV 4=G4**; Phase 4 (cf. Fig. 109)*

150 Neck and body fragments of a urinal, thin pale green glass with patchy beige weathering.
English (perhaps Wealden); 16th to mid-17th century.
**G1105; W1 5c; Phase 5*

151 Neck-fragment of a urinal, (?) green glass rendered totally opaque by overall encrusted weathering. Accompanying fragments include a base.
English (perhaps Wealden); 16th to mid-17th century.
G130; S1 13=G31**; Phase 4*

152 Neck-fragment of a urinal, pale-green glass with patchy beige/black weathering.
English (perhaps Wealden); 16th to mid-17th century.
G1171; W8 6=G6**; Phase 4*

153 Rim-fragment of a urinal, pale-green glass with overall brown/black weathering.
English (perhaps Wealden); 16th to mid-17th century.
*G1103; W1 5a=**G2**; Phase 4

154 Rim-fragment of a urinal, pale-green glass with spotty beige/black weathering.
English (perhaps Wealden); 16th to mid-17th century.
G1138; W5ext 2d=G5**; Phase 4*

155 Rim-fragment of a urinal, of pronounced (? distorted) oval shape, pale-green glass with patchy black weathering.
English (perhaps Wealden); 16th to mid-17th century.
**G1060; V8 5a; Phase 5*

156 Rim/neck-fragment of a urinal, with rim of oval shape and narrow neck, pale-green glass with patchy beige/black weathering.
English (perhaps Wealden); 16th to mid-17th century.
G1196; W4 II/IV 4=G4**; Phase 4*

157 Rim/neck-fragment of a urinal, with tapering neck (type II), pale-green glass with patchy beige/black weathering
English (perhaps Wealden); 16th to mid-17th century.
G1089; W1 5a=G2**; Phase 4*

158 Rim/neck-fragment of a urinal, with tapering neck (type II), pale-green glass with overall silvery weathering.
English (perhaps Wealden); 16th to mid-17th century.
**G1070; U7 2; Phase 5*

159 Rim/neck-fragment of a urinal, with cylindrical neck and raised rim, pale-green glass with patchy brown/black weathering. Rim approx. 75mm. diam.
English (perhaps Wealden); 16th to mid-17th century.
G1200; Q6 II/IV 4; Phase 5

160 Rim/neck-fragment of a urinal, with cylindrical neck and raised rim, grey-green glass with spotty black weathering. Rim approx. 90mm diam.
English (perhaps Wealden); 16th to mid-17th century.
*G1135; W5 ext 2c=**G5**; Phase 4*

161 Rim/neck-fragment of a urinal with cylindrical neck and narrow lip with raised rim, pale green bubbly glass with overall encrusted grey weathering. Rim approx. diam. 65mm.
English (perhaps Wealden); 16th to mid-17th century.
*G1257; W12/13 8=**G11**; Phase 4*

162 Rim/neck-fragments of a urinal, with cylindrical neck and slightly up-turned rim, pale-green glass with encrusted patchy black/brown weathering. Rim approx. diam. 90mm.
English (perhaps Wealden); 16th to mid-17th century.
G1107; W1 5c; Phase 5

163 Rim/neck-fragment of a urinal, pale-green glass with spotty black weathering, slightly up-turned rim. Rim approx. diam. 75mm.
English (perhaps Wealden); 16th to mid-17th century.
*G1204; W4 II/IV 4=**G4**; Phase 4*

164 Rim/neck-fragment of a urinal, pale-green glass with patchy encrusted black/brown weathering, cylindrical neck and markedly up-turned rim. Rim approx. diam. 83mm.
English (perhaps Wealden); 16th to mid-17th century.
G1162; W8 3; Phase 5

165 Rim/neck-fragment of a urinal, pale-green glass with patchy buff/black weathering, cylindrical neck and markedly up-turned rim. Rim. approx. diam. 83mm, distorted.
English (perhaps Wealden); 16th to mid-17th century.
G1164; W8 3; Phase 5

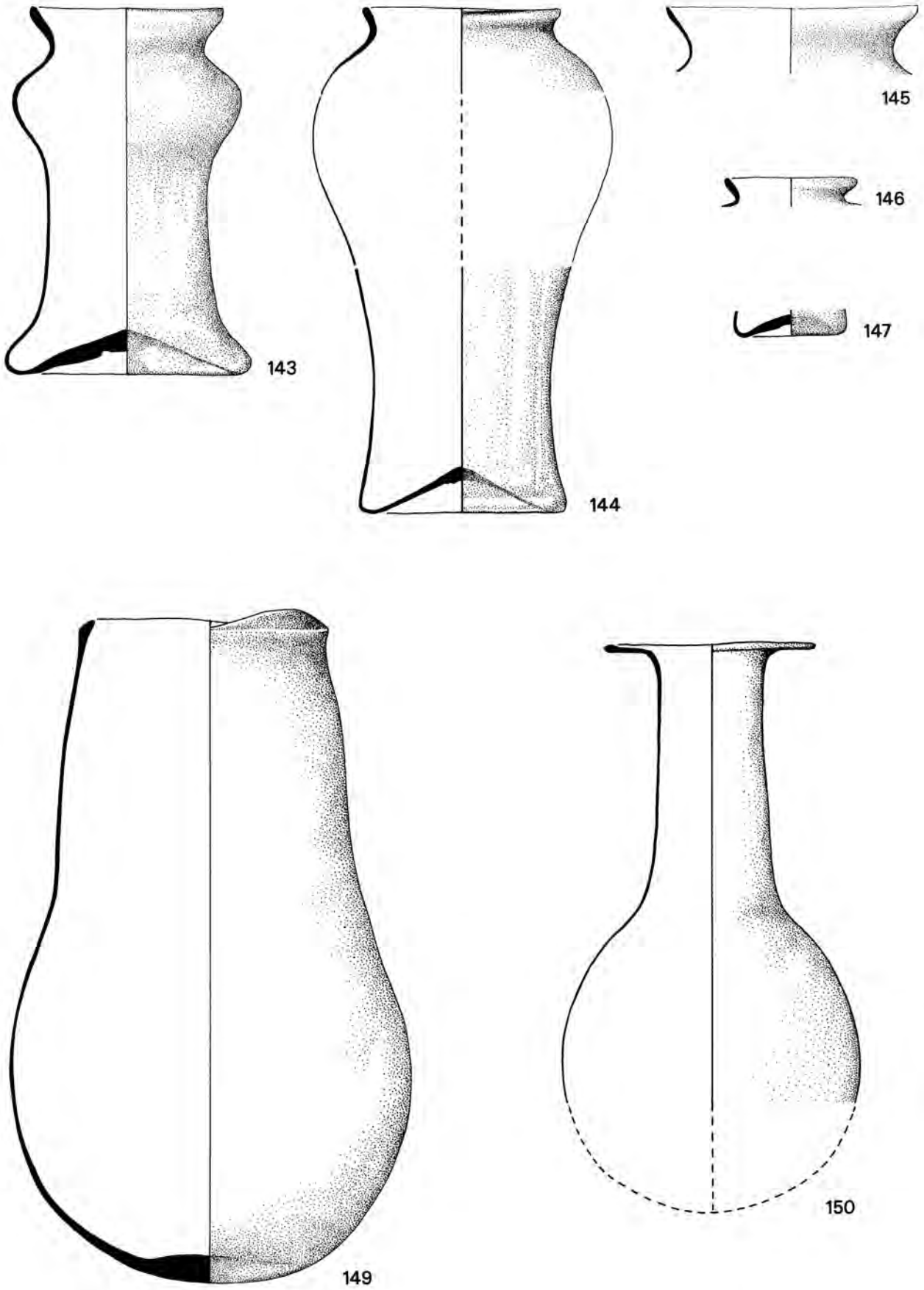


Fig. 121 Fine vessel glass: green albarellos, ***143–7,*** *cucurbit****, 149****, urinal,* ***150*** *(1:2).*

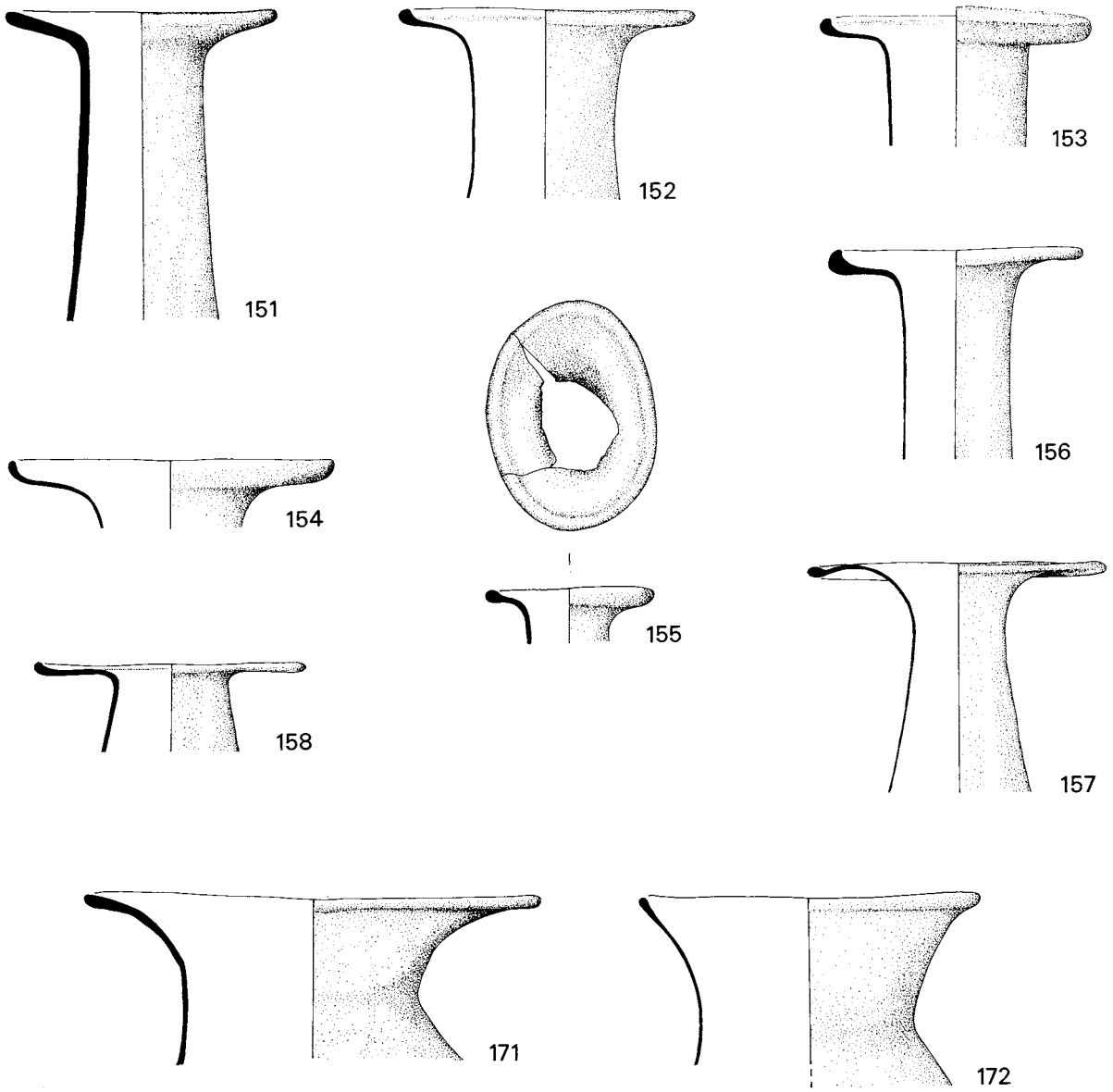


Fig. 122 Fine vessel glass: green urinals, ***151–8, 171–2*** *(1:2).*

166 Rim/neck-fragments of a urinal, pale-green glass with patchy beige/black weathering, cylindrical neck and markedly up-turned rim. Rim approx. diam. 75mm.
English (perhaps Wealden); 16th to mid-17th century.
*G1216; W4 II/IV 4=**G4**; Phase 4*

167 Rim-fragment of a urinal, pale-green glass with patchy beige/black weathering, cylindrical neck and up-turned rim. Rim approx. diam. 75mm.
English (perhaps Wealden); 16th to mid-17th century.
*G1201; W4 II/IV 4=**G4**; Phase 4*

168 Rim-fragment of a urinal, pale yellowish-green glass with patchy coated black weathering, narrow rim with markedly up-turned lip. Rim approx. diam. 70mm.
English (perhaps Wealden); 16th to mid-17th century.
G1101; W1 5c; Phase 5

169 Various neck-fragments of urinals.
169a: Two rim-fragments, pale-green glass with patchy beige/black weathering, up-turned lip. Approx. diam. 83mm. **169b**: Rim-fragment, pale-green glass with overall beige/silvery weathering, up-turned lip. Approx. diam. 90m. **169c**: Rim-

fragment, pale green bubbly glass with overall beige/black weathering, up-turned lip. Approx. diam. 90mm. **169d**: Numerous rim-fragments, pale-green glass with spotty beige/black weathering, slight up-turned lip. Approx diam. 83mm. **169e**: Pale-green bubbled glass, virtually unweathered, up-turned lip. Approx. diam. 90mm. **169f**: Almost complete rim, pale-green glass with overall encrusted beige/black weathering, up-turned lip. Approx. diam. 75mm. **169g**: Rim-fragment, completely obscured by encrusted ochre weathering, up-turned lip. Approx. diam. 75mm. **169h**: Rim-fragment, pale-green glass with dense overall black weathering, up-turned lip. Approx. diam. 83mm. **169i**: Rim/neck-fragments, pale-green glass with encrusted beige /black silvery weathering, up-turned lip. **169j**: Four neck/rim-fragments, with overall encrusted black weathering, narrow rim and markedly up-turned lip (perhaps type II). Approx. diam. 75mm.
English (perhaps Wealden); 16th to mid-17th century.
169a *G1086; U7 8=**G9**; Phase 4.* ***169b*** *G1231; W4 II/II 4=**G4**; Phase 4.* ***169c*** *G1230; W4 II/IV 4=**G4;** Phase 4.* ***169d*** *G1148; W5ext 2d=**G5**; Phase 4.* ***169e*** *G1144; W8 6=**G6/7**; Phase 4.* ***169f*** *G1124; W1 5c; Phase 5.* ***169g*** *1019; W1 5c; Phase 5.* ***169h*** *1024; W4 II/IV 3; Phase 5.* ***169i*** *W4 5=**D1**; Phase 5.* ***169j*** *G1015; W5ext 2; Phase 5*

Numerous smaller rim-fragments may also be noted:
*G1141; W5ext 2d=**G5**; Phase 4. G1143; W5 ext 2d=**G5**; Phase 4. G1014; W5 2; Phase 6. G1130; W5 4a=**D1**; Phase 5. G1072; W5ext 2a; Phase 5. G1073; V7 2; Phase 6*

170 Rim- and base-fragments (2), originally pale-green glass covered with thick black/brown weathering, the neck with narrow rim and markedly up-turned lip. Rim approx. diam. 90mm.
English (perhaps Wealden); 16th to mid-17th century.
*G1256; W12/13 8=**G11**; Phase 4*

171 Rim fragments of a large urinal (type III), thick almost colourless glass with overall encrusted black weathering.
Probably English (perhaps Wealden); 16th to mid-17th century.
G1183; W4 II/IV 4=G4**; Phase 4*

172 Rim of a large urinal (type III), thick pale-green glass with occasional spotty beige weathering.
English (perhaps Wealden); 16th to mid-17th century.
G1191; W4 II/IV 4=G4**; Phase 4*

173 Base-fragment of a urinal, pale-green glass with overall encrusted cream weathering on the inside and patchy black weathering on the outside.
English (perhaps Wealden); 16th to mid-17th century.
**G1110; W1 5c; Phase 5*

174 Base-fragment of a urinal with pronounced pontil-mark, pale-green glass with overall spotty beige and some black weathering on both surfaces.
English (perhaps Wealden); 16th to mid-17th century.
G1205; W4 II/IV 4=G4**; Phase 4*

175 Base-fragment of a urinal, pale-green glass with some spotty black weathering.
English (perhaps Wealden); 16th to mid-17th century.
**G1106; W1 5c; Phase 5*

176 Base-fragment of a urinal, pale-green glass with some spotty black and beige weathering, mainly internally.
English (perhaps Wealden); 16th to mid-17th century.
G1192; W4 II/IV 4=G4**; Phase 4*

177 Base-fragment of a urinal, with pronounced pontil-mark, having overall beige/black weathering on both surfaces.
English (perhaps Wealden); 16th to mid-17th century.
G1016; W5ext 2c=G5**; Phase 4*

178 Base-fragment of a urinal, pale greyish-green glass with spotty encrusted black weathering and rust-stains.
English (perhaps Wealden); 16th to mid-17th century.
G1144; W5ext 2d=G5**; Phase 4*

179 Base-fragment of a urinal, pale greyish-green glass with superficial black weathering on both faces, prominent rough pontil-marks.
English (perhaps Wealden); probably 16th century.
**G1113; W1 5c; Phase 5*

180 Various base-fragments of urinals.
180a: Base with pontil-mark, completely encrusted with black weathering. **180b**: Base with apparently ring-pontil mark, pale green glass with patchy black weathering and overall grey coating. **180c**: Base with apparently ring-pontil mark, pale grey-green glass with patchy black weathering. **180d**: Base with smooth pontil-mark, pale-green glass completely encrusted with black weathering. **180e**: Base with deep pontil-scar, pale-green bubbly glass with some patchy black weathering. **180f**: Base with apparently ring-pontil mark, pale-green glass with much spotty black weathering.
English (perhaps Wealden); 16th to mid-17th century.
180a *G1144; W5ext 2d=**G5**; Phase 4.* ***180b*** *G1149;*

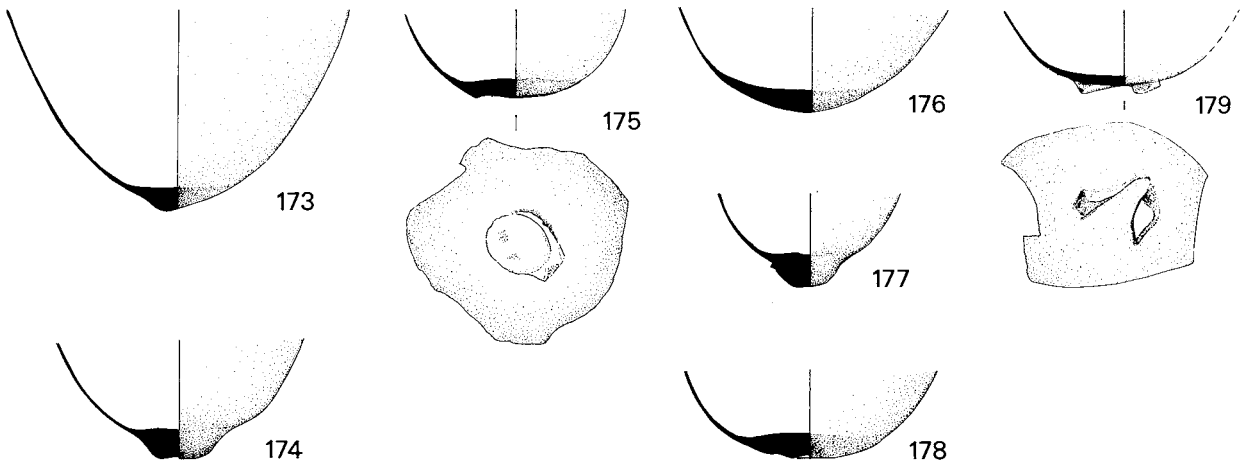


Fig. 123 Fine vessel glass: green urinals, ***173–9*** *(1:2).*

*W5ext 2d=**G5**; Phase 4.* ***180c*** *G1172; W8 6=**G6/7**; Phase 4.* ***180d*** *G1121; W5 4=**D1**; Phase 5.* ***180e*** *G1025; W4 III/IV 3a; Phase 5.* ***180f*** *G1163; W8 3; Phase 5*

Numerous smaller base-fragments may also be noted:
*G1181; W8 5; Phase 3. G1064; S1 13=**G31**; Phase 4. G1095; W1 5a=**G2**; Phase 4. G1109; W1 5a=**G2**; Phase 4. G1188; W4 II/IV 4=**G4**; Phase 4. G1218; W4 II/IV 4=**G4**; Phase 4. G1225; W4 II/IV 4=**G4**; Phase 4. G1031; W4 II/IV 7=**G4**; Phase 4. G1260; W12/13 8=**G11**; Phase 4. G1263; W12/13 8=**G11**; Phase 4. G1010; T1 5; Phase 5. G1114; W1 5c; Phase 5. G2166; W5ext 2a; Phase 5. G1161; W8 3; Phase 5. G1169; W8 3; Phase 5. G1159; W8 2; Phase 6. G1061; W7 1; Phase 8*

BEAKERS

181 Body- and base-fragments of tall beaker, pale grey-green glass with overall film of greyish-white weathering, the body with close mould-blown ribbing 'wrythen' anti-clockwise.
Probably Central Germany; middle of the 16th century. For analysis of the chemical composition of the glass, see above, p 236–8.
G1240, G1235; Y4 34=Well**; Phase 4. G1241, G1243, G1247; Y4 35=**Well**; Phase 4*

182 Rim- and base-fragments of cylindrical beaker, grey-green glass with patchy greyish-white weathering, the body with a mould-blown diaper-design of elongated lozenges in relief.
Central German or English; second half of the 16th century.
G1237, 1238; Y4 34=Well**; Phase 4*

183 Base-fragments of pushed-in foot of beaker, grey-green glass with patchy greyish-white weathering, with traces of vertical mould-blown ribbing.
Central German or English; second half of the 16th century.
G1236, 1241, 1243; Y4 34=Well**, Y4 35=**Well**; Phase 4*

184 Rim-fragments from a beaker, grey-green glass with patchy greyish-white and some rusty weathering, with mould-blown patterns of ovals in 'wrythen' vertical lines.
Central German or English; second half of the 16th century.
G1239; Y4 34=Well**; Phase 4. G1246; Y4 35=**Well**; Phase 4*

185 Base-fragments of pushed-in foot of beaker, pale-green glass with patchy grey-brown weathering.
English; late 16th-early 17th century.
G1221–4; W4 II/IV 4=G4**; Phase 4*

186 Base-fragments of pushed-in foot of beaker, pale-green glass with patchy brown/black weathering.
English; late 16th-early 17th century.
**G1104; W1 5b; Phase 5. G1113; W1 5c; Phase 5*

187 Rim-fragment of a beaker, pale-green glass with patchy pale-brown and overall black weathering, with overall mould-blown mesh pattern.
English; second half of the 16th-early 17th century.
G176; W4 II/IV 4=G4**; Phase 4*

188 Rim-fragment of a beaker, pale greyish-green glass with overall iridescent weathering, decor-

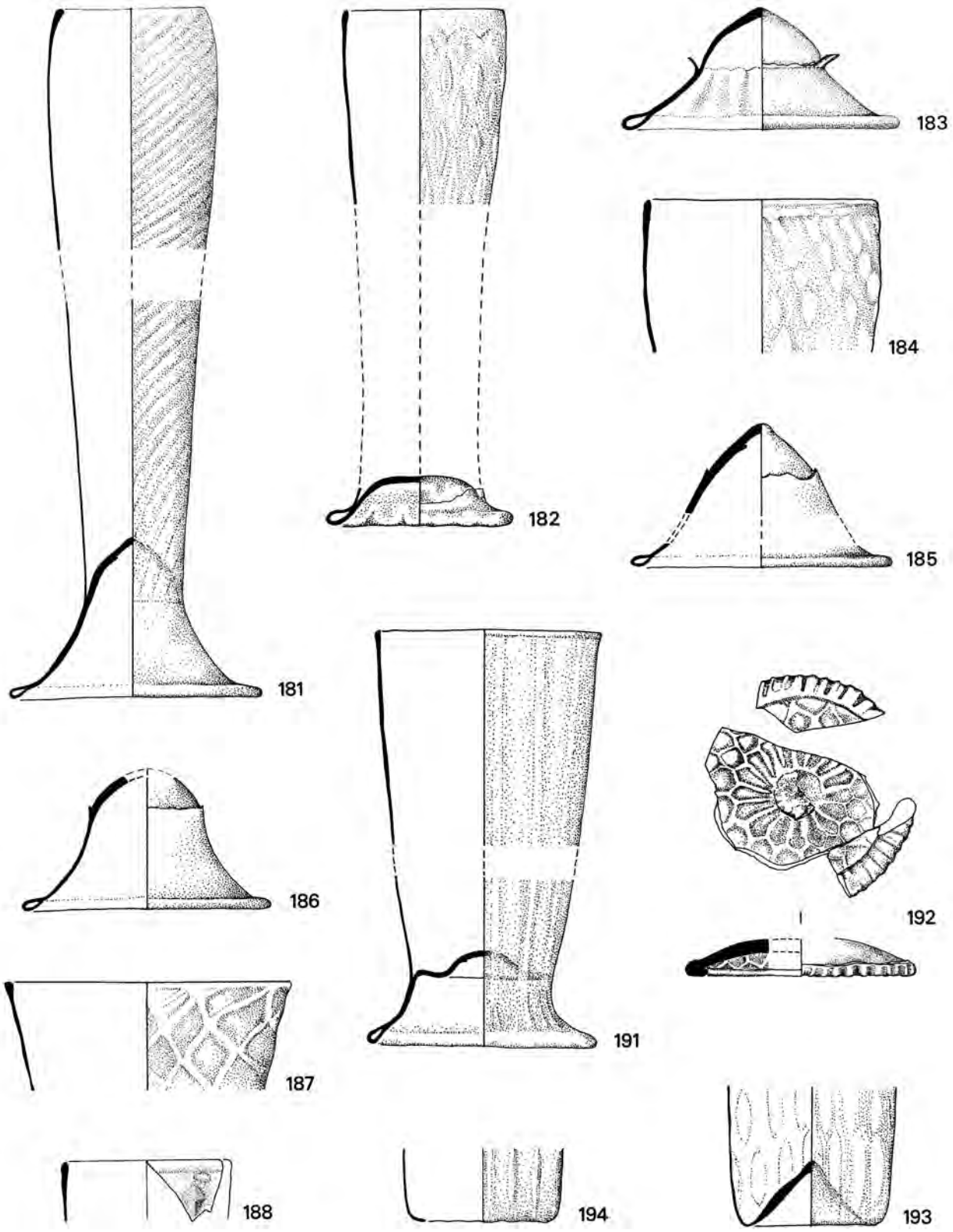


Fig. 124 Fine vessel glass: green beakers, ***181–8, 191–4*** *(1:2).*

ated with a mould-blown lozenge in relief.
Perhaps English; second half of the 16th-early 17th century.
**G1054; CH II 9; Phase 2 (contamination)*

189 Foot-fragment of a beaker, pale greyish-green glass with overall iridescent weathering, made by the pushed-in technique and with traces of mould-blown decoration. Probably part of **188**.
Perhaps English; second half of the 16th-early 17th century.
G1055; CH II 9; Phase 2 (contamination)

190 Rim- and wall-fragments from a beaker, pale greyish-green glass with overall iridescent weathering, decorated with a mould-blown diaper-pattern of raised elongated lozenges in relief. Probably part of **188**.
Perhaps English; second half of the 16th-early 17th century.
G1053; CH II 9; Phase 2 (contamination)

191 Rim-, base-, and body-fragments of a beaker, greyish-colourless glass with overall green/silvery weathering, the foot and body showing faint vertical mould-blown ribbing.
Perhaps French or possibly English; probably mid 16th century.
G172; W4 II/IV 4=G4**; Phase 4*

192 Foot-fragments of a cylindrical beaker, greenish-colourless glass with overall coating of black enamel-like weathering, mould-blown with an overall mesh-pattern springing from a 'rosette' of raised lines radiating from the centre of the base, which is obscured by a large pontil-mark. The basal angle has an applied thick thread notched probably by a roulette and partially turned under the base and flattened to form a stable ring-base.
Perhaps English, first half of the 17th century.
**G1021; W4 II/IV 3; Phase 5. G1034; X4 4; Phase 5. G1019; X4 I/II 1; Phase 8*

193 Base- and wall-fragments of a cylindrical beaker, greyish-colourless glass with overall coating of opaque-white weathering, mould-blown with an overall diaper of raised elongated (?) lozenges. Traces of pontil-mark in apex of base. (Perhaps part of **194**).
Perhaps English; second or third quarter of the 17th century.
G166; Y4 34=Well**; Phase 4. G1248; Y4 35=**Well**; Phase 4*

194 Base- and wall-fragments of a cylindrical beaker, greyish-colourless glass with film of iridescent weathering, mould-blown with a pattern of apparently raised vertical ribs, perhaps formed by greatly elongated lozenges. (Perhaps part of **193**).
Perhaps English; second or third quarter of the 17th century.
G1242; Y4 35=Well**; Phase 4*

195 Base/wall fragment of a cylindrical beaker, grey-greenish-colourless glass with patchy opaque-white weathering, mould-blown with close 'wrythen' ribbing.
Perhaps English; second or third quarter of the 17th century.
G1245; Y4 35=Well**; Phase 4*

MISCELLANEOUS

196 Fragment of a (?) goblet, pale-green glass with encrusted beige weathering, with thick and thin applied trails.
English, late 16th-early 17th century.
G174; W4 II/IV 4=G4**; Phase 4*

197 Neck- and shoulder-fragments of a handled jug, pale-green glass with patchy black/beige weathering, the body of the jug with faint mould-blown vertical ribbing.
English; late 16th-early 17th century.
G1199; W4 II/II 4=G4**; Phase 4*

198 Fragmentary dish with underfolded rim and flat base with small neat pontil-mark on under surface, faintly greenish-colourless glass with some iridescent weathering.
Probably English; late 16th-early 17th century.
G1077; U7 8=G9**; Phase 4*

199 Rim- and wall-fragment of a (?) milk-pan, pale-green glass with patchy beige weathering.
Probably English; 17th century.
G1119; W2 5b=G3**; Phase 4*

200 Wall-, rim-, and base-fragments of a straight-sided bowl, pale-green glass with patchy beige/silvery weathering.
Probably English; 17th century.
**G1071, G1072; U7 2; Phase 5*

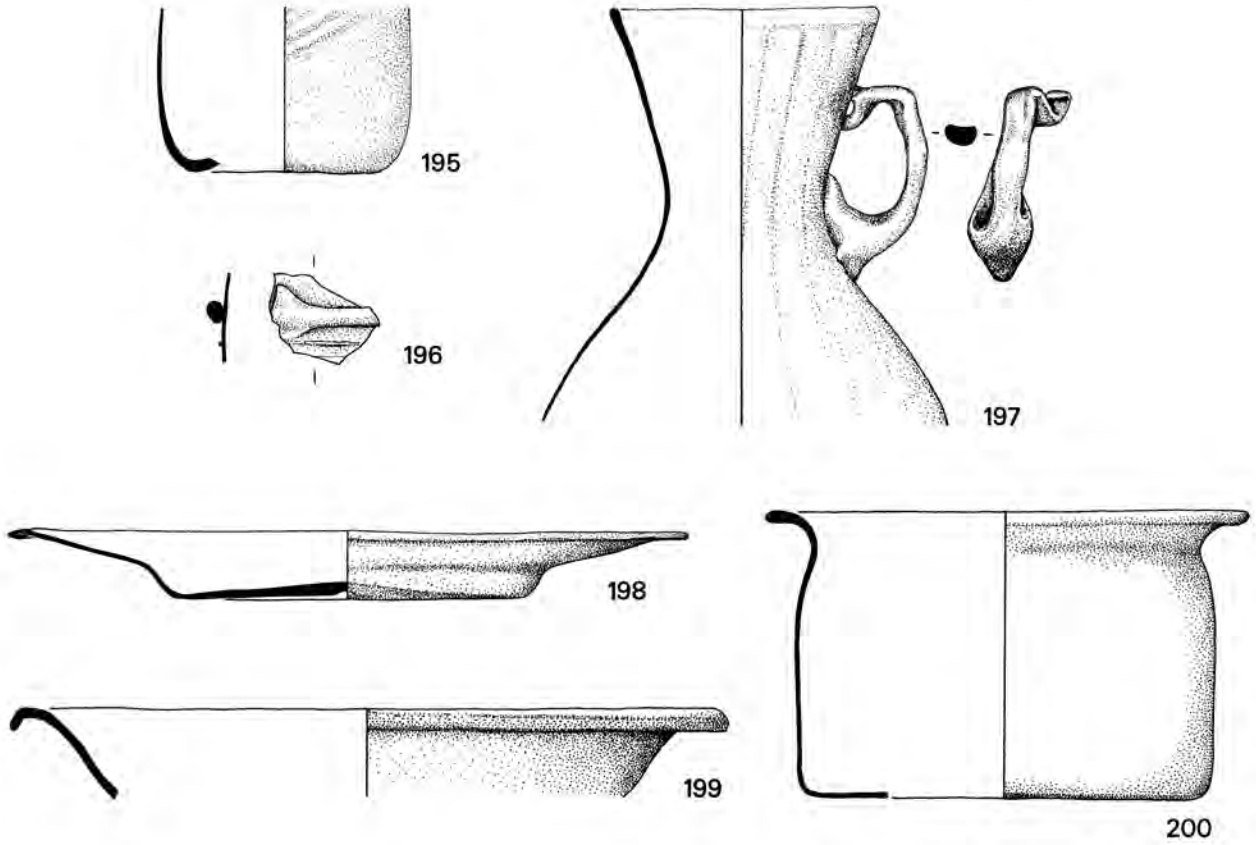


Fig. 125 Fine vessel glass: green beaker, ***195****, and miscellaneous,* ***196–200*** *(1:2).*

7

GREEN GLASS BOTTLES

by Martin Biddle and Jane Webster[1]

(Figs 75, 126–140; Tables 16–24)

During much of the sixteenth and well into the seventeenth century, most bottles were made of pottery or leather. German and eventually English stonewares (above, pp 99–119), Martincamp flasks and other French hard-fired wares (above, pp 139–42), and to a smaller extent tin-glazed vessels (above, pp 71–98), satisfied the need which glass bottles were later to meet. Two varieties of thin or relatively thin-walled green glass bottle were however in use from before the beginning of the seventeenth century: square or 'case' bottles (above, p 225; **111–17**; below, p 291–2), and round-bottomed vessels which were usually 'wanded', ie caged in wicker (cf Fig 75), or covered with leather (above, pp 139–41).[2] Some time before 1650 a technological or design advance resulted in the appearance of the thick-walled green-glass wine bottle,[3] an innovation which was to lead directly to the development of the modern bottle-making industry.

i. Thick-walled wine bottles

On sites throughout the world fragments of thick-walled green glass bottles are one of the characteristic artefacts of early modern archaeology. The ability to blow the thick-walled bottles probably emerged in several different European glass making centres at about the same time, but it is the English developments which concern us here, and it is these too which are the most thoroughly studied, not least because of the export of great quantities of English bottles to the North American colonies.[4]

There has been much debate over the date of origin of the thick-walled green glass wine bottle, sometimes known as a 'sack bottle'. Despite various suggestions,[5] there is as yet no good evidence that such bottles were being made as early as 1630–40. The earliest fixed point is provided by a seal dated 1650, found in London and broken from a bottle of this type.[6] Including this example, four wine-bottles or detached seals bearing dates in the 1650s are known, and

1. Our warmest thanks are due to Richard Kennaugh and Clive Orton for their advice and comments on the statistical methods adopted, although we remain responsible for any errors of approach or application
2. Hume 1961, 92, 94, 105–7; Charleston 1984a, 91–3, 96, 137
3. Hume 1961, 96–8; Charleston 1984a, 93–6
4. Hume 1961; Hudson 1961; Charleston 1984a, 95–6
5. Dumbrell 1983, 44–7
6. See below, p 303, Fig 142

several undated seals can also be attributed to this decade.[7] The manufacture of thick-walled wine-bottles probably began therefore in the 1640s, but there is no evidence at present to push this date any earlier. The excavation of closely dated Civil War fortifications, or the recovery of bottles from wrecks of known date, may help to refine the position, but meanwhile 1650 may be accepted as an approximate date for the introduction of the type.[7a]

The shape of the wine bottle evolved during the next century and a half until by about 1800 something close to the modern claret bottle had appeared. This evolution was gradual and did not proceed by sudden steps, but four basic types or stages have been defined:[8]

Type I	'Shaft and globe', *c* 1650–80. A bulbous body with a narrow base and a long neck, with a wide gap between the string and the rim.
Type II	'Onion', *c* 1680–1730. Squatter than Type I with a more rounded rim and a string close below the lip.
Type III	'Mallet', *c* 1730-60. Rim and neck similar to Type II, but the body has straight sides.
Type IV	'Tall', *c* 1760 onwards. The body is more slender and cylindrical, with a slightly bulging neck and, usually, a double string rim.

The Nonsuch thick-walled bottles and bottle fragments from the occupation and demolition layers of the palace are all of Types I and II. Bottles of Type III do not appear. The one exception is a group of 'tall' bottles of Type IV which otherwise occur only in the post-demolition and topsoil layers (see below, **78–9**).[9]

Although this sequence is useful as a broad classification, detailed studies by Leeds (who in 1914 was the first to place the typological evolution of the glass wine bottle on a systematic basis), Hume, and Haslam have shown that within these types or stages the shape of the bottle underwent a steady evolution.[10] This is clearest in Leeds' work, which covered the period *c* 1650 to *c* 1730, and dealt only with Types I and II, the 'shaft-and-globe' and 'onion' types (terms which Leeds himself seems not to have used). This evolution of what might be called 'the Oxford style' is summarized in Fig. 126.

The recorded demolition of Nonsuch in 1682–90 suggests that the thick-walled wine bottles from the occupation and demolition deposits should belong to Type I and the earliest part of Type II, and this is in fact the case. But it seemed that the bottles might provide (together, perhaps, with the clay pipes) potentially the best hope of refining the date range of these deposits within the period *c* 1670–1690, and in particular of establishing the probable dates of deposition of the groups of material in the separate garderobes. To use the bottles in this way requires, however, a more precise dating of the changes in shape within Types I and II. Leeds' pioneering work of 1914, revised in 1941, saw the attribution of some 39 bottle-profiles, mainly from four Oxford taverns, to the individual decades from 1650 to 1720.[11] Leeds' attributions to decades were based on bottles bearing dated seals (15 examples), on the dating of undated tavern seals by the identification of the licensees whose initials appeared on the seals, together with a tavern sign but without a year (22 examples), and to some extent on the style of seals or the evolution of form (2 examples).[12] More important for the present purpose, less than half Leeds' profiles (17 examples) related to the four decades 1650 to 1690 which are critical for study

7. See below, p 303, Table 26
7a. There were, for example, no thick-walled green glass bottles found in the extensive excavations at Sandal Castle, occupied briefly for the last time in the siege of 1645: Mayes and Butler 1983, 6–7; Moorhouse 1983.
8. Cf. the classification outlined by Thorpe 1929
9. See below, p 291 and n 21
10. Leeds 1914; Leeds 1941; Hume 1961; Hume 1970, 60–71; Haslam 1969; Haslam 1970
11. Leeds 1914, Fig 2; Leeds 1941, Fig 11
12. Leeds 1941, 46, 51, 53

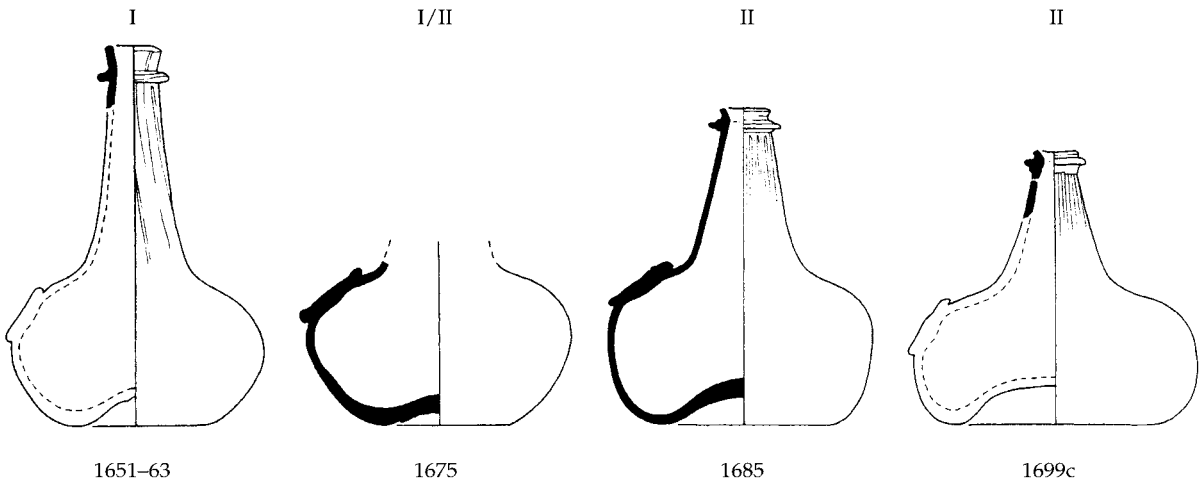


Fig. 126 English glass bottles: the principal typological stages of the 'Oxford style'. Type I, 'Shaft and globe', c 1650–65; Type I/II, 'Transitional', c 1660–80; Type II, 'Onion', c 1675–1730.

of the Nonsuch bottles. A further difficulty, experienced by other workers, was that Leeds' profiles were reproduced too small to allow useful comparisons to be made. To meet these difficulties, an attempt has been made here to provide a series of drawings of bottles with dated seals, at intervals of no more than five years, over the period *c* 1650 to *c* 1700 (Figs 127–31). A search of the literature, much of it seriously deficient in accurate information concerning original provenance, current location, museum accession number, or all three, suggests that about 146 bottles or seals actually bearing dates between these years have been recorded in Britain (Appendices 1 and 2, p 293–301, Table 25). At least 37 of the 91 bottles are in public collections or institutions, and 22 in private collections; the whereabouts of 30 or so are unknown, at least to the present writers. Drawings of 27 of these bottles are given in Figs 127–8. There are three additions at the start of the series: the bottle found in London and stamped RW, identified by Hume as belonging to Ralph Wormeley who died in 1651 (Fig 127, **pre-1652**); the bottle with the seal of TW and the tennis players dated by Leeds to between 1651 and 1663 (Fig 127, **1651–63**); and the bottle bearing the scratched date 1659, known only from a drawing preserved in the Bodleian Library, Oxford, redrawn for inclusion here (Fig 127, **1659**).[13] Other bottles whose seals can be identified with some certainty as belonging to known individuals and/or taverns during this period might have been included, but it seemed best to restrict this presentation (with the three exceptions already noted) to examples bearing dates in years. A seal with a date might, it is clear, appear on new bottles years after the die was cut, or seals might have dates relating not to the year the die was cut, but to some other event, for example an anniversary.[14] These pitfalls

13. Biddle 1988
14. It has sometimes been argued that the two bottles dated 1661 (Appendix 2) must be commemorative on account of their shape (Dumbrell 1983, 27, 54–5, Figs 22 and 28), but the section of the 1661 bottle once in Francis Berry's collection was drawn by Leeds (1941, 50, Fig 11b, date omitted from profile) and what seems to be the other example is illustrated by Hume (Hume 1970, 63). These drawings suggest that both bottles are clear examples of Type I/II: they fit comfortably into the 1660s, even if, with the date 1661, they are very early examples of the transitional type

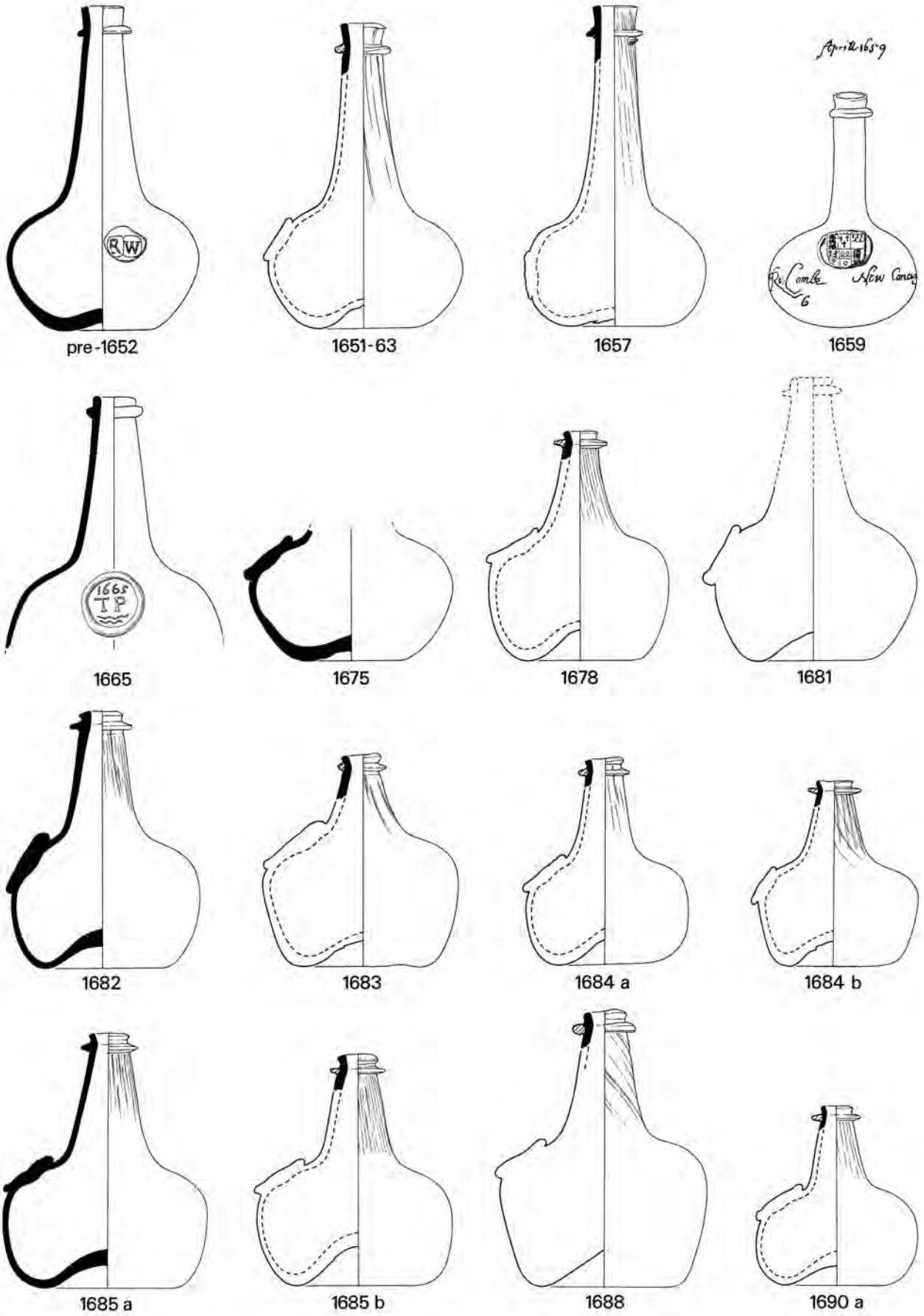


Fig. 127 English gless bottles with dated seals, pre–1652 to 1690 (for the seals, see Figs 129–30; for list, see p 293–5) (1:4).

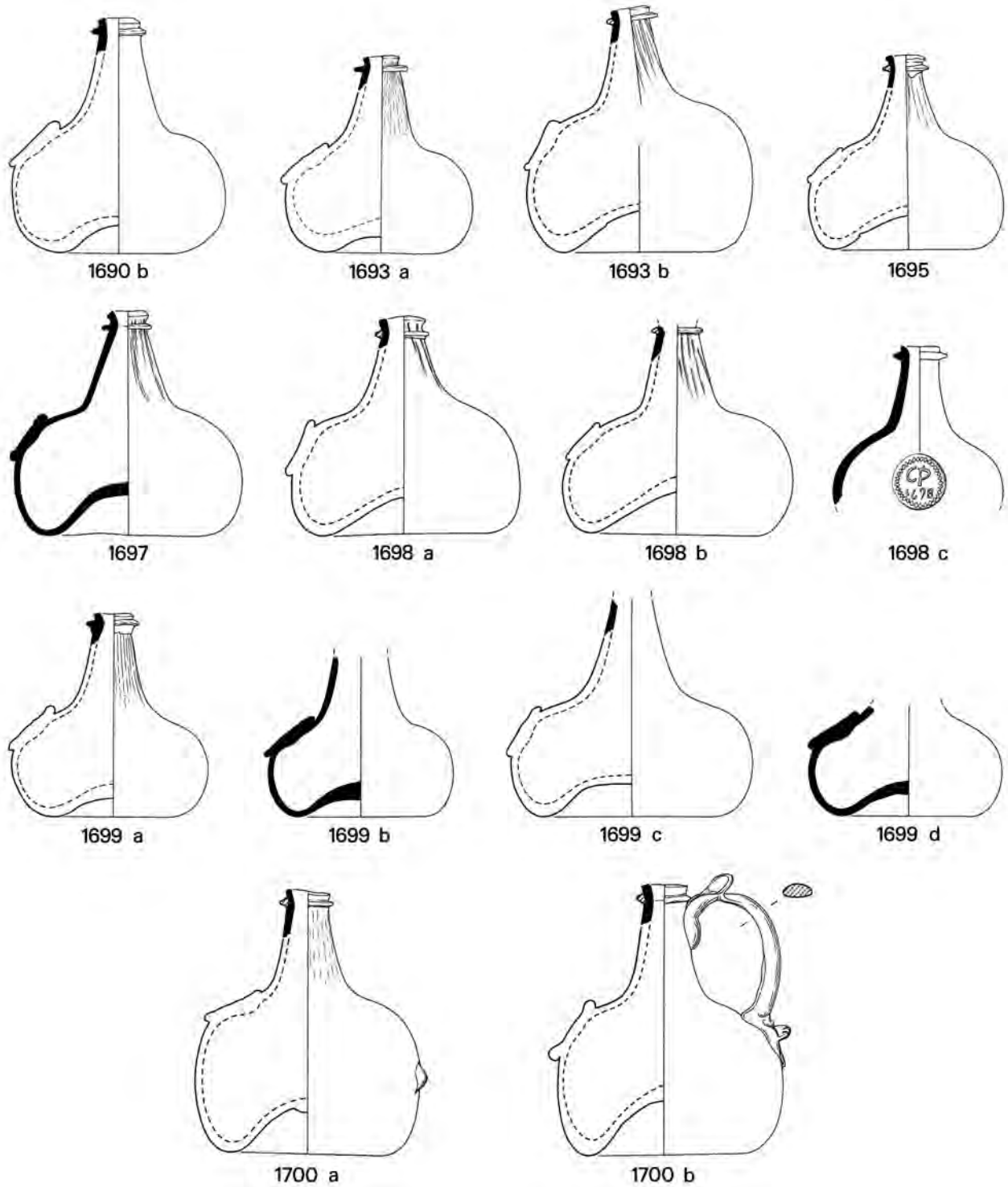


Fig. 128 English glass bottles with dated seals, 1690 to 1700 (for the seals, see Figs 130–1; for list, see p 296) (1:4).

Fig. 129 Dated seals from English glass bottles, pre-1652 to 1683 (for the bottles, see Fig 127; for list, see p 294–5) (1:1).

need to be kept in mind, but the coherence of the typological development displayed by the bottles in Figs 127–8 suggests that the dates are broadly reliable.

This view is supported by the care some owners took to change the dates on their seals from year to year, either by changing the die itself, or by having new dies cut. Two Oxford families were particularly assiduous: the Morrells changed the date on the die (1674 to 1675: p 294, Figs 127, 129, **1675**), or had new dies cut from year to year (1677, 1678, 1683, **1684a**, **1685a**, 1689); the Walkers had their dies repeatedly recut (1687, 1688, 1690, **1690a**, **1693a**, 1695, 1696, 1699, **1699a/b**,

Fig. 130 Dated seals from English glass bottles, 1684 to 1693 (for the bottles, see Figs 127–8; for list, see p 295–6) (1:1).

1699c/d) [in these examples, **bold** dates refer to examples drawn in Figs 127–8; ordinary dates to bottles listed in Appendix 2]. Others marked their bottles specifically to see how long the wine would keep (p 294, **1659**),[15] or changed the dates on their dies like the Morrells and the Walkers (eg, Hall, 1686, p 298). The conclusion seems inescapable: owners did update their seals. If the evidence for this comes overwhelmingly from Oxford taverns, that is in part because so many Oxford bottles appear in these lists (perhaps 40 out of 91), but it also increases confidence in the reliability of the dated seals to date the bottles on which they appear.

15. Biddle 1988

Fig. 131 Dated seals from English glass bottles, 1695 to 1700 (for the bottles, see Fig 128; for list, see p 296) (1:1).

In broad terms what emerges visually from this sequence of dated bottles? First, there is a steady decrease in absolute height over the period *c* 1650 to 1700. Second, the height of the neck decreases from nearly twice that of the body to less than the height of the body. Third, the shape of the body goes through a more complex evolution than simply from globe to onion. As Leeds noted already in 1914, the decade 1660 to 1670 saw the development of a pronounced angle at the shoulder, which produced in consequence an inward slope of the lower part of the wall of the body (Fig. 126, Type I/II).[16] Leeds' evidence was dependent on undated bottles assigned on

16. Leeds 1914, 289; Leeds 1941, 54

other grounds to this decade, and this must still be the case, for no bottle with a dated seal is yet known from the 1660s, apart from the two 1661 bottles which may be commemoratives.[17] The 1675 bottle (Fig 127, **1675**, cf. Fig 126) shows this feature clearly. By 1682 (Fig 127, **1682**) it had almost disappeared and been replaced by the relatively vertical side which was characteristic of the later 1680s (Fig 127, **1685**, cf Fig 126; Fig 128, **1690b**). This change in the shape of the body also affected, as Leeds noticed, the shape of the 'kick', which gradually increased in width and depth through the 1660s (as his evidence seemed to show[18]) and more particularly in the 1670s and 1680s (as the evidence of the dated bottles in Figs 127–8 shows).

Fourth, and last, there are changes in the height and form of the rim and the string below. As has long been observed, on the earliest bottles the rim projects tall and straight above the string to a height of up to nearly 0.75 in. (17 mm.), and the top of the rim is cut off flat or nearly so (eg Fig 127, **1657**; Fig 136, 1). As time goes on, the height of the rim above the string decreases and the rim begins to bend slightly outwards, forming a constriction inside the neck where previously there had been only a straight-sided shaft. At the same time the top of the rim is bevelled outwards and becomes lipped. In time, string and rim merge to form a single outwardly flanged rim (Figs 127–8).

When the Nonsuch bottles are arranged in sequence according to the typology demonstrated by the dated bottles, it is at once clear that the Nonsuch bottles relate to the period up to about 1685 (Fig 127). There seems to be one anomaly: the Nonsuch bottles include a series with very short necks but relatively simple, undeveloped rims (e.g. Fig 138, **43–7**) . If the length of the neck were to be the sole criterion, these bottles might be placed in the 1690s; the rims suggest that they are probably earlier. The recorded demolition of Nonsuch in 1682–90 would seem to confirm this, since the majority of such short-necked simple-rimmed bottles came from the demolition rubble filling the West Cellar.

To test these subjective typological judgements a quantitative study of the dated corpus was undertaken to determine whether bottle morphology between 1650 and 1700 exhibited temporal trends which could be employed in dating the Nonsuch bottles and fragments. The methodology used derives from that outlined by Robertson in a similar quantitative exercise performed on a series of 49 dated bottles of the period *c* 1652–1834 from colonial America[19] and graphs bottle dimensions (either individually or as ratios) against time. In the present case, the significance of the observed temporal trends was also assessed statistically using linear regression analyses with time as the independent variable. The work of Leeds and others, illustrating a large number of bottles, indicates that changes in bottle morphology during the seventeenth century are broadly linear. This premise of linear change informs the present statistical analysis. The regression analyses also afforded a statistical basis from which to derive dates for the undated Nonsuch glass.

Measurements were obtained from drawings of 21 complete bottles dating from *c* 1650–1700 (Figs 127–8). The drawings were made specially and are the work of a single illustrator, Nicholas Griffiths, affording a measure of control over both accuracy and consistency. Robertson's study incorporated only seven bottles from the period *c* 1650–1700, one of which (**pre-1652**) is included here. Although every effort was made to locate and draw complete bottles within the dates *c* 1650–1700, the resultant sample of 21 bottles is a small one.[20] This should be borne in mind, particularly with reference to the regression analyses discussed below.

17. But see n. 14
18. Leeds 1914, 289; Leeds 1941, 54
19. Robertson 1976, 13–20
20. Of the 30 bottles in this catalogue (p 293–6), **pre-1659** is known only from a drawing and eight are incomplete (see Figs 127–8)

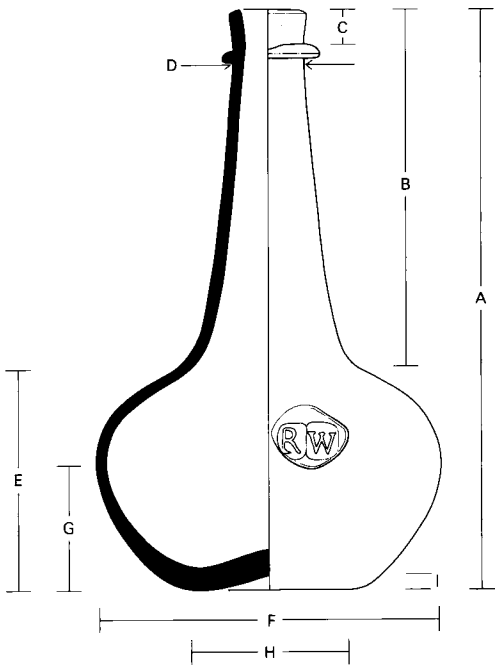


Fig. 132 English glass bottles: measurements taken for metrical analysis.

The raw dimensions taken from the 21 bottles are defined in Fig 132 and given in Table 16. The regression analyses performed on a range of 18 individual dimensions and dimension ratios, using time as the independent variable are set out in Table 17. Critical R^2 values for the total sample of 21 bottles are those >0.25. For full bottles (15 examples) and half bottles (6 examples) the critical values are 0.34 and 0.81 respectively.

In obtaining measurements from the bottle drawings, a formerly little-discussed distinction between full and half bottles was found to be important. Full bottles have a cubic capacity of *c* 26 fl oz, and half bottles of *c* 15 fl oz. The latter are obviously of a smaller size than the former, and do not exceed *c* 150 mm in height (Table 16). Although Robertson's morphological study drew no distinction between full and half bottles, it is obvious that the analysis of changes in single dimensions over time (such as bottle height) will be affected by the smaller size of half bottles. Equally, it was felt important to determine whether the analysis of dimension *ratios* would be similarly affected.

Much of the pioneering literature on glass bottle morphology fails to discuss the distinction between full and half bottles explicitly, and tacitly assumes that morphological changes in half bottles are parallel to those for full bottles. If this is the case, regression scores on dimension ratios (such as height : width) for full and half bottles should be virtually identical. That this is not the case is demonstrated in Table 17, where the 21 bottles examined in the present study have been assessed as two distinct categories.

As Table 17 shows, when the full bottles are analyzed separately as a group, their R^2 values are enhanced for all but one of those dimensions which had previously appeared significant (R^2 >0.25) for full and half bottles combined. Two further dimensions (height of kick: diameter of base; width) join this group. Thus, the removal of the half bottles brings the morphological changes suggested by analysis of the combined series into sharper focus. At the same time, the half bottles exhibit as a group radically different results to the initial analysis (compare Table 17, Columns 2 and 4). However, it seems clear that the comparision is affected in this instance by the narrow date range of the available half-bottles, none of which pre-dates 1684. When the half bottles are compared with those full bottles with a similar date range (ie full bottles post-dating 1680) the values acheived by the full and half bottle groups are generally closer, but large differences remain. This could suggest some difference factors operating before and after 1680, as opposed to difference factors between full and half bottles. However the small sample size precludes the drawing of any firm conclusions. For this reason it was necessary to omit the half bottles from the final analysis, since the number of examples available for study is only six out of the full sample of 21 bottles. This is too small a sample for viable regression analysis.

The 13 significant R^2 values for the 15 full bottles (R^2 >0.34) are summarised in Table 18, and the 12 variables achieving R^2 >0.5 are graphed in Figs 133–4. These graphs also plot the 'least

Table 16. Green bottle glass: dimensions of the 21 complete dated full and half bottles (mm).

Full (F) or Half (H) size	Date of bottle	Overall height	Height of neck	Height of rim above string	Diameter of rim	Height of body	Maximum Width	Height at widest part	Diameter of base	Height of kick
F	pre-1652 (notional date 1650)	232	142	16	29	90	138	54	55	5.5
F	1651–63 (notional date 1657)	217	135	15	28.5	82	140	42	64	16
F	1657	230	145	18	28.5	85	127	42	64	5
F	1678	164	75	6	26	89	130	58	74	21.5
F	1682	183	90.5	8	31	92.5	135	59	82	15.5
F	1683	154	57	7.5	26	91	141	63	88	18
H	1684a	148	72	9	27	76	116	38	68	17
H	1684b	133	57.5	6	26	77.5	116	50.5	62	17.5
F	1685a	182.5	95	8	29	87.5	141	53.5	90	16
F	1685b	166	79	10	29	87	140	49.5	90	28
F	1688	199	91	7.5	31	108	147	71	92	25.5
H	1690a	129	58	7	23	71	117	31.5	76	13.5
F	1690b	155	75.5	8	28	70.5	140	32.5	79	18
H	1693a	130	60.5	7	24	69.5	123	31.5	73	10.5
F	1693b	167	60	6	24.5	107	150	31	100	27
H	1695	130	54	5	21	76	129.5	31.5	98	22.5
F	1697	148.5	62.5	9	25	85.5	151	37	108	26
F	1698a	144	55	10	29	89	151	33	108	23.5
H	1699a	134	67	5	25.5	67	129.5	31	80	12
F	1700a	174	68.5	7	28	105.5	148	50.5	102	27
F	1700b	177.5	75.5	7	30	102	149	44	100	35

squares fit', calculated by linear regression of each of the variables against time. These results place on a quantitative footing for the first time the observations made by Leeds over eighty years ago.

1. As noted by Leeds, bottle height decreases steadily during the period 1650–1680, after which the decrease levels off (Table 18, 10; Fig 134).
2. Despite this, there is an increase in bottle width, both in simple terms (Table 18, No 12; Fig 134), and relative to the diameter of the base (Table 18, Nos 1–2; Fig 133) and overall bottle height (Table 18, No 6; Fig 133). Thus bottles are becoming shorter and squatter. Leeds also suggested that the decade 1660 to 1670 saw the development of a pronounced angle at the shoulder, producing an inward slope of the lower part of the bottle wall. Because of the difficulty of quantifying this change in terms of bottle measurement, this feature was not analyzed statistically here. Again, most of the increase in bottle width takes place before 1680.
3. A further change to the bottle base is the deepening of the kick over time (Table 18, Nos 7 and 13; Fig 134).
4. A major group of changes concerns the bottle neck. Neck height decreases over time as a proportion of the total bottle height (Table 18, No 3; Fig 133), and on the earliest bottles the

Table 17. Green bottle glass: correlation co-efficients for 21 complete dated full and half bottles.

Variables (v. Time) (1)	**R^2 all bottles** (2)	**R^2 full Bottles** (3)	**R^2 half Bottles** (4)	**R^2 full bottles after 1680** (5)
Neck height	0.769	0.814	0.022	0.243
Diameter of base : width	0.760	0.891	0.315	0.511
Neck height : body height	0.742	0.814	0.053	0.294
Width : overall height	0.725	0.710	0.764	0.271
Height of rim above string	0.681	0.689	0.260	0.009
Body height : overall height	0.655	0.745	0.066	0.315
Height of rim above string: diameter of rim	0.623	0.666	0.043	0.001
Overall height	0.575	0.677	0.260	0.077
Diameter of base	0.570	0.887	0.511	0.642
Body height : height of kick	0.489	0.678	0.018	0.415
Height of kick	0.392	0.706	0.059	0.479
Height of kick : diameter of base	0.191	0.419	0.566	0.221
Height at widest part : body height	0.175	0.140	0.464	0.579
Width : height at widest part	0.150	0.092	0.698	0.424
Height at widest part : overall height	0.128	0.046	0.441	0.348
Diameter of rim	0.086	0.018	0.255	0.043
Width	0.044	0.510	0.850	0.722
Width : body height	0.023	0.001	0.937	0.006
Sample size	21	15	6	9
Critical values	0.50	0.34	0.81	0.54

rim projects tall and the height of the rim above the string decreases (Table 18, No 8; Fig 134). Much of the decrease in neck height takes place between 1660 and 1680.

In summary, as Leeds' original work suggested, these developments broadly comprise a change in bottle height relative to width – including the development of a 'saggy' profile' – and changes in neck length and rim profile.

ii. THE NONSUCH GLASS BOTTLES AND FRAGMENTS

In applying these results to assessment of the Nonsuch glass, a principal weakness of the dated bottle series is the absence of dated material between *c* 1660 and *c* 1680. A few bottles with dated seals from this period are known, but it has not been possible to locate and/or draw them for the present exercise (Appendix 2, p 297–301). Given the hypothesis that the majority of finds from Nonsuch date to *c* 1670–1682/8, this lacuna is particularly unfortunate. Despite this limitation, the graphs in Figs 133–4 support the premise that morphological changes were gradual, linear trends occurring throughout the period *c* 1650–1700. The principal exceptions are changes to the bottle rim, discussed below.

As noted above, one function of performing linear regression analyses on the dated bottles was to make possible the statistical derivation of dates for the undated Nonsuch material.

This was done using the following method. The 'least squares fit' plotted on each of the graphs in Figs 133–4 is calculated by a linear regression in which time (t) is an independent variable, and shows the position at which a straight line is closest to the variables graphed. The least squares fit (y) may be calculated by the formula

Table 18. Green bottle glass: correlation coefficients for the 15 dated full bottles.

No.	Variables (v Time)	R^2
1	Diameter of base : width	0.891
2	Diameter of base	0.887
3	Neck height : body height	0.814
4	Neck height	0.814
5	Body height : overall height	0.745
6	Width : overall height	0.710
7	Height of kick	0.706
8	Height of rim above string	0.683
9	Body height : height of kick	0.678
10	Overall height	0.677
11	Height of rim above string : diameter or rim	0.666
12	Width	0.510
13	Height of kick : diameter of base	0.419

$$y = c + mt$$

where c = the intercept, m = the slope, and t = time. Time (t) may therefore be expressed as

$$t = \frac{(y - c)}{m}$$

Taking the values c and m from the relevant regression analysis in the dated bottle series, it is possible to estimate a time value (t) for those fragments from Nonsuch for which the relevant dimensions and dimension ratios may be measured. Put simply, this exercise calculates what the date of the Nonsuch fragments would be *if* they lay on the least squares fit (y) determined for the dated bottles.

Only five complete bottles were found at Nonsuch, too small a sample for direct statistical comparison with the dated series of complete bottles. In addition to this small group, measurements have also been taken of all the bottle fragments on which relevant dimension(s) survive. The Nonsuch sample is therefore a composite one, and results for one dimension (eg diameter of base) will not be directly comparable with another (eg height of rim above string) since the fragments in question are unlikely to be from the same bottle. But the fragments may reasonably be supposed to represent a cross-section of the total Nonsuch bottle population similar to that which would be derived using complete bottles.

It was not possible to distinguish between full and half-size bottles in measuring the Nonsuch fragments, and only a limited range of the significant dimensions could be derived from the fragments. Ratios involving maximum height (Fig 132A), for example, could not be calculated. Six of the 13 significant variables (Table 18) could be compared by these means. These are:

1. Diameter of base : width
2. Diameter of base
7. Height of kick
8. Height of rim above string
11. Height of rim above string : diameter of rim
12. Width

The results are shown in Fig 135. For each of the relevant variables, the fragments are plotted on the 'least squares fit' established for the dated series. The estimated date (t) forms the y-axis. The number of fragments for a given year is noted on the graph. Prediction intervals at 80 % confidence were calculated for the derived dates given in Fig 135, but for clarity, single dates rather than date ranges have been graphed. For the prediction intervals for the derived dates plotted on Fig 135, see Tables 19–24.

It is necessary to remember that in every case the 'least squares fit' to which the Nonsuch fragments are fitted is not a true chronological value. What is calculated is the position at which a straight line is closest to all the variables plotted. The prediction interval suggests the degree of dependability of the linear regression itself. Thus some of the 'least squares fits' used to estimate dates for the Nonsuch fragments are more reliable than others (compare for example, Figs 133–4 and Fig. 135).

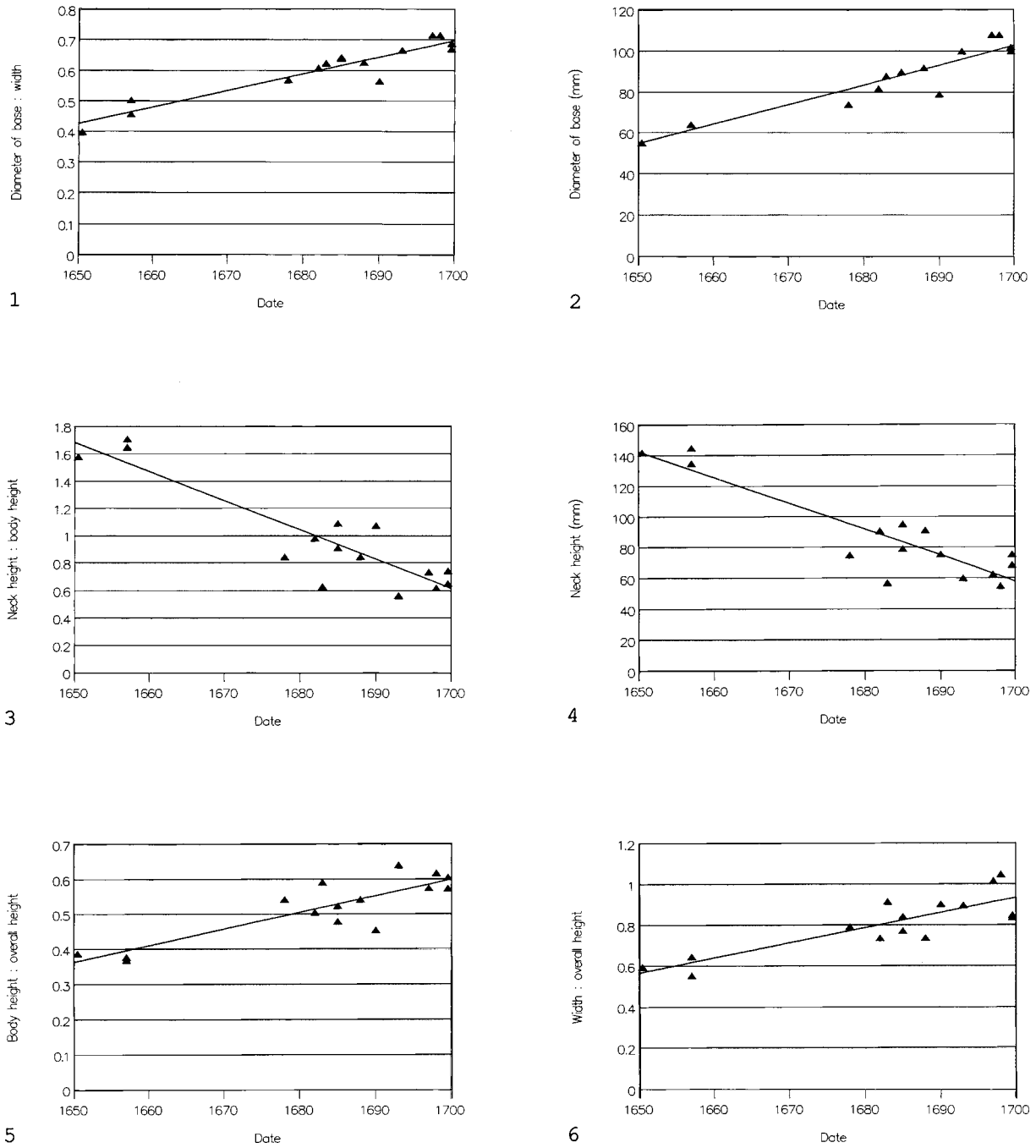


Fig. 133 English glass bottles with dated seals, pre-1652 to 1700: dimensions and ratios of the 15 dated full bottles (cf. Table 18) with linear regressions 1–6.

With this caveat in mind, the graphs may now be examined in greater detail.

1. Diameter of base : width (Fig 135, 1)
   The derived dates here bracket 1625 to 1695 with the majority falling between 1640 and 1680. This is compatible with the dating hypothesis advanced for the bulk of the palace material, but it is interesting that eight of the 19 examples are suggested to pre-date 1660. Whilst the lack of evidence for thick-walled bottles prior to 1650 may cause us to question

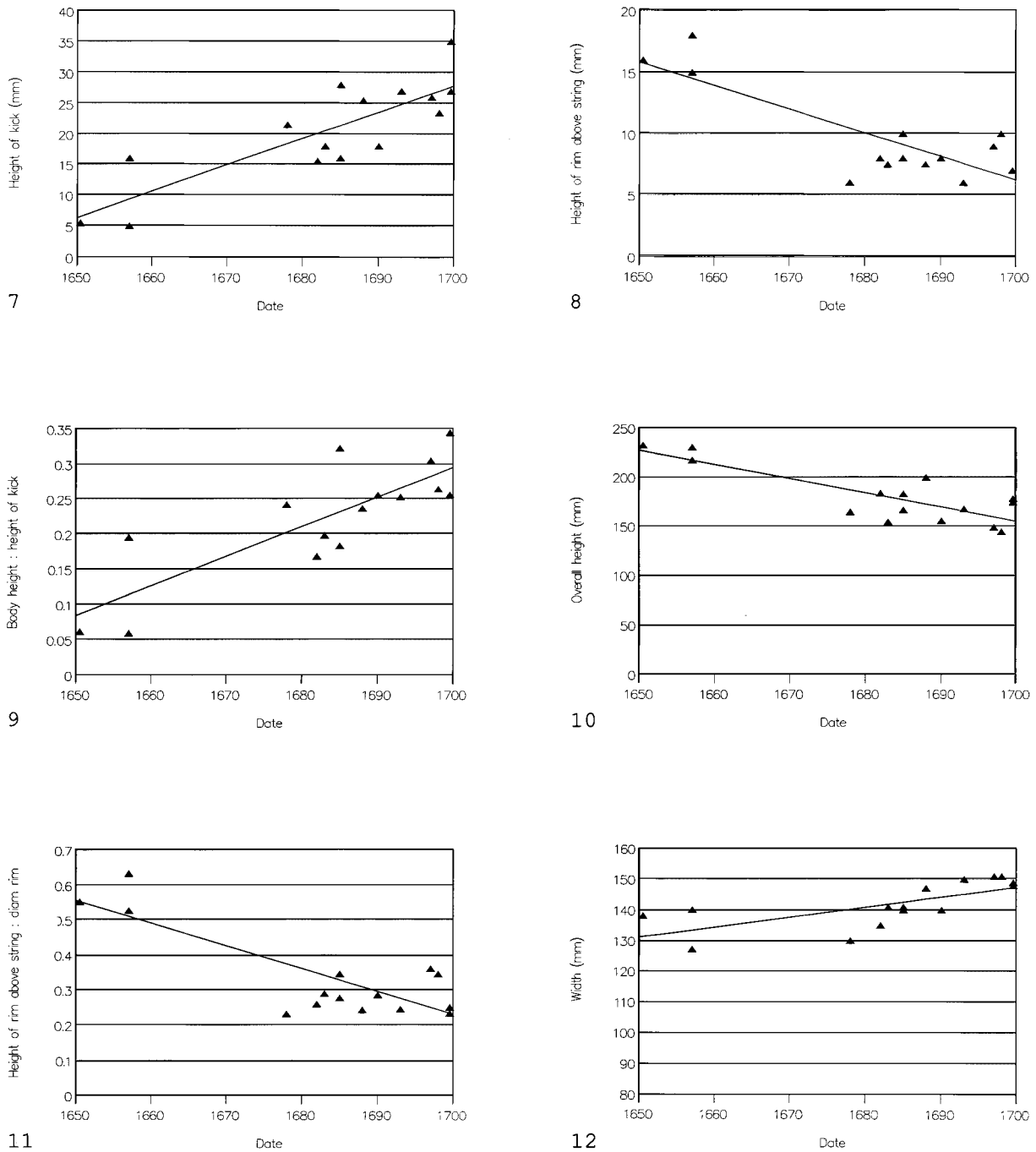


Fig. 134 English glass bottles with dated seals, pre-1652 to 1700: dimensions and ratios of the 15 dated full bottles (cf Table 18) with linear regressions, 7–12.

the dates projected for fragments with diameter of base: width ratios of less than 0.4, it is interesting to note that four of the examples estimated to pre-date 1650 are complete bottles (**1**, **28–30**). Prior to this analysis, it was already clear that these bottles belonged to an early phase of the typological evolution proposed by Leeds. At the other end of the derived date range, only one example is suggested to post-date the demolition of the palace.

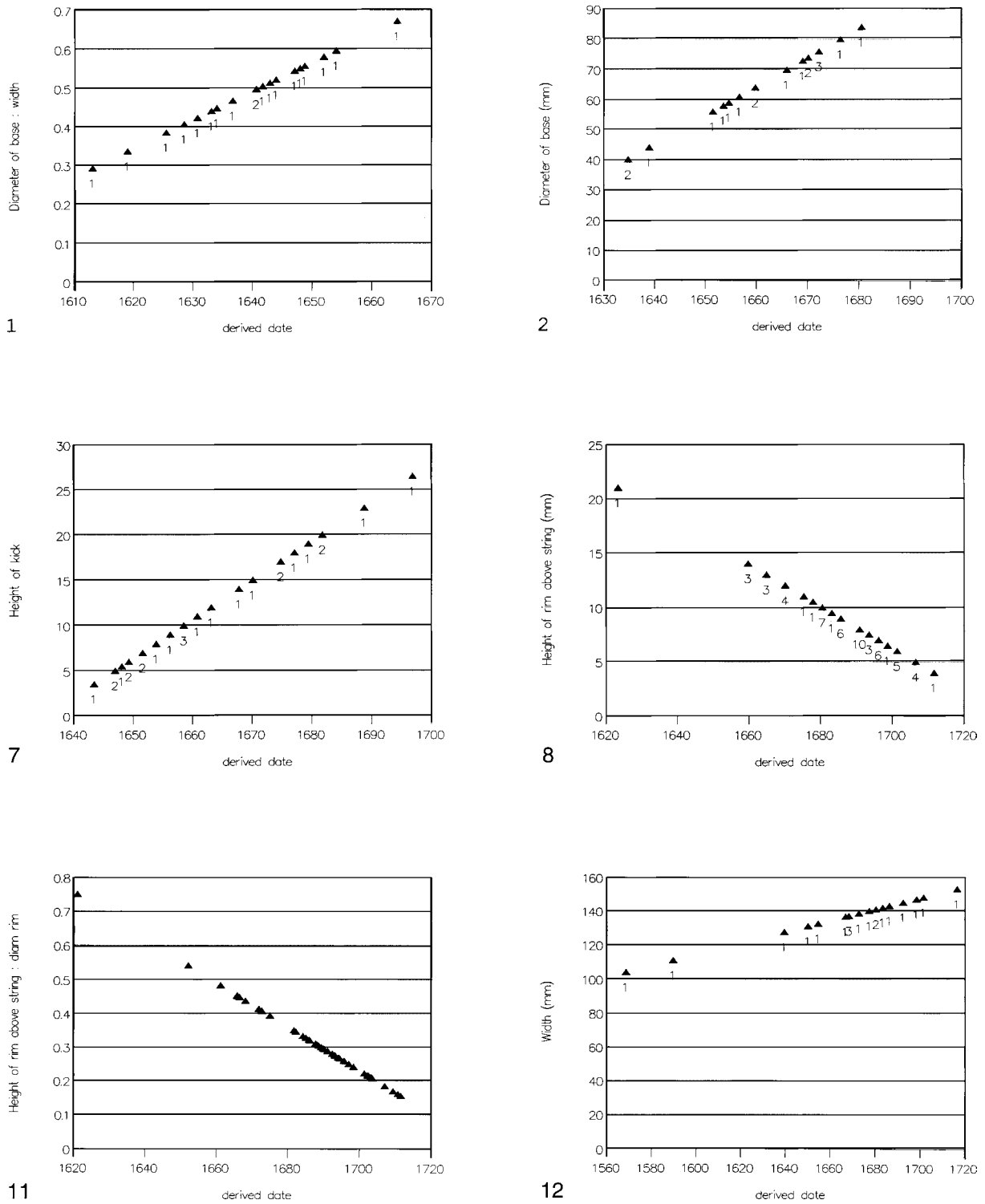


Fig. 135 Glass bottles from Nonsuch: dates derived by linear regression for six of the significant variables (cf Table 18). The number of each graph refers to the number of the significant variable in Table 18 and on p 278. The numbers below the symbols indicate the number of occurences at each position.

Table 19. Prediction intervals for the derived dates in Fig. 135, 1. Brackets ( ) denote multiple examples.

Derived date	Minimum date	Maximum date
1626	1595	1656
1633	1604	1662
1642	1615	1669
1646	1620	1672
1649	1624	1673
1652	1627	1677
1654	1629	1678
1657	1633	1681
1663 (2)	1639	1686
1664	1641	1688
1666	1642	1689
1667	1644	1690
1672	1649	1694
1673	1650	1696
1674	1651	1697
1678	1656	1701
1681	1658	1704
1695	1672	1718

Table 20. Prediction intervals for the derived dates in Fig. 135, 2. Brackets ( ) denote multiple examples.

Derived date	Minumum date	Maximum date
1635 (2)	1630	1639
1639	1634	1643
1651	1647	1655
1653	1649	1657
1654	1650	1658
1656	1652	1660
1659 (2)	1656	1663
1666	1662	1669
1669	1665	1673
1670	1666	1674
1672	1668	1676
1676	1672	1680
1680	1676	1684
1690	1687	1694

Table 21. Prediction intervals for the derived dates in Fig. 135, 7. Brackets ( ) denote multiple examples.

Derived date	Minimum date	Maximum date
1643	1618	1669
1647 (2)	1622	1671
1648	1624	1672
1649 (2)	1624	1673
1651 (2)	1627	1675
1654	1630	1678
1656	1633	1680
1658 (3)	1635	1682
1661	1637	1684
1663	1640	1686
1668	1645	1690
1670	1648	1692
1675 (2)	1653	1697
1677	1655	1699
1679	1657	1701
1682 (2)	1660	1703
1688	1667	1710
1697	1674	1719

Table 22. Prediction intervals for the derived dates in Fig. 135, 4. Brackets ( ) denotes multiple examples.

Derived date	Minimum date	Maximum date
1624	1595	1653
1660 (3)	1636	1684
1665 (3)	1642	1689
1671 (4)	1648	1693
1676	1653	1698
1678	1656	1701
1681 (7)	1658	1704
1684	1661	1706
1686 (6)	1664	1709
1691 (10)	1669	1714
1694 (3)	1971	1717
1697 (6)	1674	1719
1699	1676	1722
1702 (5)	1679	1725
1707 (4)	1683	1731
1712	1688	1736

Table 23. Prediction intervals for the derived dates in Fig. 135, 11. Brackets ( ) denote multiple examples.

Derived date	Minimum date	Maximum date
1620	1590	1650
1652	1627	1676
1661	1637	1685
1666 (3)	1642	1689
1668	1645	1691
1672 (3)	1649	1695
1673	1649	1695
1675	1652	1698
1681	1659	1704
1682	1660	1705
1684 (6)	1661	1707
1685	1662	1707
1686 (2)	1663	1709
1688 (4)	1665	1710
1689	1667	1712
1690 (2)	1667	1712
1691	1668	1713
1692	1669	1715
1693 (3)	1670	1716
1694 (5)	1671	1717
1695	1673	1718
1696	1673	1718
1697	1674	1720
1698	1675	1721
1701 (2)	1678	1724
1702 (3)	1679	1725
1703 (4)	1680	1727
1707	1683	1730
1709	1685	1733
1710	1687	1735
1711	1687	1735

Table 24. Prediction intervals for the derived dates in Fig. 135, 12. Brackets ( ) denote multiple examples.

Derived date	Minimum date	Maximum date
1569	1531	1605
1590	1557	1623
1640	1615	1665
1650	1626	1674
1655	1631	1678
1667	1644	1690
1668	1646	1691
1673	1651	1695
1678	1655	1700
1681	1658	1703
1684	1661	1706
1687	1664	1709
1693	1670	1715
1699	1676	1721
1702	1679	1724
1716	1693	1740

2. Diameter of base (Fig 135, 2)
   The variable measured here is similar to the last, and the derived dates embrace a similar range (1634 to 1680). Again, three of the four examples with a suggested date of pre-1650 are the complete bottles mentioned above (**28–30**). It is again interesting that seven of the total of 18 fragments are suggested to pre-date 1660. There are no bottles suggested to post-date the demolition of the palace.

3. Height of kick (Fig 135, 7)
   The derived dates here bracket 1643 to 1696, with three examples suggested to post-date the demolition of the palace. Again, this is broadly in line with the dating hypothesis advanced for the palace assemblage. In this case, however, the derived dates for 13 of the total of 25 examples pre-date 1660.
4. Height of rim above string (Fig 135, 8)
5. Height of rim above string : diameter of rim (Fig 135, 11)
   In both these cases, the great majority of the 59 examples are suggested to post-date 1680. Given the demolition date of the palace, this is extremely unlikely. A problem here is that the major changes to bottle rims take place before 1670. As already discussed, few bottles pre-dating 1670 could be included in the statistical analysis of dated bottles, from which the estimates of date presented here are derived. The R^2 scores for these rim variables thus achieve only low significance (R^2 = 0.684, 0.666), as is reflected by the 'best squares fit' graphed for the dated bottles (see Figs 133–4).

6. Width (Fig 135, 12)
   The date range suggested here is very wide: 1568 to 1715. The lower end of this projection is clearly unrealistic, and as in the case of the rim variables (4 and 5, above), the projected dates for this dimension should be treated with caution. The R^2 score for the dated bottles was of very low significance (R^2 0.510).

It is unfortunate that less than half of the 13 variables defined as statistically significant for the dated bottle series could be tested for the Nonsuch sample. It is equally unfortunate that of those variables which could be tested, three achieved R^2 scores of less than 0.7. Nevertheless, the results obtained for the more significant variables (with scores greater than 0.7; 1–3 above) are of considerable interest. The assumption that glass bottles ceased to arrive on the site in any numbers after the demolition of 1682–90 is, as may be expected, supported. At the same time, a significant proportion of the material is suggested to pre-date 1660. This may be a result of the statistical limitations of the exercise, discussed above, but given that 'sack' bottle was certainly in existence by 1650, and possibly before, this lower date margin for the Nonsuch material is not unrealistic.

The stratigraphy and phasing of each of the bottles and bottle fragments appearing on Fig 135, 1–6 with 'early' (ie pre-1660) and 'late' (ie post-1680) derived dates were examined case by case. The occurrence of 'early' bottles and bottle fragments in the demolition deposits can cause no surprise, for early material is frequently residual in the Phase 4 (garderobe), Phase 5 (demolition) and later deposits (see Concordance I). The 'early' dates for bottles and bottle fragments cannot therefore be controlled from the evidence of the site. Such 'early' dates are not impossible in terms of what is known of the beginning of bottle production (see below, p 302), but those of the 1620s and 1630s must be regarded as unlikely. This may be due to the limitations of the statistical method, and in particular the small number of bottles in the earlier part of the set dated *c* 1650–1700 on which the regression analyses are based. The addition of more data for the period *c* 1650–80 may be expected to clarify the picture in due course. Meanwhile, it is worth recording that 12 of the 22 examples with derived dates earlier than 1660 occur in Phase 4 garderobes or on the floor of the Great Cellar, while none of the 66 examples with derived dates later than 1680 occur in Phase 4 deposits.

The derived dates which are late present similar problems and again may be attributed to the small sample size. As noted above only variables with R^2 scores greater than 0.7 seem reliable (Figs 133–4). On this basis only three bottles are later than 1680: one each assigned to 1688, 1695, and 1696. All three come from Phase 5 demolition deposits, and in two cases the layer concerned contained other material dated later than 1682. These pieces could also indicate that the robbing of some elements of the palace continued in the years after 1682–90, as we know on historical evidence was the case (see above, p 62). The 63 pieces with 'late' derived dates based on variables with R^2 scores less than 0.7 are also all from Phase 5 demolition contexts, but are probably not sufficiently secure to be used in evaluation of the dating of the site.

The analysis has, on the other hand, not been successful in distinguishing chronologically between the garderobes and the demolition deposits on the basis of the glass, a conclusion which is fully borne out by visual comparison of the range of glass types from Phase 4 garderobe and Great Cellar deposits (Fig 136) on the one hand, and those from the Phase 5 demolition deposits (Figs 137–9) on the other.

The method adopted seems to be generally applicable to bottle studies, at least in this period. Improvement in the results requires, however, the incorporation of as many bottles with dated seals as can be located and drawn. It must also be hoped that in future dated bottles passing through the market will be fully recorded as they appear. The departure of a number of early bottles abroad in recent years without a proper record being made (eg Appendix 2, 1674) is regrettable.

iii. CATALOGUE: BOTTLE GLASS

1–14: Garderobes

1 Type I Half bottle
Flat high rim. No constriction. Tall straight shaft. Round body with small kick in the base. Relatively thin walled, bearing Wine-bottle seal **1**. The only certain complete Type I bottle.
G2353; T7 III 3=G26**; Phase 4*

2 Type I/II
Flat rim of medium height. No constriction. Tall flaring shaft.
G2015; W8 3=G6**; Phase 4*

3 Type I/II
Flat rim of medium height. Constricted neck. Flaring shaft.
G2001; U7 8=G9**; Phase 4*

4 Type I/II
Flat rim of medium height. No constriction.
No.4; P/Q 15/16 16=G19**; Phase 4*

5 Type I/II
Flat rim of tall to medium height. No constriction. Tall flaring shaft.
G2016; W8 3=G6**; Phase 4*

6 Type I/II
Rounded 'flat' rim of medium height. No constriction. ?Flaring shaft.
G2032; P/Q 15/16 16=G19**; Phase 4*

7 Type I/II
Flat rim of low to medium height. No constriction. Tall flaring shaft.
G2015; W8 3=G6**; Phase 4*

8 Type I/II
Bevelled low rim. Constricted neck.
G2023; Y4 32=Well**; Phase 4*

9 Type II
Bevelled low rim. Constricted neck. Swollen shaft.
G2015; W8 3=G6**; Phase 4*

10 Type II
Bevelled low rim. Constricted neck. Swollen shaft.
G2005; W4 II/IV 4b=G4**; Phase 4*

11 Type II
Bevelled low rim. Constricted neck. Short, slightly swollen and flaring shaft.
G2015; W8 3=G6**; Phase 4*

12 Type II
Bevelled low rim. Constricted neck. Short flaring shaft.
G2015; W8 3=G6**; Phase 4*

13 Type I/II
High shoulder. Straight, outward sloping wall. Large, high kick in base. Thick base and lower wall, thinning above.
G2008; W4 II/IV 4=G4**; Phase 4*

14 Type I/II
High shoulder. Straight, outward sloping wall. Large, high kick in base. Walls and base of relatively even thickness.
G2015; W8 3=G6**; Phase 4*

15–27: Great cellar floor

15 Type I/II
Flat rim of tall to medium height. No constriction. Tall flaring shaft.
No.13; W8 7=Great cellar**; Phase 4*

16 Type I/II
Rounded 'flat' rim of medium height. Slightly narrowed neck.
G2037; U8 3=Great cellar**; Phase 4*

17 Type I/II
Flat low rim. No constriction.
No.18; W8 7=Great cellar**; Phase 4*

18 Type I/II
Flat low rim. No constriction. Tall flaring shaft.
No.16a; W8 7=Great cellar**; Phase 4*

19 Type I/II
Bevelled low rim. Constricted neck. ?Tall flaring shaft.
No.13; W8 7=Great cellar**; Phase 4*

20 Type I/II
Bevelled low rim. Slightly constricted neck. Tall, very slightly swollen shaft.
G2037; U8 3=Great cellar**; Phase 4*

21 Type II
Bevelled low rim. Constricted neck. Flaring shaft of medium height.
G2035; V8 4=Great cellar**; Phase 4*

22 Type II
Bevelled low rim. Constricted neck. Flaring shaft of medium height.
G2036; U8 II/IV 3=Great cellar**; Phase 4*

23 Type II
Bevelled low rim. Constricted neck. Almost straight shaft of medium height.
G2039; W8 8=Great cellar**; Phase 4*

24 Type II
Bevelled low rim.
No.18; W8 7=Great cellar**; Phase 4*

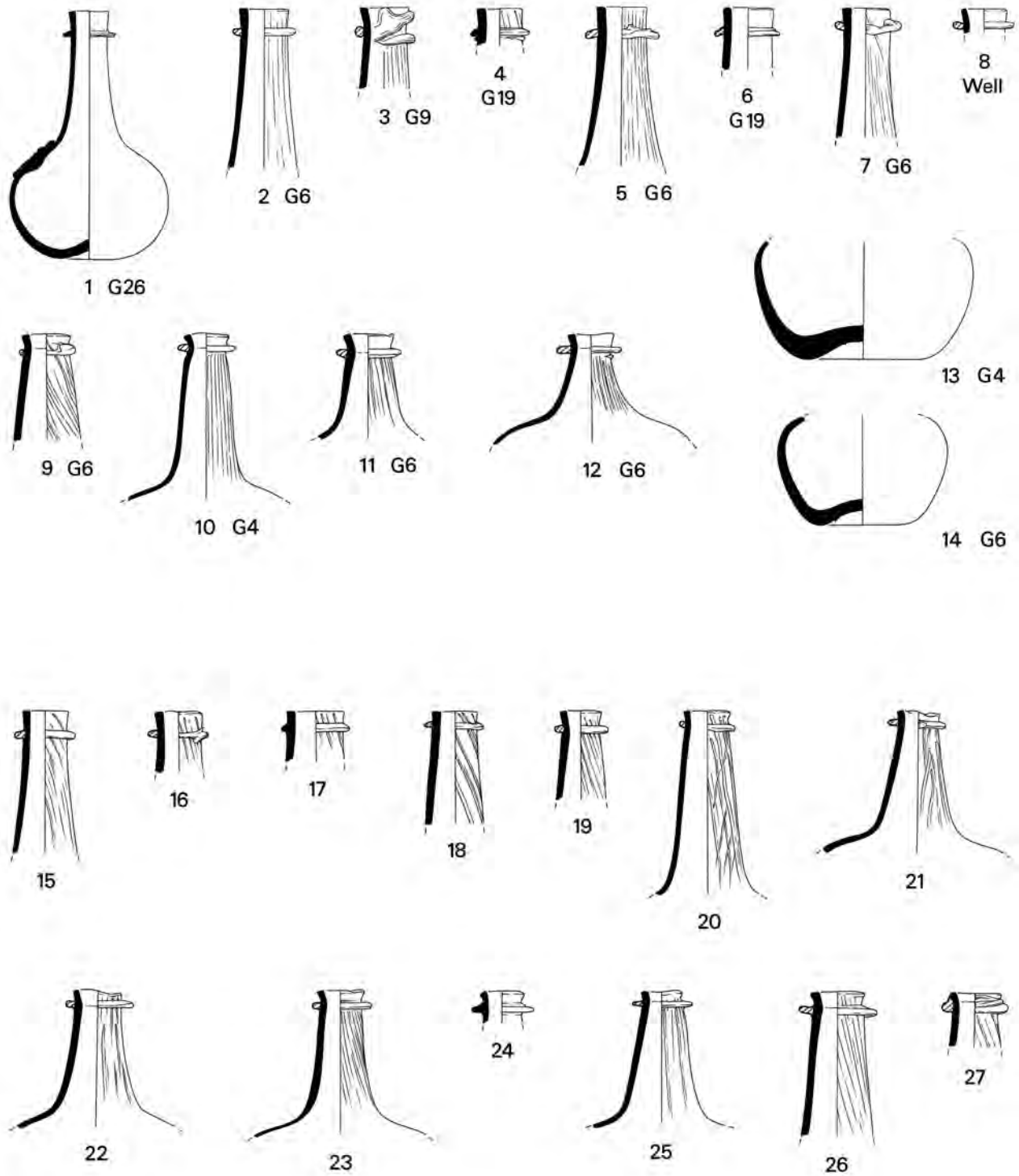


Fig. 136 Glass bottles: from garderobes, ***1–14****; from the floor of the Great Cellar,* ***15–27*** *(1:4).*

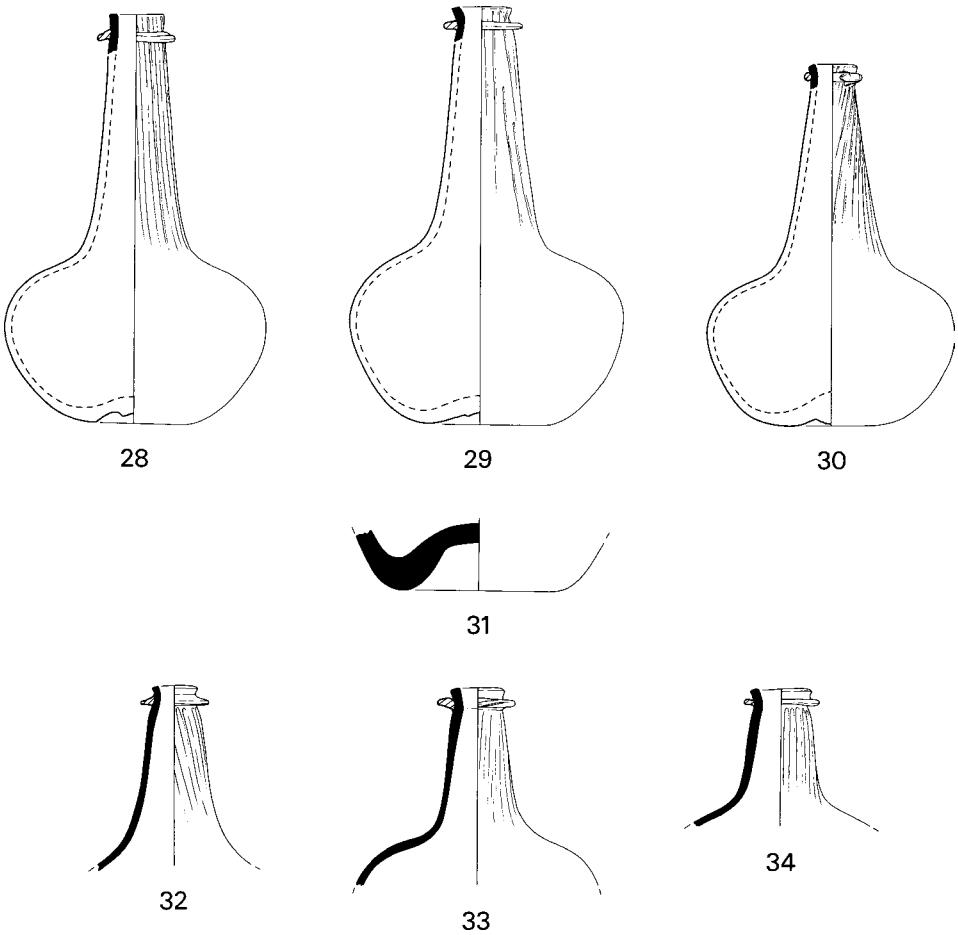


Fig. 137 Glass bottles: from the demolition rubble filling the Great Cellar, ***28–34*** *(1:4).*

25 Type II
Bevelled low rim. Constricted neck. Flaring shaft of medium height.
G2038; U8 3=Great cellar**; Phase 4*

26 Type II
Bevelled low rim. Constricted neck. ?Tall, slightly flaring shaft.
No.15; W8 7=Great cellar**; Phase 4*

27 Type II
Very low rim. Constricted neck.
No.17; W8 7=Great cellar**; Phase 4*

28–34: Demolition of Great cellar

28 Type I/II
Flat rim of medium height. No constriction. Tall flaring shaft. Fairly high rounded shoulder. Slightly rounded, outward sloping wall. Small low kick in base. Appears relatively thin-walled.
**G2116; U7 2; Phase 5*

29 Type I/II
Bevelled low rim. Constricted neck. Tall flaring shaft. High shoulder. Straight, outward sloping wall. Small low kick in base. Appears relatively thin-walled.
**G2117; U7 2; Phase 5*

30 Type I/II
Bevelled low rim. Constricted neck. Tall flaring shaft. High shoulder. Straight, rather upright, outward sloping wall. Small low kick in base. Appears relatively thin-walled.
**G2115; U7 2; Phase 5*

31 Type I/II
Massive base with large, high, angled kick. The wall apparently straight, outward sloping.
**G2114; U7 2; Phase 5*

32 Type II
Bevelled low rim. Constricted neck. Slightly swollen, flaring shaft of medium height.
**G2142; V8 3; Phase 5*

33 Type II
Bevelled low rim. Constricted neck. Slightly swollen and thickened almost straight shaft of medium height.
**G2126; U8 II/II 2a; Phase 5*

34 Type II
Bevelled low rim. Constricted neck. Short, slightly swollen and thickened, slightly flaring shaft.
**G2142; V8 3; Phase 5*

35–56: Demolition of West cellar

35 Type I/II
Flat rim of low to medium height. No constriction. Tall almost straight shaft.
**G2089; S8 2; Phase 5*

36 Type I/II
Bevelled rim of low to medium height. Constricted neck. Tall flaring shaft.
**G2089; S8 2; Phase 5*

37 Type I/II
Bevelled low rim. Constricted neck. Tall, slightly swollen, flaring shaft.
**G2073; R8 3; Phase 5*

38 Type II
Bevelled low rim. Constricted neck. Tall, very slightly swollen, flaring shaft. High shoulder.
**No.14; R8 3; Phase 5*

39 Type II
Bevelled low rim. Constricted neck. Tall flaring shaft.
**G2091; R8 3; Phase 5*

40 Type II
Bevelled low rim. Constricted neck. Tall, slightly swollen, flaring shaft.
**G2073; R8 3; Phase 5*

41 Type II
Bevelled rim of medium height. Constricted neck. Flaring shaft of medium height.
**G2089; S8 2; Phase 5*

42 Type II
Bevelled low rim. Constricted neck. Swollen, flaring shaft of medium height.
**G2091; R8 3; Phase 5*

43 Type II
Bevelled low rim. Constricted neck. Flaring shaft of medium height.
**G2073; R8 3; Phase 5*

44 Type II
Bevelled low rim. Constricted neck. Flaring shaft of medium height.
**G2073; R8 3; Phase 5*

45 Type II
Bevelled low rim. Constricted neck. Short, slightly swollen, flaring shaft.
**No.14; R8 3; Phase 5*

46 Type II
Bevelled low rim. Constricted neck. Short, strongly flaring shaft.
**G2089; S8 2; Phase 5*

47 Type II
Bevelled low rim. Slightly constricted neck. Very short, strongly flaring shaft.
**G2073; S8 2; Phase 5*

48 Type I/II
Rounded body. Small low kick in base. Thick wall, thinning to shoulder.
**2073; R8 3; Phase 5*

49 Type I/II
Straight, outward-sloping wall. Large kick of medium height in base. Thick walled.
**2073; R8 3; Phase 5*

50 Type I/II
Straight, outward-sloping wall. Large kick of medium height in base. Thick base, wall thinning from base to shoulder.
**2073; R8 3; Phase 5*

51 Type I/II
Straight, outward-sloping wall. Large, relatively high kick. Thick base, wall thinning upwards.
**G2089; S8 2; Phase 5*

52 Type I/II
Thick base with large, relatively high kick. The kick retains the pontil glass, 11mm thick and 35mm in diameter, with a reddish deposit on its underside, 17mm in diameter. For discussion, see above, p 00.
**G2091; R8 3; Phase 5*

53 Type II
Thick base with large, high kick. The kick retains traces of the pontil glass, 44mm in diameter, with a reddish deposit on its underside, 24mm in diameter. For discussion, see above, p 00.
**G2089; S8 2; Phase 5*

54 Type II
Slightly rounded, near vertical wall, with large high kick. Thick walled, thinning slightly to shoulder.
**G2089; S8 2; Phase 5*

55 Type II
Almost straight, slightly sloping wall. Large, high angled kick. Thick base, wall thinning upwards.
**G2091; R8 3; Phase 5*

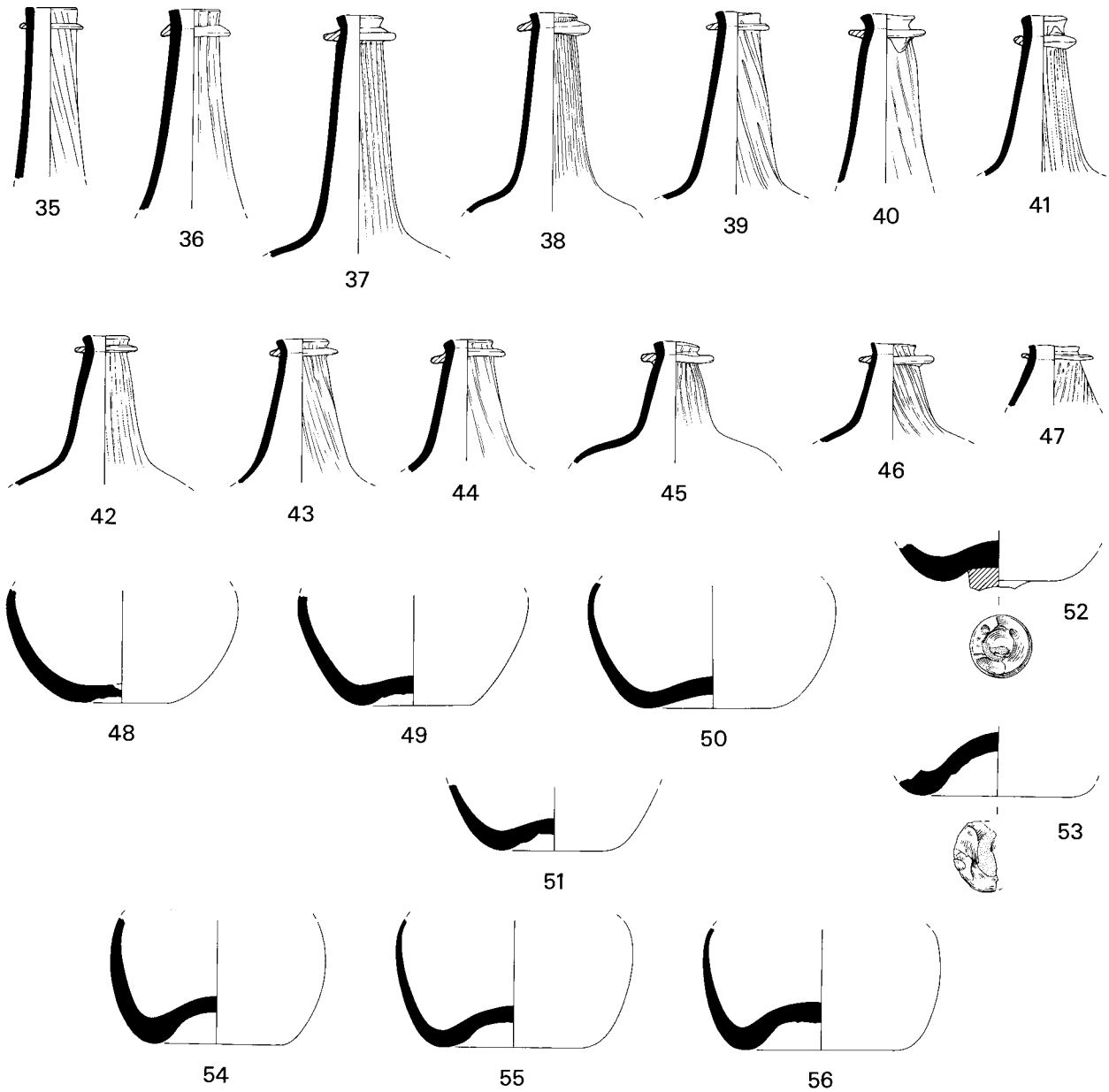


Fig. 138 Glass bottles: from the demolition rubble filling the Western Cellar, ***35–56*** *(1:4).*

56 Type II
Almost straight, near vertical wall. Large, high angled kick. Thick base, wall thinning upwards.
**G2089; S8 2; Phase 5*

57–72: Demolition of other areas

57 Type I/II
Flat rim of medium height. Very slight constriction. Tall, very slightly swollen, flaring shaft.
**G2082; S1 11; Phase 5*

58 Type II
Bevelled low rim. Constricted neck. Tall, swollen and flaring shaft.
**G2082; S1 11; Phase 5*

59 Type II
Bevelled low rim. Constricted neck. Tall, almost straight shaft.
**G2226; Y4 14; Phase 5*

60 Type II
Bevelled low rim. Constricted neck. Tall, swollen, and flaring shaft.
**G2182; W6ext2 2; Phase 5*

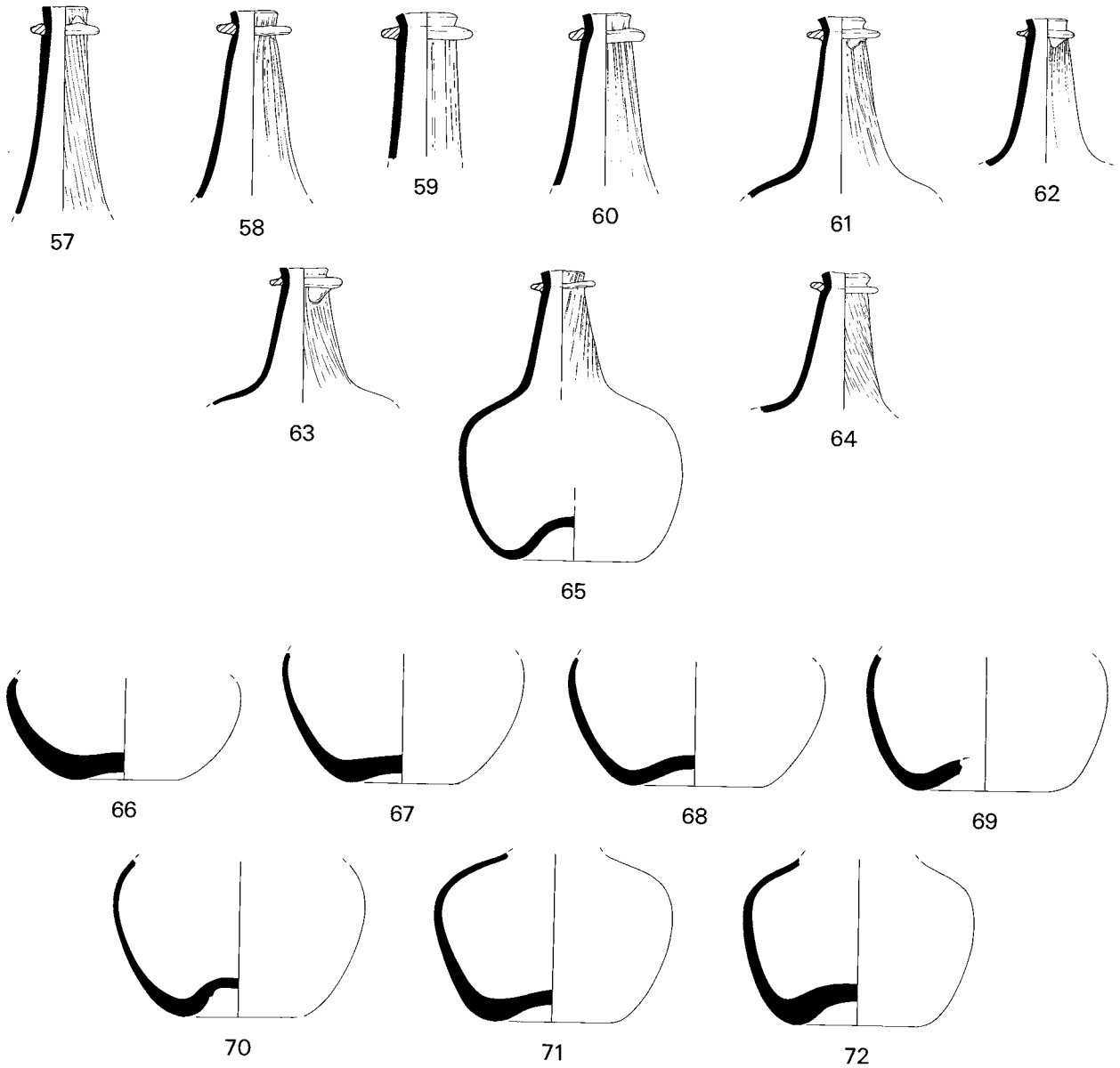


Fig. 139 Glass bottles: from the demolition rubble of the south range, the east range, and the kitchen court, **57–72** *(1:4).*

61 Type II
Bevelled low rim. Constricted neck. Tall flaring shaft.
**G2182; W6ext2 2; Phase 5*

62 Type II
Bevelled low rim. Constricted neck. Flaring shaft of medium height.
**G2182; W6ext2 2; Phase 5*

63 Type II
Flat low rim. Constricted neck. Flaring shaft of medium height.
**G2182; W6ext2 2; Phase 5*

64 Type II
Bevelled low rim. Constricted neck. Flaring shaft of medium height.
**G2182; W6ext2 2; Phase 5*

65 Type II
Bevelled low rim. Constricted neck. Flaring shaft of medium height. High shoulder. Slightly rounded, near vertical wall. Relatively large high kick. Base, wall, and shaft of even, relatively thin glass.
**G2182; W6ext2 2; Phase 5*

66 Type I/II
Slightly rounded, strongly outward sloping wall with ?low shoulder. Small, low kick. Thick base, wall thinning upwards.
**G2082; S1 11; Phase 5*

67 Type I/II
Slightly rounded, outward sloping wall. High shoulder. Small, low kick. Thick base, relatively thin wall.
**No.10; W6ext2 2; Phase 5*

68 Type I/II
Slightly rounded, outward-sloping wall. High shoulder. Large kick of medium height. Base only slightly thicker than wall.
**No.10; W6ext2 2; Phase 5*

69 Type I/II
Slightly rounded, near vertical wall. Large kick of medium height. Base only slightly thicker than wall.
**No.10; W6ext2 2; Phase 5*

70 Type I/II
Rounded, outward-sloping wall. High shoulder. Large, high, angled kick. Relatively thin-walled except for base below kick.
**No.10; W6ext2 2; Phase 5*

71 Type I/II
Straight, outward-sloping wall. High shoulder. Large kick of medium height. Thick base, wall thinning upwards and over shoulder.
**No.12; W6ext2 2; Phase 5*

72 Type I/II
Straight, near vertical wall. High shoulder. Large high kick. Thick base, thinning into wall and over shoulder.
**No.12; W6ext2 2; Phase 5*

73–9: Miscellaneous bottles

Although fragments of thick-walled bottles of Types I, I/II and II provided by far the greater part of the Nonsuch bottle glass, there were some pieces of bottles of different kinds (**73–9**). No 'mallet' bottles of Type III (*c* 1730–60) were recorded, but a few fragments of 'tall' bottles of Type IV (*c* 1760 onwards) were found. These came usually from Phase 6 deposits resulting from the agricultural levelling of the site in the eighteenth century (**78–9**) or from later deposits, but some were also found in Garderobe 1.[21] The latter suggest that the deposition of the rubble filling this garderobe, and hence the demolition of at least that part of the outer gatehouse in which Garderobe 1 lay, did not take place until the second half of the eighteenth century, probably as part of the tidying and levelling of the site of the palace for agriculture.[22]

The remaining miscellaneous types are from case bottles (**73**) and large bottles such as carboys (**74–6**) and a cistern (**77**).

Case bottles (**73**) were uncommon at Nonsuch with a total of not more than seven examples from the palace and three from the Banqueting House (but see also above, p 255, Fig. 120). Their rarity relative to thick-walled bottles may reflect the implications of Hume's view that 'they are often found on archaeological sites dating before the last quarter of the seventeenth century'.[23] The Nonsuch evidence may support this: of the perhaps eleven examples recorded, seven came from deposits of the 1660s to 1680s: four from garderobe pits at the palace dated *ex hypothesi* to *c* 1670–1688,[24] and three from the Banqueting House demolished in 1667.

Large glass storage bottles, still seen today in the wicker or straw-bound carboy, almost never (if ever) survive intact. Only fragments were found at Nonsuch (**74–6**), the two rims (very different one from the other) both displaying the strings below the lip needed for the secure attachment of a stopper or cover. All the fragments recognised came from Phase 5 demolition or later contexts. The number of vessels involved is almost impossible to ascertain, but based on the find-locations is not likely to exceed six vessels at the palace and two at the Banqueting House, where 38 fragments, all unfortunately featureless, but probably from a single vessel, were found in the cellar.[25]

Such carboys may have been fitted with reinforced holes near or at the base to take a wooden tap. Vessels with fittings of this kind are well known in later medieval pottery and are best described as 'cisterns'.[26] The single glass example (**77**) came from a Phase 5 demolition deposit at the palace.

73 Case bottle
Tall, rectangular bottle with vertical, slightly concave sides, the same width at the base and sides (ie. not tapered). The base raised and scarred by a pontil mark. Neck and rim missing.

21. G2000; U1 6=**G1**; Phase 5. The 'carton' of bottle fragments from this deposit seems to have been discarded at some early stage in the sorting of the glass. A rough sketch of the shape of one of the bottles made in Site Note Book A, p. 35 when found, shows that the date of the bottles and their significance for the continued use of the outer gatehouse was appreciated at the time
22. See further above, p. 2, 47, 62–3
23. Hume 1969, 32; cf Hume 1970, 62. Case bottles continued to be made throughout the eighteenth century: Hume 1961, 105–6
24. **G5**: G2013; **G6**: G2015; **G9**: G2001a; **G26**: G2030/G2096, illustrated here as **73**
25. G2516, G2536, G2538–9, and G2541; for contexts see the entry for **76**
26. McCarthy and Brooks 1988, 112–13

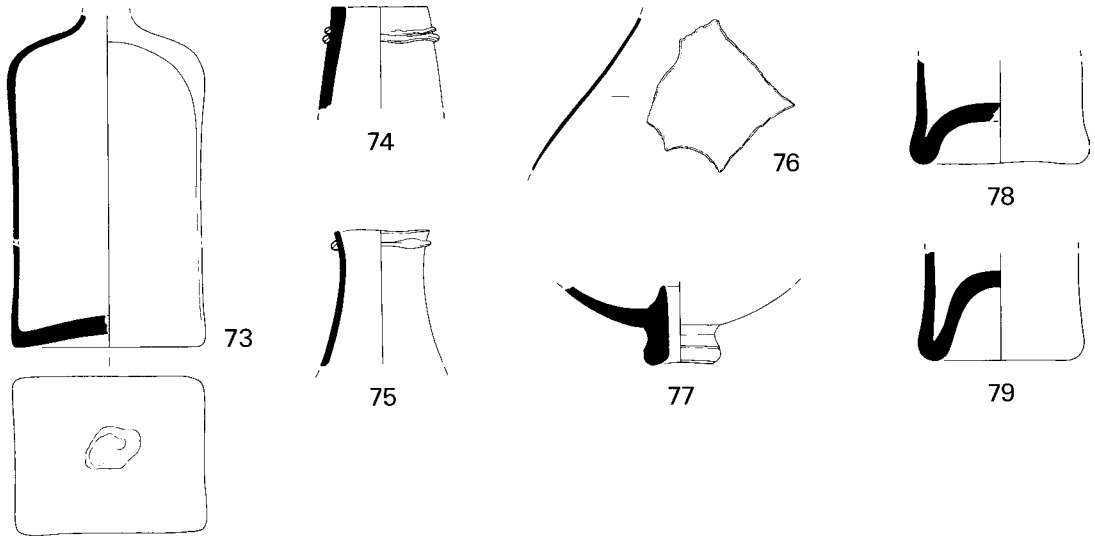


Fig. 140 Glass bottles from Nonsuch; miscellaneous types, ***73–9*** *(1:4).*

Thin walled, except for base and shoulder.
*G2013; W5ext 2d=**G5**; Phase 4. G2015; W8 3=**G6**; Phase 4. G2001a; U7 8=**G9**; Phase 4. *G2030/2069; T7 III 3=**G26**; Phase 4. T7 III 2; Phase 5. G2064; Q5 III 3; Phase 5. G2256; Q14 III 5=**SA G**; Phase 5. G2098; T8 1; Phase 8*
Banqueting House: *G2518; D5/6 3 Baulk; BH Phase 4. G2559; F4 IIext 2; BH Phase 5. G2519; D6 1; Phase 7*

74 Bottle or carboy with inverted rim
Inverted neck and flat-topped rim of a large thick-walled bottle or carboy with a double string for holding the tie of a stopper or cover.
**G2098a; T8 1; Phase 8*

75 Bottle or carboy with everted rim
Waisted neck and everted, flat-topped rim of a large thin-walled bottle or carboy, with a single string for holding the tie of a stopper or cover. Possibly from a vessel of comparable form to **76**.
**G2098b; T8 1; Phase 8*

76 Carboy?
Fragment apparently from the shoulder of a large vessel such as a carboy, possibly with a neck and rim comparable to **75**. Brown glass. The thin wall suggests that the vessel would have been protected by a woven case.
**G2169; W6 2; Phase 5. G2173; W6 3; Phase 5. G2202b; X8 2; Phase 5. G2226; Y4 14; Phase 5. G2113; U14 II/IV 2; Phase 6. G2094; T1 2; Phase 6. G2098; T8 1; Phase 8. G2231; Y5 I/II 1; Phase 8. G2335; CH XV 1; Phase 8*

Banqueting House: *G2516; D5 IV 5; BH Phase 4. G2536; E5 3 Baulk; BH Phase 4. G2538; E5 III 7; BH Phase 4. G2539; E5 III 10; BH Phase 4. G2541; E5 IV 3; BH Phase 4. G2567; G8 I 1; BH Phase 7*

77 Cistern?
Reinforced hole in the curve of a thick-walled vessel, with heavy external rim and internal sleeve. A position with a wooden tap ('spigot' or 'forcet') fitted in the base of the vessel makes perhaps the best sense, with the internal sleeve forming a raised collar to retain a sediment. The curvature suggests that a side position (as in a true cistern) would not be practicable and the internal sleeve would only be a hinderance.
**G2202; X8 2; Phase 5*

78 Tall bottle (Type IV)
Base of a tall, cylindrical bottle. High, flat-topped kick. Thick, very dark, almost black, glass.
**G2013; T8 7; Phase 6*

79 Tall bottle (Type IV)
Base of a tall, cylindrical bottle, with slightly concave wall. Very high kick. Thick, very dark, almost black, glass.
**G2103; T8 7; Phase 6*

APPENDIX 1

ENGLISH DATED GLASS BOTTLES *c* 1650–1700

(Figs 127–31)

Thirty bottles are illustrated. All have dated seals, except '**pre-1652**', '**1651–63**', and '**1659**' which are datable on grounds explained in their catalogue entries, and which are included because of the lack of dated bottles from the 1650s. Few of the bottles have previously been published to scale in standard conventions. With three exceptions those published here have been drawn full-size by Nicholas Griffiths and appear on Figs 127–8 reduced to one-quarter. '**Pre-1652**' has been redrawn after Hume, '**1665**' and '**1698c**' from working drawings by R.C. Alvey. In this appendix, for which all the seals have been drawn (Figs 129–31), the legends are given in the entries in **bold**, but no attempt has been made to provide detailed descriptions.

The catalogue entries refer only to publications providing significant information or illustrations; no attempt has been made to list all the references to these bottles, some of which have been reproduced on many occasions; Dumbrell's reprint of Ruggles-Brise's list of seals has only been quoted where he provides new information. Every attempt has been made to provide identifications of the seals, find-spots or provenance (since some of these bottles have probably never been buried), collection history, and present whereabouts with accession number where available. Much of the literature is seriously deficient in these details, but it is only by establishing the origin of such bottles that the more obscure seals may perhaps be identified, the social status of their owners established, and possible regional variations in bottle production and bottle type defined.

Another way forward is by the detailed study and publication of major early groups. Notable among these are the Nottingham, High Pavement, cess-pit[1] and the Oxford, St. Ebbs, cellar,[2] both of which might usefully be restudied. The Nottingham group in particular contained seven or eight Type I bottles, the largest number yet published from a single deposit, five or six bearing seals, two of which are dated, a unique association (RM 1660, a detached seal, see Table 26; TP 1665, a bottle; see Figs 127 and 129, **1665**).

In broad terms the bottles appear in two sizes, the 'bottle' with a capacity of about 26 fl oz and the 'half bottle' containing about 15 fl oz. No systematic measurement of capacity has been carried out for this survey, but in the entries both for the bottles illustrated on Figs 127–8 and for those not included (p 297–301), the distinction as to bottle or half-bottle has been made where there is sufficient information. Of the 80 pieces where this can be done (for all 30 in Figs 127–8 and for 50 of the 62 bottles not included), 27 (34%) are half bottles. The smaller size appears not to be so unusual as has sometimes been thought, but it may also survive better than the larger version, which is relatively thinner walled and has often lost its neck.

Grateful thanks are due to those who have helped in the compilation of this series and/or have given permission for the publication of drawings of bottles in their care: Nicholas Griffiths

1. Alvey 1973.
2. Mellor and Oakley 1984, 191-5 (assemblages A F17, mid to late 17th century, Fig 20; and W F80, late 17th century, Fig. 21); for the bottles, see Haslam 1984, with Fig 41; and for the seals, see Oakley 1984, with Fig 48.

for visiting the museums and making the drawings; R.C. Alvey (Northampton Museum); Mrs C.G. Benson (Glass Circle); Mrs Anthea Bickley and Mrs Christine Hopper (Bradford Art Gallery and Museums); Bodleian Library, Oxford; David Burton (Tunbridge Wells); Christopher Chippindale (Cambridge University Museum of Archaeology and Anthropology); Mrs Aileen Dawson (Department of Medieval and Later Antiquities, British Museum); Roger Dodsworth (Glass Association); R.C. Eccarius (General Manager, Berry Bros. & Rudd Ltd., Basingstoke); Geoff Egan (Museum of London Archaeological Service); Mrs Hazel Forsyth and Mrs Wendy Evans (Museum of London); Dr. Arthur MacGregor (Ashmolean Museum, Oxford); Jonathan Horne (Kensington, London); Ms. Francesca Jones and John Lange (Oxford County Museum Service/Museum of Oxford); Dr Olive Jones (Environment Canada, Ottawa); Dwight P. Lanmon and David B. Whitehouse (Corning Museum of Glass); Peter Lewis and Miss Norma Aubertin-Potter (All Souls College, Oxford); Arthur MacGregor (Ashmolean Museum, Oxford); Brian Moody (St. Albans); Miss Julia Poole (Fitzwilliam Museum, Cambridge); Salisbury Museum; Somerset County Museum, Taunton; John Turner (Bedford Museum). Special mention must be made of Chris Mortimer (Sri Lanka) who is compiling a catalogue of all recorded English wine-bottle seals. When we became aware of each other's work we agreed to exchange information on material for the period *c* 1650 to 1700, with the result that 15 bottles were added to Appendix 2 and 41 seals to Table 26.

CATALOGUE

pre-1652

Type I bottle. Separate matrix seal **RW** impressed by the same dies as were used on a bottle seal found on a property in Jamestown, Virginia, owned by the colonist Ralph Wormeley who died in 1651. One of two found in London in 1954.[3] Formerly I. Noël Hume collection; since 1978 Corning Museum of Glass, Acc. no. 78.2.13.[4]

1651–63

Type I bottle. Seal **TW** with tennis-players of Thomas Wood, licensee of The Salutation tavern and adjacent tennis-court in High Street, Oxford, from 1651 until his death in 1663. Found in Oxford. Ashmolean Museum 1896–1908, M.68 (ex St. John's College).[5]

1657

Type I bottle. Seal **RMP 1657** with king's bust profile looking left. Tavern and licensee not identified. Found in the church-yard at Market Harborough, Leics, pre-*c* 1914.[6] Northampton Museum Z 240 (ex J. Cecil).

1659

Type I ?half bottle. Seal of (Sir) Richard Combe (d.1676) and scratched inscription, 'Ri: Combe New Canary wine Aprill 1659 See how longe last good' with the numeral '6' and the word 'Six' below. Found at The Bury, Hemel Hempstead (Herts.) in 1745, but known only from a drawing now in the Bodleian Library, Oxford (Gough Maps II, f.61).[7]

1665

Type I or I/II bottle. Seal **TP 1665**. Owner not identified. Found in a cess-pit at Nos 26–8 High Pavement, Nottingham, in 1972.[8] Present whereabouts unknown.

1675

Type I/II bottle. Seal with crown above cipher of William and Anne Morrell, licensees of The Crown tavern, Cornmarket Street, Oxford, 1660–79.[9] **OX/ON** to either side of crown. At bottom, the numerals **74** altered to **75** for 1675. Found Radcliffe Sqaure Oxford. Ashmolean Museum, Oxford, 1910.308.

1678

Type II bottle (26.5 fl oz 'to brim'). Seal of **RICHARD CHURCH 1678** with dolphin. Tavern

3. Hume 1955, 4, Pl I; Hume 1957a; Hume 1961, 98, 102, Fig 3, No 1, from which the section on Fig 127 is redrawn; the seal on Fig 129 is drawn from Hudson 1961, 86, No 24.
4. Anon. 1979, 122, no. 17. The other RW bottle found in 1954 is now Museum of London, Acc. no. 22360
5. Leeds 1914, 287, Fig. 1.1; Leeds 1941, 45–6, No 1, Pl IX.
6. Anon. 1921, Fig. 6; *Wine Trade* 1933, 60, No 214, Pl LXXXVII. For the find-spot, usually said to have been Wellingborough, see Morgan 1976; cf Morgan 1980, 25 and cf pages 7 (photograph) and 9. See also Leeds 1914, 287–9, Fig. 2; Leeds 1941, 50, No a.
7. Biddle 1988.
8. Alvey 1973, 65, Fig 9, No 5. The illustration on Fig 127 is redrawn from Mr Alvey's full-size working drawing. The unusual profile makes it particularly unfortunate that the bottle, which had to be returned to the owners of the site, cannot now be located.
9. Leeds 1941, 46–7, No 13, Pl IX.

and licensee not certainly identified but possibly from The Dolphin tavern, All Saints Passage, Cambridge (cf **1684b**).[10] Provenance unknown. Lady Darwin (to 1943/4); Fitzwilliam Museum, Cambridge (1944), C/G 1–1944, gift of the Hon. Lady Darwin.

1681

Type II bottle. Seal **WM** (or **MW**) **81**, for 1681. Owner not identified. Find-spot unknown, but 'possibly excavated around Oxford'. Sold at auction in 1976–8 (?Christie's); later Roger Dumbrell and illustrated by him.[11] In 1991 in possession of Jonathan Horne, Kensington, London.[12]

1682

Type II bottle. Seal **AH 1682** with mermaid, of Anthony Hall junior, licensee of The Mermaid tavern, Carfax, Oxford, from 1675–91.[13] Found 27 Broad Street, Oxford 1913. Ashmolean Museum, Oxford, 1924.512.

1683

Type II bottle. Seal of **R How at Chedworth 1683**. Identified as Sir Richard Howe, lord of the manor of Chedworth.[14] Provenance unknown. Sold at Sotheby's 1978. In 1991 in the possession of Mr David Burton, Tunbridge Wells, Kent.

1684a

Type II half bottle. Seal with crown and cypher of Anne Morrell, widow, licensee of The Crown tavern, Cornmarket Street, Oxford, 1679–96.[15] **OX/ ON** to either side of crown. At bottom, the date **1684**. Provenance unknown, but 'possibly bought in Manchester many years ago'. Perhaps the bottle sold in 1977. Sold at Sotheby's 21 July 1980. Roger Dumbrell collection; later purchased by Jonathan Horne.[16] In 1993 in the possession of Mr. David Burton, Tunbridge Wells, Kent.

1684b

Type II half bottle (15 fl oz 'capacity'). Seal **EC CAMBRIDG 1684** with dolphin. Tavern and licensee not certainly identified, but possibly from The Dolphin tavern, All Saints Passage, Cambridge (cf **1678**).[17] Provenance unknown. Sold Sotheby's summer 1934; Francis Berry (1934); Fitzwilliam Museum, Cambridge (1936), C/G 1–1936, gift of Mrs Francis Berry.

1685a

Type II bottle. Seal with crown and cipher of Anne Morrell, widow, licensee of The Crown tavern, Cornmarket Street, Oxford, 1679–96.[18] **OX/ ON** to either side of crown. At bottom, the date **1685**. Found Clarendon Quad., Oxford 1899. Ashmolean Museum, Oxford, 1916.19.

1685b

Type II bottle (26.5 fl oz 'capacity'). Seal of **ANTHONY HALL IN OXFORD 1685** around mermaid, of Anthony Hall junior, licensee of The Mermaid tavern, Carfax, Oxford, from 1675–91.[19] Provenance unknown. J.W.L. Glaisher (to 1928); Fitzwilliam Museum, Cambridge (1928) C/G 3–1928, bequest of J.W.L. Glaisher.

1688

Type II bottle. Seal **TT 1688**. Owner not identified. Provenance unknown. Cartwright Hall, Bradford Art Gallery and Museums (Yorks.), 4/26; purchased from a local antique dealer, 1926.

1690a

Type II half bottle. Seal **RW 1690** with king's bust full-face. Identified as Richard Walker, licensee of The King's Head tavern, Cornmarket Street, Oxford, from 1687 to *c* 1696, and in High Street from *c* 1696 to his death in 1704.[20] Provenance unknown. This appears to be the bottle from Col. Ratcliff's collection, sold at Christie's 3 June 1943 to Messrs D.H. and P. Manheim. With 'one or two exceptions' these bottles were sold to the USA,[21] but the present bottle, or a second example, has either returned to the UK, or never left, for it (or another like it) was sold at Sotheby's on 11 December 1972 and in 1983 was in Roger Dumbrell's collection and was illustrated by him,[22] having possibly been brought in Brighton.[23] In 1991 it was in the possession of Jonathan Horne, London, and by 1993 in the collection of David Burton, Tunbridge Wells (Kent).

10. Ruggles-Brise 1949, 91, cf 88–9; Fitzwilliam 1978, 91, No 217b.
11. Dumbrell 1983, 59 (Fig 31), 290, 335.
12. Pers. comm. J. Horne (letter of 8.vii.1993).
13. Leeds 1941, 45, 47, No 6, Pl IX. This is the bottle illustrated by Dumbrell 1983, 59 (Fig 32). For an earlier type of bottle (I/II) with this seal, see Dumbrell 1983, 56 (Fig a), listed in Appendix 2, 1682.
14. Dumbrell 1983, 59 (Fig 33), 274.
15. Cf Leeds 1941, 46-8, Nos 14-19, Pl IX; the present bottle was not known to Leeds.
16. Dumbrell 1983, 27, 58 (Pl. 10, right), 177 (Pl. 78, top), 331 (sold by a provincial dealer, 1977). Pers. comm J. Horne (letter of 8.vii.1993).
17. Berry 1935, Fig 3; Leeds 1941, 53, No a; Ruggles-Brise 1949, 88–9; Fitzwilliam 1978, 91, No 217c.
18. Leeds 1941, 46, 48 (No 16), Pl IX Anon. 1921, Fig. 6..
19. Cf Leeds 1941, 45, 47, Nos 7 and 7a, Pl IX; Fitzwilliam 1978, 91, No 217a. Leeds refers to a bottle with this seal, the date apparently altered from 1685 to 1686, in the C.K. Mason collection (see below, App 2, 1686).
20. Cf Leeds 1941, 46, 50, Nos 35–9; the present bottle was not known to Leeds.
21. Ruggles-Brise 1949, 147.
22. Dumbrell 1983, 56 (Fig b), 58 (Pl. 10, left), 60 (Fig 40), 174 (Pl. 75), 317, 323, Pls 10, 75, but it is not certain whether these all refer to this bottle, or whether some refer to the Museum of London bottle (see below, App. 2, **1690**).
23. Pers. comm. J. Horne (letter of 8.vii.1993).

1690b

Type II bottle. Seal of **Cha: Turnor 1690**. Possibly to be identified as Charles Turner of Oxford.[24] Provenance unknown. Northampton Museum, no number.

1693a

Type II half bottle. Seal **RW 1693** with king's bust full-face, of Richard Walker, licensee of The King's Head tavern, Oxford (see **1690a**).[25] Provenance not recorded, but presumably All Souls College, Oxford, where the bottle remains in the library, with the number '5'.

1693b

Type II bottle. Seal **I I** (ie, II, JJ, IJ or JI) **1693** with one mullet between and another above letters. Owner unknown. Provenance unknown. In 1933 in the collection of Francis Berry; ?sold at Christie's 1939; by 1942 Lt.Col. V. Vivian; by 1991 in the possession of Jonathan Horne, London.[26] Now London, Victoria and Albert Museum, no. C.383 – 1993.

1695

Type II half bottle. Seal of ***John Lovering Bidiford 1695***. Owner (of Bideford, Devon) not identified. Provenance unknown. Sold at Christie's 1989. In 1991 in the possession of David Burton, Tunbridge Wells (Kent).

1697

Type II bottle. Seal **IC 97**, for 1697. Owner not identified. Provenance unknown.[27] Somerset County Museum, Taunton, B.1866.

1698a

Type II bottle. Seal of **D Musgrave 98**, for 1698. Owner not identified. Provenance unknown.[28] In 1991 in the possession of David Burton, Tunbridge Wells (Kent).

1698b

Type II bottle. Seal of merchant's mark with central **S** between **1698**. Owner not identified. Provenance unknown. Purchased at auction in north Devon before 1976; by 1976 in C. Staal collection; sold at Christie's 13 February 1990. By 1991 in the possession of David Burton, Tunbridge Wells (Kent). [29]

1698c

?Type II half bottle. Seal **CP 1698**. Owner not identified. Found in a pit at Drury Hill, Nottingham, June 1971. Recently in possession of J.K. Clifford.[30]

1699a

Type II half bottle. Seal with king's bust profile in armour looking right, between **1699** (cf **1699b**). Richard Walker, licensee of The King's Head tavern Oxford (see **1690a**). Found 12 High Street, Oxford. Ashmolean Museum, Oxford, 1928.502.[31]

1699b

Type II half bottle. Seal with king's bust profile in armour looking right, between **1699** (cf **1699a**). Richard Walker, licensee of The King's Head tavern, Oxford (see **1690a**). Found in Oxford. Ashmolean Museum, Oxford, 1910.313.[32]

1699c

Type II bottle. Seal **REW 1699** with king's bust profile in armour looking right (cf **1699d**). Richard Walker, licensee of The King's Head tavern, Oxford (see **1690a**). The addition of initials to the type used for **1699a** and **1699b** refers to Richard's second marriage, to Elizabeth Wildgoose in 1694, and may reflect the renewal of his license in 1698. Found in Oxford. Ashmolean Museum, Oxford, 1913.926.[33]

1699d

Type II half bottle. Seal **REW 1699** with king's bust profile in armour looking right (cf **1699c**). Richard Walker, licensee of The King's Head tavern, Oxford (see **1690a**, **1699c**). Found 50A High Street, Oxford 1906. Ashmolean Museum, Oxford, 1896–1908 (M.66).[34]

1700a

Type II/III bottle. Seal **TM 1700** with florets. Owner not identified. 'Found in sand at Hastings beach, Sussex in 1898'.[35] Formerly in Roland Mole collection, Acc.No 191; now in Salisbury Museum, M vi A 5.

1700b

Type II/III bottle with handle. Seal of ***Daniell Dowsing de Norwich 1700***. Provenance unknown. Cecil Higgins; then Cecil Higgins Art Gallery, Bedford, G.59.[36]

24. Leeds 1941, 53, No f; Ruggles-Brise 1949, 314.
25. Leeds 1941, 50, No 35.
26. Berry 1933a; *Wine Trade* 1933, 60, No 217, Pl XC (B); Ruggles-Brise 1942c, 2, 4; Ruggles-Brise 1949, 86, No 25, 116; Dumbrell 1983, 277; Liefkes (ed.) 1997, Pl. 103..
27. Truro 1976, No 9; Dumbrell 1983, 61 (Fig 45), 250.
28. Litherland 1977, 23; Dumbrell 1983, 61 (Fig 46), 289.
29. Dumbrell 1983, 61 (Fig 47), 154, 309.
30. Recorded by Mr R.C. Alvey from whose full-size working drawing the illustration on Fig 128 is redrawn.
31. Leeds 1941, 50, No 39b. Leeds seems to have thought that this poor impression was the same as the seal of his No 39, ie with the initials REW added (see here **1699c**). It appears in fact to be another example of the seal with bust and 1699 only, ie of the type of his No 38.
32. Leeds 1941, 50, No 38.
33. Leeds 1941, 50, No 39a.
34. Leeds 1941, 50, No 39.
35. Ruggles-Brise 1949, 127. Truro 1976, No 17; Dumbrell 1983, 66 (Fig 50).
36. Ruggles-Brise 1949, 98.

APPENDIX 2

ENGLISH DATED BOTTLES 1661–1700 KNOWN OR BELIEVED TO EXIST BUT NOT INCLUDED IN APPENDIX 1

Sixty-two bottles are listed here in a simplified format, with special attention given to provenance and collection history to aid possible identification of the thirty or so whose present whereabouts are still unknown. Where possible, provisional identifications to type (I/II or II) and size (bottle/half bottle) are given on the basis of the photographs, sketch profiles, or sizes quoted in the works to which reference is made.

1661

CR under crown to left, with king's bust full-face above date, and formless raised mass, identified by Francis Berry as an oak tree, to right. Type I/II bottle.
Said to have been found in the 'West Country'. Francis Berry (1933); ?sold at Christie's 1939; then A.S. Marsden-Smedley; sold at Sotheby's 18 June 1943; P.M. Turner (1949).[1] By 1993 Berry Bros. and Rudd (Basingstoke).

1661

CR to left, with king's bust full-face, **RAB** to right. Type I/II bottle.
Found at Whitney-on-Wye, Herefordshire. Hereford Museum, Acc.no. 738.92, No. 4428 (missing since early 1980s).[2] Present whereabouts unknown.

1667

RS. Type/size unknown.
Provenance unknown. Formerly Ranson collection. Cambridge, University Museum of Archaeology and Anthropology, Acc. no. 1923.718 (ex inf. Chris Mortimer).

1674

Bydder 1674/THISTLE BOON. Type I/II bottle.
Identified as Thomas Bydder of Thistle Boon, in the parish of Oystermouth, south of Swansea. R. Dumbrell (before 1978); sold via London dealer in 1978; then or later sold by Jonathan Horne, London, to a collector in Chicago, USA.[3]

1677

Cipher of William and Anne Morrell with crown and **OX/ON** to either side. Type/size unknown.
Found during a house clearance in the Wessex area. Sold at Phillips Wessex Auction 1998 (ex inf. Chris Mortimer). Present whereabouts unknown.

1678

Cipher of William and Anne Morrell beneath crown, with **OX/ON** to either side, joint licensees of The Crown tavern, Cornmarket Street, Oxford, 1660–79. Type I/II bottle.
Provenance unknown. New York, Ithaca, Corning Museum of Glass, Acc.no. 54.2.14, since 1954.

1682

AH with mermaid. Type I/II, bottle.
Provenance unknown. This bottle is at present known only from the drawing in Dumbrell 1983, 56, Fig a, which shows a Type I/II bottle. In its type (I/II) and the alignment of its seal (tilted to the right) this bottle differs from that drawn in Dumbrell 1983, 59, Fig 32 (Type II, seal tilted to

1. Berry 1933a; *Wine Trade* 1933, 60, No 215, Pl LXXXVIII (A) (sticker and strung-on label); Leeds 1941, 50, No b; Ruggles-Brise 1942c, 2; Dumbrell 1983, 244. The symbol to the right of the king's bust, identified by Berry as a possible oak tree, has been ignored by all subsequent writers. Berry's suggestion is plausible but could scarcely be made without the association with Charles II.
2. Information from Museum record card. See also Ruggles-Brise 1949, 33, 54, 90; Dumbrell 1983, 55 (Fig 28).
3. Dunsmuir 1976, 30 (photograph by courtesy of Richard Dennis); Dumbrell 1983, 27, 55 (Fig 25), 241, 332, Pl 58. The present owner has kindly provided a drawing.

the left) which is illustrated here as Fig. 127, **1682** (cf. Appendix 1). Although Dumbrell's Fig a probably represents a second example dated 1682, this cannot be certain given the small scale of his drawings.

1683

Cipher of Anne Morrell beneath crown, with **OX/ON** to either side. Type/size unknown.
A bottle with this seal and two detached seals were recorded by Ruggles-Brise in the Ashmolean Museum, Oxford. The seals were also listed by Leeds (see also here, Table 26), but it is not certain that the bottle exists; it is not now in the Ashmolean[4]

1684/5

ANTHONY HALL IN OXFORD 1684 around mermaid. Type II, bottle. Neck missing. The date altered to 1685?
Found in excavations at 31–4 Church Street, Oxford (Site A, 1967–76, SF 181). Oxford, OCMS 1975.25.[4a]

1685

Rutland arms (lion rampant between three mullets; crest, a boar; with mantling). Jug, type/size unknown.
Provenance unknown. At Belvoir Castle, Leicestershire, in the Duke of Rutland's collection in Feb. 1926.[5]

1686

ANTHONY HALL IN OXFORD 1685 around mermaid (same as Figs 127, 130, **1685b**, but the last figure doubtful, possibly a **5** altered to a **6**). Type uncertain, bottle.
C.K. Mason (1941).[6] Tom Floyd. Sold Christie's 13 Feb. 1990, Lot 6. Present whereabouts unknown.

1686

ANTHONY HALL IN OXFORD 1686 around mermaid (same as Figs 127, 130, **1685b**, but the last figure doubtful, possibly a **5** altered to a **6**. Type uncertain, bottle.
Found in making King Edward Street, Oxford. Ashmolean Museum, Oxford 1874.53.

1686

TL. Type II bottle.
C. Staal (1976). Present whereabouts unknown.[7]

1686

CP above date. Type II half bottle.
Found at Railway Works, Bermondsey. By Nov. 1920 in the Guildhall Museum, London, Acc.no. 10835, by exchange with Mr W. Pavyer;[8] now Museum of London, MA 2386.

1686

CP above date. Type unknown, bottle.
Provenance unknown. Present whereabouts unknown.[9]

1686

Christo^{r}: GILL. Type II bottle.
Provenance unknown. Mrs Radford (before 1943); sold Sotheby's 3 Nov. 1943; M.W. Ashby (1949).[10] By 1993 Berry Bros. and Rudd (Basingstoke).

1687

TL above date. Type II bottle.
Bacon collection (before 1949); Luis G. Gordon (1949).[11] Present whereabouts unknown.

1687

RW with king's bust full-face. Type unknown, bottle.
No details known, but possibly from Richard Walker's first year as the licensee of The King's Head tavern, Oxford.[12] Oxford, Ashmolean Museum, AM 1994.70.

1688

IH above date. Type II ?bottle.
Provenance unknown. Colonial Williamsburg, Coll. no. 56.392.

1688

RH with a globe. Type II bottle.
No details known. Sold by a London dealer in 1979.[13] Present whereabouts unknown.

1688

ES to either side of a symbol (a crossbow?). Type II bottle.
No details known.[14] Present whereabouts unknown.

1688

Cipher of Anne Morrell with crown and **OX/ON** to either side, the **N** reversed. Type unknown, half bottle.
Provenance unknown. London, Museum of London (ex inf. Chris Mortimer).

4. Ruggles-Brise 1949, 126; cf Leeds 1941, 48, No 15. No separate record of the bottle has been found.
4a. Hassall *et. al.* 1984, Fig. 48, no. 3; Fig. 144, no. 3).
5. Ruggles-Brise 1949, 74.
6. Leeds 1941, 47, No 7a; Ruggles-Brise 1949, 109. Ruggles-Brise's notes (BM, Dept. of Medieval and Later Antiquities) records what may be this bottle as once the property of P. Manning F.S.A.
7. Truro 1976, No 7, with drawn section two pages on.
8. Anon. 1921, Fig. 3; Powell 1923, Fig.66; *Wine Trade* 1933, 60, No 216, Pl LXXXIX; Ruggles-Brise 1949, 134.
9. Information from C. Mortimer. Since the height of this bottle is recorded by him as 152 mm., it is a full bottle and not a half-bottle like the previous entry.
10. Ruggles-Brise 1949, 55, 106.
11. Ruggles-Brise 1949, 55, 123; Dumbrell 1983, 60 (Fig 38).
12. Dumbrell 1983, 323; cf Leeds 1941, 46, 50, Nos 35–7.
13. Dumbrell 1983, 276, 333.
14. Dumbrell 1983, 60 (Fig 39), 309.

1688

Cypher of Anne Morrell beneath crown, with **OX/ON** to either side, the **N** reversed. Type unknown, half bottle.
Lady Ruggles-Brise (1949); probably No 5 or 6 in the 1976 Truro exhibition and therefore at that date in the possession of Findlater Mackie Todd and Co. Ltd.[15]

1688

Cypher of Anne Morrell beneath crown, with **OX/ON** to either side, the **N** reversed. Type uncertain, half bottle.
C.K. Mason (1941); possibly the same as the bottle sold at Puttick and Simpson, 1 July 1947; Mrs H.J.M. Mitchell (1949); probably No 5 or 6 in the 1976 Truro exhibition and therefore at that date in the possession of Findlater Mackie Todd and Co.Ltd.[16]

1688

Cipher of Anne Morrell with crown and **OX/ON** to either side, the **N** reversed. Type unknown, ?half bottle.
The second **8** may have been altered to a **9** (cf. 1689, below). Found in excavations at All Saints Church, Oxford (in the backfill of the crypt of St. Anne's chapel, 1973, SF 237).[16a] Oxford County Museum Service, OXCMS, no. 73.237

1688

REW with king's head (whether full-face or profile not recorded). Type/size unknown.
No details known. Present whereabouts unknown. Not certainly a bottle, as distinct from a detached seal, and possibly a fiction.[17]

1689

RH with a globe. Type/size unknown.
Recently dug up at an unknown location. Broadfield House Glass Museum, Dudley, West Midlands (ex inf. Chris Mortimer).

1689

Cipher of Anne Morrell with crown and **OX/ON** to either side, the **N** reversed. Type unknown, half bottle.
The figure **9** apparently indistinct (? altered from an **8**) (cf. **1688**, above). Provenance unknown. Sold at Sotheby's 30 Nov. 1999 (ex inf. Chris Mortimer). Present whereabouts unknown.

1690

RW with king's bust full-face (?). Type II half bottle.
Found on site of Powell's Glass-house, Whitefriars, London. London Museum, purchased from Mr W. Pavyer (1931); now Museum of London, E.237 (formerly 31.45/1).[18]

1690

Cha: Turnor above date. Type/size unknown.
As Figs 127, 130, **1690b**. Neck missing. Found 50A High Street, Oxford 1906. Oxford, Ashmolean Museum, AM 1917.1.[19]

1690

WTC (**WT** below **C**) above date. Type II bottle.
No details known. Mrs K.S. Cassels of Minehead, Somerset (1933).[20] Present whereabouts unknown.

1690

W with **90** for **1690**. Type unknown, bottle.
Provenance unknown. Sold at Sotheby's May 1997 (ex inf. Chris Mortimer). Present whereabouts unknown.

1691

Crest of Warre with **91** for **1691**. Type II ?bottle.
No details known.[21] Present whereabouts unknown.

1691

RN above date. Type II bottle.
Identified as Robert Newman (1676–1739), merchant mariner of Dartmouth, Devon, but this seems unlikely as he would have been only 15 or 16 in 1691.[22] Lady Ruggles-Brise records a letter of 1952 stating that this bottle was dug up near Devizes, Wiltshire (BM, Ruggles-Brise notes). May have been in Francis Berry collection and later R. Dumbrell; sold at a provincial auction in 1978.[23] Present whereabouts unknown.

1692

IG with two oak trees. Type II, size unknown.
Not sealed: "engraved (or perhaps ... 'chipped' – so large are the marks made by the tool) 1692, together with two Royal Oak trees (in the manner of 'stump' needlework) and initials 'I.G.'". Purchased from a provincial dealer and said to have been dug up at Boscobel, Shropshire, some years before 1935. Denys E. Bower (1935).[23a] Present whereabouts unknown.

15. Ruggles-Brise 1949, 55, No 15, 126.
16. Leeds 1941, 48, No 18, Pl IX; Ruggles-Brise 1949, 55, No 17, 126; cf ibid. 55, No 18, 126.
16a. Hassall *et al.* 1984, 247, Fig. 48, no. 25; Fig. 148, no. 25.
17. Ruggles-Brise 1949, 151. The use of the initials REW with king's head before 1699 would be exceptional: see Appendix 1 and Figs 130–1, **1690a**, **1693a**, **1699a-d**,
18. Ruggles-Brise 1949, 56, No 21, 147.
19. Leeds 1941, 53, cf No f.
20. Berry 1933b with photograph; Ruggles-Brise 1949, 56, No 23, 95. This bottle was shown in the Wine Trade Exhibition (1933), but arrived too late to be included in the catalogue.
21. Dumbrell 1983, 231.
22. Dumbrell 1983, 60 (Fig 42), 293, Pl 67; for Newman, see ibid. 291.
23. Dumbrell 1983, 332.
23a. Bower 1935 with photograph; Ruggles-Brise 1949, 56, No 24, 107.

1693

RW with king's bust full face. Type II half-bottle; neck missing.
Found in excavations at Site W, Westgate, Oxford.[24] Oxford County Museum Service, OXCMS no. not assigned.

1693

R Bott. Type/size unknown.
Name and date apparently engraved rather than sealed. No other details known (ex inf. Chris Mortimer). Present whereabouts unknown.

1693

II (ie, II, JJ, IJ, or JI) with two mullets/stars. Type unknown, bottle.
Similar to Appendix 1, **1693b**, but badly damaged. Provenance unknown. Sold at Sotheby's 13 July 1987 (ex inf. Chris Mortimer). Present whereabouts unknown.

1694

WS with **I_E** upside down (?). Type unknown, ?bottle.
The symbol between the **I** and **E** may suggest that this is an apothecary's bottle. Provenance unknown. Colchester Museum, Acc. no. 90.1973 (ex inf Chris Mortimer).

1695

IW over date. Type II bottle.
Provenance unknown. Label underneath has the number CNNN Ha 11. Formerly Charles B. Gardner; sold at Robert W. Skinner auction, Boston, Mass., 1975, Item 2921 (number on another paper label underneath). Charles M. Webb (1975). Jonathan Horne (1992). By 1993 in private possession, Maryland, USA.[25]

1695

RW with king's head (whether full-face or profile not recorded). Type II half bottle.
One of four 'little bottles ... all similar in size, shape and approximate date ... excavated from the Market Place, Oxford, when the foundations were being made for the present Market Place ... purchased by Mr Handley in the nineties of the last century and given by him to the late Mr R.G. Bell, formerly a director of Handley's Brewery at Oxford (now Hall's Oxford Brewery) who had them harnessed with silver at the lip and subsequently bequeathed them to members of his family. They are half-bottle size'. Mrs Ragg (1935).[26] Present whereabouts unknown.

1695

RW with king's head. Type/size unknown.
Found in 'recent' excavations in Cornmarket Street, Oxford (ex inf. Chris Mortimer).

1696

RW with king's bust full-face. Type/size unknown.
No details known. C.K. Mason (1941).[27] Present whereabouts perhaps unknown, but possibly the bottle once with Jonathan Horne, London, later sold to a collector in Chicago, USA.

1697

CP below ... . Type unknown, small half size (diameter 102 mm, height 127 mm).
Provenance unknown. Purchased in Florida, USA. Sold at Norman C. Heckler & Co. auction March 1997 (ex inf. Chris Mortimer). Present whereabouts unknown.

1698

WR with two mullets. Type II ?bottle.
No details known.[28] Present whereabouts unknown.

1699

GS over date. Type II bottle.
No details known. Rees Price (1908).[29] New York, Ithaca, Corning Museum of Glass, Acc.no. 71.2.7, since 1971.

1699

Beni Wall. Type unknown, bottle.
Provenance unknown. Sold at Robert W. Skinner auction, Boston, Mass., 18 Feb. 1984 (ex inf. Chris Mortimer). Present whereabouts unknown.

1699

RW with king's head (whether full-face or profile not recorded). Type II half bottle.
Found in the Market Place, Oxford. Later history as **1695 RW**, above. Harnessed in silver at the lip. Mrs Cecil D. Bell (1935).[30] Present whereabouts unknown.

1699

King's head (whether full-face or profile not recorded). Type II half bottle.
Found in the Market Place, Oxford. Later history

24. Hassall *et al.* 1984, 195, Fig. 21, no. 15; Fig. 48, no. 22; Fig. 147, no. 22.
25. Heckler 1975, Item 2921 (colour illustration); Dumbrell 1983, 61 (Fig 44), 323; Bivins 1987, 4 (when on loan from Dr. Webb: MESDA, Acc. 3891–3).
26. Berry 1935, Fig 1; Ruggles-Brise 1949, 56, No 29, 147.
27. Leeds 1941, 56, No 36; Ruggles-Brise 1949, 56, No 28, 146.
28. Dumbrell 1983, 304.
29. Rees Price 1910, 118, exhibited in 1908 with his collection 'obtained chiefly in the eastern counties of Norfolk and Suffolk' (pp 116, 123). Rees Price's paper, a pioneering work on wine bottle typology, now long forgotten, published photographs of 22 sealed and dated bottles covering the period 1699–1856. Ruggles-Brise 1949, 57, No 33, 141.
30. Berry 1935; Ruggles-Brise 1949, 56, No 31, 147.

as **1695 RW**, above. Harnessed in silver at the lip. Mrs Alexander Brown (1935).[31] Present whereabouts unknown.

1699

King's bust profile in armour looking right. Type unknown, bottle.
No details known. Cheltenham Art Gallery and Museum, Acc no. 1941.8.[32]

1699

REW with king's bust profile in armour. Type II half-bottle, large part of side of only.
Found in excavations at Site B, Grey friars, Oxford.[32a] Oxford County Museum Service, OXCMS, no. 1975.27.

1699

REW with king's head (whether full-face or profile not recorded). Type II half bottle.
Found in the Market Place, Oxford. Later history as **1695 RW**, above. Harnessed in silver at the lip. Mrs R.G. Bell (1933); possibly in other hands by 1935.[33] Present whereabouts unknown.

1699

REW with king's head (whether full-face or profile not recorded). Type II half bottle.
Find-place unknown.[34] Roger Dumbrell. Jonathan Horne (1991). Now in private possession, Maryland, USA.

1699

REW with king's head (whether full-face or profile not recorded). Type II half bottle.
Find-place unknown.[35] Tom Floyd. Sold Christie's 13 Feb. 1990, Lot 5. Now in the possession of David Harris, Hampton Court (Middlesex).

1699

IW. Type unknown, bottle.
Provenance unknown. Said to be (but in 2002 not) in Winterthur Museum, Delaware, USA (ex inf. Chris Mortimer).

1700

MM over date. Type II bottle.
No details known.[36] David Burton, Tunbridge Wells (1991).

1700

WILLIAM STONAS. Type II ?bottle.
Excavated from the wreck of the *Stirling Castle*, Northumberland, which foundered on the Goodwin Sands in 1703. Now Kent, Ramsgate Maritime Museum.[37]

1700

IC with floret between, scroll above, and date below. Type II bottle.
Francis Berry (1933); ?sold at Christie's 1939; Lt. Col. V. Vivian (1942).[38] Sold at Sotheby's 13 July 1987; sold at BBR Auction, March 1992. Bob Metselaar collection. Present whereabouts unknown.

1700

IC with floret between, scroll above, and date below, but said to be not quite the same as the previous seal. Type unknown, ?bottle.
Bedford Modern School, Bedford (1949); later Cecil Higgins Art Gallery and Museum, Bedford; stolen *c* 1990.[39] Present whereabouts unknown.

1700

EDOUARD GASTON. Type II half bottle.
Provenance unknown. A round white paper label underneath has the pencil inscription, 'Col Mackimbér' (?), presumably indicating a previous owner (Colonel or Collection Mackimber). F.A. Crisp (before 1943); sold Sotheby's 18 June 1943; P.M. Turner (1949).[40] By 1993 Berry Bros. and Rudd, Basingstoke.

1700

HENRY GALSHELL. Type/size unknown.
No details known. Alfred Trapnell of Bournemouth (to 1910); sold Sotheby, Wilkinson and Hodge 12 April 1910.[41] Present whereabouts unknown.

1700

FRANCIS YOUNG DE RYE. Type II bottle.
No details known. Tom Floyd. Sold at Christie's 13 Feb. 1990. By 1993 David Burton, Tunbridge Wells (Kent).

31. Berry 1935; Ruggles-Brise 1949, 56, No 32, 147.
32. Ruggles-Brise 1949, 57, No 38, 117–18.
32a. Hassall *et al.* 1984, Fig. 48, no. 9; Fig. 145, no. 9.
33. Berry 1935, Fig 2; Ruggles-Brise 1949, 56, No 30, 147. On 3 September 1951, Mr H. Herbert Morrell of Hawthorns, Sheringham, Norfolk, wrote to Lady Ruggles-Brise saying that he had in his possession a '1689 or 1699' king's head REW (BM, Ruggles-Brise notes), which may be this or another REW bottle, as Mr Morrell did not note whether his bottle was or was not harnessed in silver.
34. Either this or the next entry may be the bottle owned in 1951 by Mr H. Herbert Morrell: see n. 33.
35. Either this or the previous entry may be the bottle owned in 1951 by Mr H. Herbert Morrell: see above, n.33.
36. Dumbrell 1983, 289.
37. Dumbrell 1983, 308.
38. Berry 1935a; *Wine Trade* 1933, 60, No 218, Pl XC (A); Ruggles-Brise 1942c, 2, 4; Ruggles-Brise 1949, 58, No 1, 95; Dumbrell 1983, 66 (Fig 49).
39. Ruggles-Brise 1949, 95; pers. comm., John Taylor, Bedford Museum (still missing, June 1993). Ruggles-Brise notes height as 6 ½ in. (BM, Ruggles-Brise notes).
40. Ruggles-Brise 1949, 59, No 4, 105.
41. Wilmer 1911, 262–3; Ruggles-Brise 1949, 58, No 3, 104.

8

WINE-BOTTLE SEALS

by Martin Biddle
with heraldic contributions by F. H. Osmond-Smith

(Figs 141–3; Tables 25–6)

i. Introduction

The glass wine bottles reviewed in the previous section were sometimes 'marked' or 'sealed' by the application of a blob of glass to the body while still warm. The blob was then stamped with a metal die engraved with the device of the owner and occasionally with a date in years (Fig 141).[1] Such wine-bottle seals may survive attached to complete or relatively complete bottles; more often they are found broken off, with only a small part of the bottle adhering. Of the eleven complete or fragmentary seals found at Nonsuch Palace in 1959 (none was discovered at the Banqueting House in 1960), only one was attached to a relatively complete bottle (**1**). They comprise, however, ten different seals plus an eleventh fragment with no distinguishing features, and form one of the largest groups yet published from a single site in Britain. Most of the Nonsuch seals were found in contexts associated with the final stages in the occupation of the palace or with its demolition: four are from the Great Cellar or garderobe pits, five are from demolition layers, and two from post-demolition layers. With the latter two possible exceptions, they must all have been made before 1682–90. As we have seen in the previous section, thick-walled green glass wine-bottles were first introduced shortly before the middle of the seventeenth century, and no seal bearing a date earlier than 1650 is yet known (Fig 142; Table 26). At the other end of the range, sealed wine-bottles are unlikely to have reached the palace after the start of the final demolition in 1688.

None of the Nonsuch seals actually bears a date, but of the relatively few wine bottles which were marked or sealed, even fewer were dated.[2] Accurate figures are as yet impossible to come by, for although each seal represents one bottle, it is difficult to estimate the number of bottles represented by a mass of fragments. More than 20,000 fragments were found at Jamestown, Virginia, but of these only 104 carried seals, less than 0.52%.[3] Of the more than 3000 fragments from Nonsuch, only 11 had seals, less than 0.36%.[4] On the assumption that each fragment

1. Ruggles-Brise 1949, 54–9, 154–6; Dumbrell 1983, 26–9; Biddle 1988, 345–7, reviewing earlier literature. For examples of metal dies of 18th- or 19th- century date, see Michaelis 1964, 52, Fig. 4
2. Throughout this discussion, 'dated' refers to seals bearing dates in years; 'datable' describes seals which can be given broad dates by the context in which they were found or by the form of the bottle to which they are attached. On this basis, the Nonsuch seals are all datable before 1688
3. Hudson 1961, 79
4. See above, this page

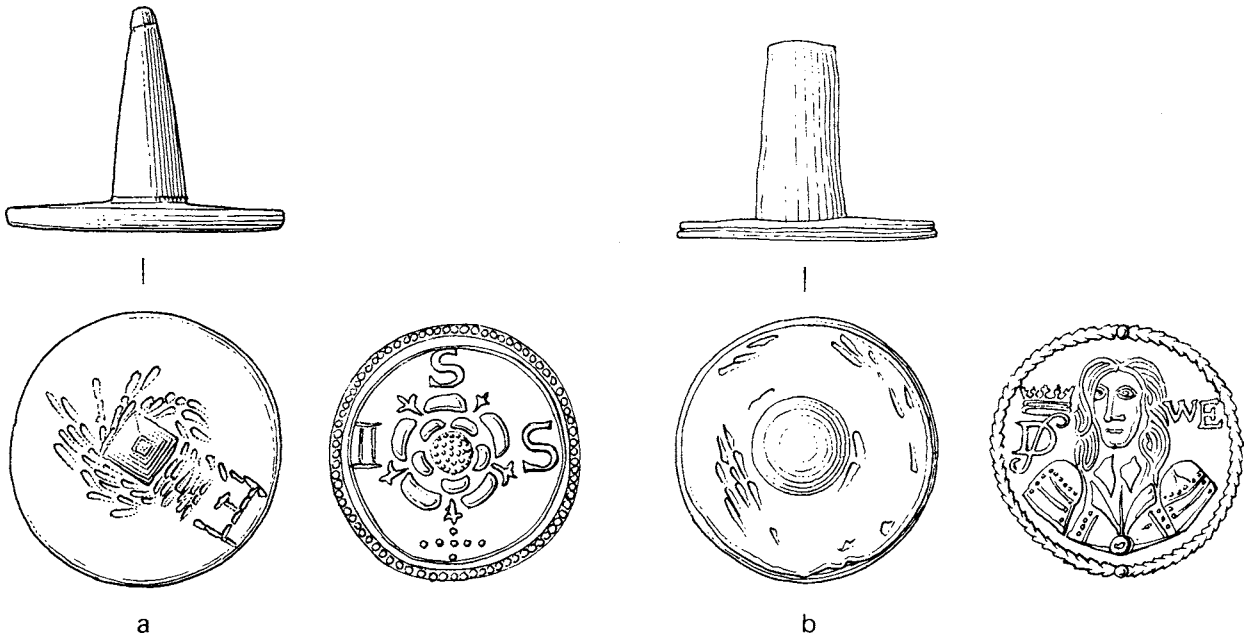


Fig. 141 Copper-alloy dies for sealing glass bottles: a, *from a Rose Tavern kept by I and S S (BM, M&LA, 1953. 2–2. 2);* b, *from a ?Duke of Somerset Tavern kept by W E (BM, M&LA, 1956. 2–4. 7) (1:1).*

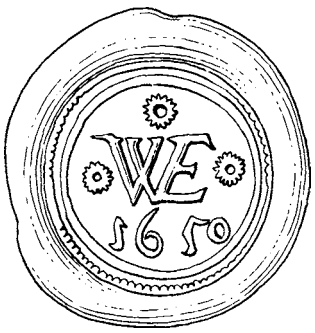


Fig. 142 The earliest English dated glass bottle seal: W E 1650 (MoL, 80.70/14) (1:1).

represents one bottle, the figures suggest than on these sites between 1 in 200 and 1 in 300 bottles was sealed. The true figure must obviously be higher, but whether it should be 1 in 100 or (as seems unlikely) 1 in 50 cannot be detected from this evidence.[5]

None of the 104 seals from Jamestown datable before 1700 was actually dated,[6] and none of the ten from Nonsuch bears a date. In fact, only 148 dated seals of the period 1650–1700 have yet been recorded (Table 26).

The earliest known dated seal is of 1650. Between that date and 1688 (the start of the final demolition of Nonsuch), 75 seals bearing dates are known (Table 25).[7] A good number of other seals without actual dates should probably be assigned to these years, and in several cases dates have been suggested, either on the basis of the seal itself or relying on the typological development of the bottles to which some of the seals are still attached. Since none of these bottles was recovered from a securely dated archaeological context, the datings proposed are all to some extent subjective. For present purposes it seems best to compare the datable (i.e. arguably

5. Sealed bottles could cost at least a shilling a dozen more than plain bottles and such accounts as exist suggest that they were usually purchased in much smaller quantities: Thorpe 1938, 191–6; cf Ruggles-Brise 1949, 26–31, and Wills 1977, 61–2
6. Hudson 1961, 79; cf Hume 1961, 102, n.64, 112–17
7. Dumbrell 1983, 208–324, collated with the sources for Table 26; for the four known bottles dated to the 1650s, see Biddle 1988, 346–7

Table 25. Dated and datable English glass bottle seals 1650–1700: a summary.

Group	Arms	Crest	Separate matrix	Initials	Name	Tavern	Merchants marks	Totals
A. Found at Nonsuch								
Phase 4 1650–1682/8	2	–	–	1	–	1	–	4
Phase 5 1682–90	1	1	–	–	–	3	–	5
Phase 6 1690–	–	1	–	–	–	–	–	1
B. Dated seals 1650–88	5	2	–	15	7	46	–	75
C. Dated seals 1689–1700	1	1	–	25	19	26	1	73
D. Dated seals 1650–1700 (i.e. B+C)	6	3	–	40	26	72	1	148
E. Found at Jamestown (i.e. pre-1700)	4	1	7	70	–	6	16	104
Totals (omitting D)	13	6	7	111	26	82	17	262

Sources: as for Table 26, with the addition of Nonsuch seals **1–10** and the Jamestown seals listed in Hudson (1961). Other potentially datable (but not dated) seals are not included as there is no available list.

up to 1688) series from Nonsuch with the 75 seals actually bearing dates, ignoring the remainder. On this basis the Nonsuch examples have increased the existing sample by 13% (Table 25).

There is general agreement that the earliest bottle seals consist of initials impressed side by side using separate dies for each letter: the so-called 'separate matrix seals'. Twenty or so examples, usually consisting of only two letters, have been recorded. None bears an actual date, but those impressed RW can probably be attributed to 1651 or before.[8] By 1650, however, the single round die had appeared and was henceforth to prevail. All 75 seals dated 1688 or before and all the Nonsuch seals are of this type. In time, the dies might be engraved with the names, arms, crest, mark, or initials of the owner, whether a private individual (such as Samuel Pepys),[9] an institution (for example, All Souls College, Oxford)[10], a tavern (for example the Three Tuns, Oxford),[11] or a merchant (for example the unidentified mark of 1698).[12] Up to 1688 dated seals appear to represent only private individuals or taverns (Table 25). Individuals could be identified by their name, arms, crest, or initials; taverns were usually identified by their signs, with the initials of the licensee combined sometimes with those of his wife. Examples of each category except names occur among the Nonsuch seals:

Arms:	**1**, **2**, **3**
Crests:	**4**, ?**5**
Initials:	**6**
Tavern signs:	**7**, **8**, **9**, **10**

The Nonsuch seals thus conform to the patterns discernable in the seals bearing dates between 1650 and 1688 (Table 25). They fully bear out Ivor Noël-Hume's contention that 'the earliest seals seem to have been made either for gentlemen or for taverns'.[13] Pepys, who certainly took wine several times at Nonsuch in 1665,[14] did not unfortunately leave behind one of his 'New

8. Hume 1957; cf Hume 1961, 98, Fig 3; and Hume 1969, 33–4, Fig 23; for 'separate matrix seals' in general see Hume 1974, 61 and Dumbrell 1983, Pls 107–8 and his list, 234–324
9. Latham and Matthews (eds), 1970–83, iv, 346; cf Biddle 1988, 348
10. Haslam 1969, 1970
11. Leeds 1941, 48–50, Pl X, Nos 23–34; Dumbrell 1983, 153 and fig.
12. Dumbrell 1983, 154, Fig 47; best illustration in Wills 1974, 29–30, Fig 12
13. Hume 1970, 61
14. Latham and Matthews (eds) (1970–83), vi, 235, 244, 303–4, 312

bottles made with my Crest upon them' which he had purchased two years before,[15] although his crest of a camel's head erased would have taken its place fittingly enough on the table with **4**. This seal, together perhaps with **5**, and two examples with the wyvern crest of Herbert, earls of Pembroke, bearing the dates 1678 and 1681,[16] are the only known examples of seals with crests datable before 1688 to set alongside Pepys' bottles of 1663, no example of which has yet been identified.

The last twelve years of the century saw the emergence of several clear trends in the adoption of bottle seals (Table 25). Initials and names appear much more frequently than arms or crests, suggesting that the sealing of bottles was becoming a 'middle-class' fashion, a trend perhaps confirmed by the increasing frequency of merchants' marks, especially at Jamestown. By 1700 bottles were more likely to be sealed for individuals than for taverns, whereas in the years 1650–88 they were apparently the preserve of taverns and a relatively few armigerous gentlemen. The bottles stamped with single-matrix seals provide an exception to this picture. The bottle-maker had only to possess an alphabet of metal stamps to be able to stamp the initials of anyone who was prepared to go to the extra expense, but without the additional cost of cutting his own die.

Study of the Nonsuch seals has resulted in tentative identifications of the armorial seals **1**–**3**. But these identifications are to families only, not to individuals and they cannot therefore be used to suggest possible dates. Of the two crests, **4** can be identified as belonging to the Coke family and can reasonably be linked to Robert Coke who died at Nonsuch in 1681, while **5** is not at present identifiable and may not be a private crest. Seal **6** with the initials DC can also not be identified, but the probable tavern seals **7**–**10** offer much better prospects: the name of the tavern is fairly obvious from the device, while the initials serve to identify the licensee and, if a third initial is present, his wife.

On the assumtion that the taverns involved are likely to have been in London, **8** can probably be identified as the seal of Christopher Durban, landlord of the Mitre in Cheapside from December 1654 to 1658, and his wife Elizabeth, while **9** may be identified as the seal of Thomas Tickner, landlord of the Feathers in Fleet Street, and may date from before his marriage in 1657. **7** probably derives from a tavern called The Fleece or The Golden Fleece, but its licensees, W and WM, cannot at present be identified with a London tavern of that name, and may come from a provincial town. **10** is too fragmentary for identification, and **11** retains no part of its design.

Tavern seals are potentially datable because of the amount of information they provide, coupled in some cases with a relatively rapid succession of licensees. In a city such as London where much work has been done on the identification and history of inns and taverns,[17] it is probably possible to be sure that identifications such as those proposed here for seals **8** and **9** are the only ones possible. Provincial towns offer much greater problems: without the compilation of directories, seals such as **7** may long remain unidentified.

Seal **8**, datable to 1654–8, and seal **2**, possibly datable before 1657, are additions to the small number of seals dated or datable to the 1650s. Only three or four recorded seals and one sealed bottle with a scratched year bear dates in this decade: 1650, 1652, 1657, 1658(?) and 1659.[18] No list of undated seals which may be datable to this decade has yet been compiled.

15. *Ibid.* iv, 346
16. Ruggles-Brise 1949, 71–2
17. See, for example, Rogers 1928, 1931, Berry 1978, and Bryant Lilly White's unpublished typescript *London Signs* in the Guildhall Library
18. Biddle 1988, 346–8

ii. CATALOGUE

1 Complete seal, attached to a broken but largely complete half-size bottle (Green glass bottle **1**). Impressed on the flat surface of the blob, within a beaded border, external diameter 31mm. In the field, an achievement of arms with shield, helmet, crest, and mantling. Per pale, a cross bottony; on a fess between three bells as many crosslets of the field. Peer's helm (?); on the crest wreath a Golden Fleece (??).
The dexter half should probably be blazoned 'argent a cross bottony', or 'argent a cross bottony voided gules', the former being the arms of Egmon, the latter of Pilkington of Durham, co. Lancaster, or of Worthington, co. Leicester. The sinister should be blazoned 'argent on a fess between three church bells, gules as many crosslets of the field', the arms of Ospringe or Oxpringe.[19]
*G2353; T7 III 3***=G26***; Phase 4*

2 Almost complete seal, impressed on the flat surface of the blob, within a beaded border, external diameter 30mm. In the field, an achievement of arms with shield, helmet, crest, and mantling. Ermine a saltire, in chief a lion passant guardant; on the fess point a crescent, cadency mark for a second son. On a crest wreath and with helm and mantling, a quadruped with streaming bushy tail.
The lion in chief might be reguardant (i.e. looking back over its shoulder). Such a beast in chief might be 'an augmentation of honour' or a 'royal augmentation' such as were freely granted after the restoration of Charles II.[20] The achievement would be that of a descendant of Armin or Armyn, or William de Ermine.[21] Although all instances with an ermine field in Papworth have engrailed saltires, differencing for other branches of the family often takes the form of line variation of 'ordinaries'.
G2343; U8 2a; Phase 5

3 Half a seal, impressed on the flat surface of the blob, within a ?linear border, external diameter 31mm. In the field, an achievement of arms, with shield, crest, and mantling. A fess fretty between two, perhaps originally three, fleurs de lys, a chief canton dexter with some curvilinear design, possibly a knot. Only the left-hand part of the crest remains, possibly to be interpreted as showing a bird such as a swan or heron devouring a fish.[22]
These arms may be those of Greville, earls of Warwick, in which case they would be blazoned 'argent a fess sable fretty argent between three fleurs de lys sable'.[23] Greville has several crests, of which the first is a swan above a ducal coronet with wings expanded and elevated.
*G2349; W8 7***=G6 or Great cellar***; Phase 4*

4 Complete seal, deeply impressed, within a beaded border, external diameter 29mm. In the field, an ostrich walking left with a horseshoe in its beak, on a chapeau.
A private crest which can be identified as that of Coke of Norfolk, later earls of Leicester: on a chapeau azure, turned up ermine, an ostrich argent proper holding in the beak a horseshoe or.[24] This bottle was perhaps the property of Robert Coke, Receiver General of Surrey, grandson of Lord Chief Justice Sir Edward Coke and nephew of George Lord Berkeley's only sister. Robert Coke died at Nonsuch in 1681.
G2352; Z5 I/II 2; Phase 6

5 Almost complete seal, slightly impressed, within a beaded border, external diameter 31mm. In the field, a crest: on a crest wreath, a demi goat rampant left, crossed diagonally by a dexter baton, with moulded top and smaller but also moulded base.
Possibly a private crest, such as Samuel Pepys (in his case, a camel's head erased) used to seal his wine-bottles, but the dexter baton does not appear in Fairbairn and its significance is unknown: it is *not* a mark of royal bastardy for which a baton *sinister* would have been used.[25] The demi goat was the crest of the families of Bardwell of Bartholomew, and Kumpton of Hertfordshire,[26] but the possibility that this is a tavern crest (e.g., 'The Goat', 'The Goat and Staff') cannot be entirely ruled out: cf. the use by Whitbreads since 1742 of a hind's head erased.
G2348; W8 3; Phase 5

6 Almost complete seal, slightly impressed, within a knurled linear border, external diameter 34mm. In the field, the letters D and C interlinked, with an eight-pointed star above and below. The letters have raised outlines and hatched bodies, in an elegant style. The D is serifed and barred, suggesting the possibility of a monogram (ID or DI). The eight-pointed stars are probably decorative. Possibly a tavern seal ('The Stars') but more probably a private mark, cf. WCC intertwined

19. Papworth 1874, 805
20. Brooke-Little 1973, 40
21. Papworth 1874, 1063
22. cf Fairbairn 1892 ii, Pls 104.2, 105.8
23. Burke 1884, 427, substantially modified
24. Fairbairn 1892 ii, Pl 97.13
25. Brooke-Little 1973, 40
26. Fairbairn 1892 ii, Pl 129.10

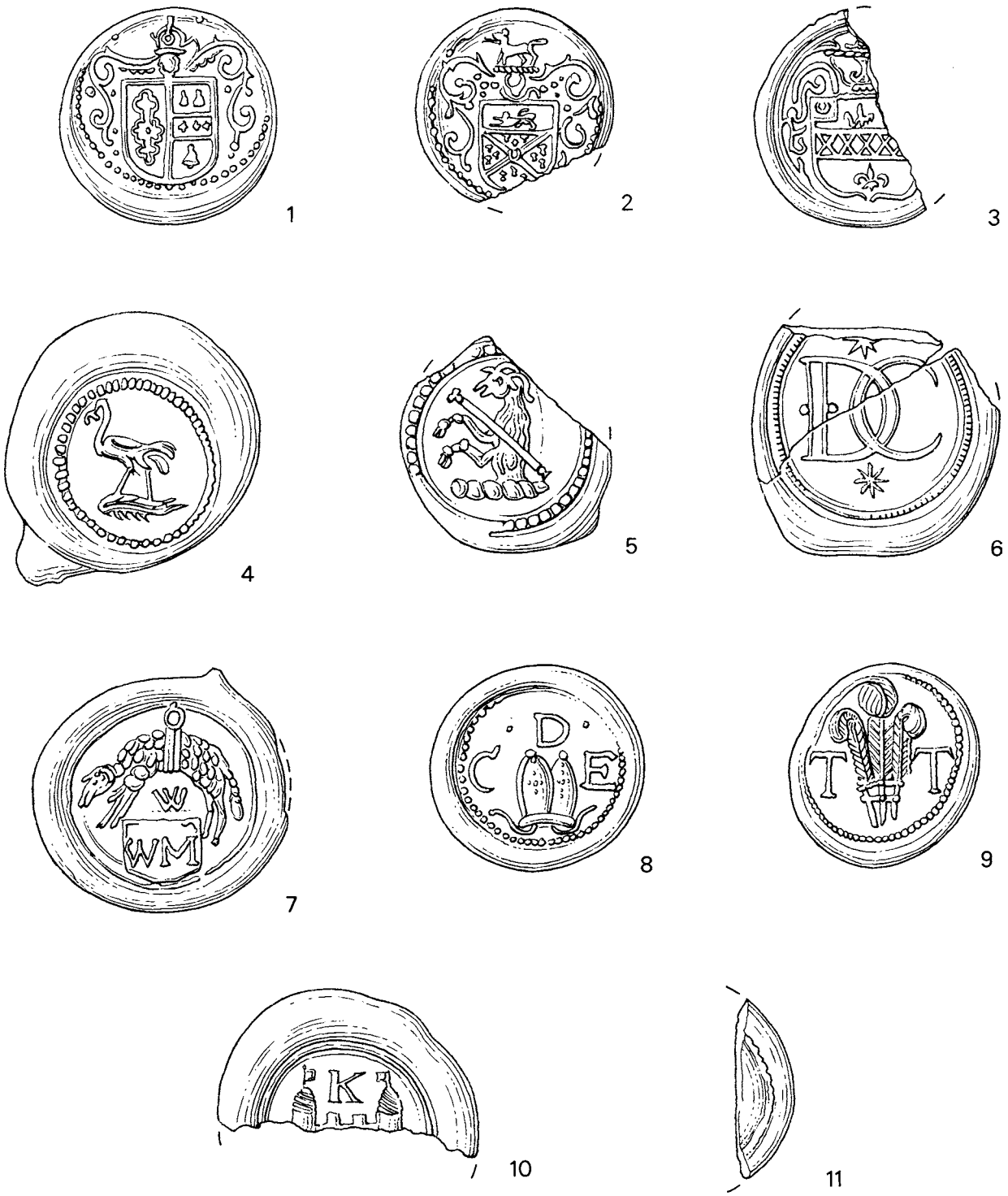


Fig. 143 Glass bottle seals from Nonsuch: ***1–11*** *(1:1).*

with an eight-pointed star above and below, or CC backed and interlaced below a ducal coronet.[27]
*G2125; U8 II/IV 2a; Phase 5. G2344 (fitting fragment); U8 3=**Great cellar**; Phase 4*

7 Complete seal, slightly impressed, within a linear border, diameter 32mm. In the field, a ram suspended left from a band and ring. Below the ram, the letter W above a shield with the letters WM. Probably a tavern seal for 'The Golden Fleece' or 'The Fleece'. The initials are probably those of the licensee and his wife, their surname indicated as usual by the upper letter, the Christian names below, with the husband's name first, in the dexter position. There were several taverns of this name in London in the 1650s and 1660s,[28] although none had a licensee who can be identified by W and MW
G2351; X7 6; Phase 5

8 Complete seal, slightly impressed, within a beaded border, external diameter 29mm. In the field, a bishop's mitre garnished. Above the mitre a capital D with a point before and after; to either side of the mitre the capitals C and E.
Probably a tavern seal for 'The Mitre' with the initials of the licensee, and probably of his wife, the surname indicated by the letter D in the usual position above, the husband's Christian name by the initial C on the left (dexter) side, and the wife's by E. Probably from The Mitre in Cheapside where Christopher Durban, whose wife's name was Elizabeth, was landlord from December 1654 until his death in 1658.[29] Another example was found at Austen Friars, London.[30]
G2347; W8 3; Phase 5

9 Complete seal, impressed on the flat surface of the blob, within a beaded border, diameter 29mm. In the field, three feathers in a plume with the letter T to either side.
Probably a tavern seal for 'The Feathers', 'The Plume of Feathers', 'The Prince of Wales Feathers', or the like, with the initials of the licensee, TT. An undated token issued by Thomas Tickner 'at ye Fethers' in Fleet Street, London, suggests a possible identification.[31] On the reverse of the token the initials T.D.T. suggest that Tickner's wife's initial was D: on 5 May 1657 Thomas Tickner married Dabora Watts at St Bride Fleet Street, and on 30 December 1658 and 13 September 1665 their daughters Elizabeth and Debora were christened in the same church.[32] This suggests that Thomas Tickner's token is to be dated after 5 May 1657. It may suggest that his bottle seal with the initials TT alone belongs to the period before his marriage.
*G2350; W8 7=**G6 or Great cellar**; Phase 4*

10 The upper third of a seal, deeply impressed, within a linear border milled on the exterior, external diameter *c* 31mm. In the field, the upper part of a castle or gatehouse with two merlons and three embrasures between two domed turrets, from both of which a single flag flies inwards. Between the turrets, the letter K. The lower part of the building and any other letters missing.
Probably a tavern seal for 'The Castle', 'The Gate', 'The Tower' or the like. Cf. for example the tokens issued by John King in Guildford in 1658 and 1664, showing a castle on the reverse;[33] by I.K. 'At the Gate', Covent Garden, London;[34] or by R.K. at 'The Castle', Cornhill, London, in 1657.[35]
G2346; W6ext2 2; Phase 5

11 Small fragment of the edge of a seal, slightly impressed, within a beaded border, external diameter c 28mm. Nothing survives of the design in the field.
G2345; W6 2c; Phase 6

27. Dumbrell 1983, 251, 245, respectively
28. Ruggles-Brise 1949, 102–3; Dickinson 1986, London 724, 736–7, 3049–50, 3164. There is another detached seal of this type in the British Museum, Dept. of Medieval and Later Antiquities, OA 477
29. Rogers 1928, 93; *IGI*, sn
30. Ruggles-Brise 1949, 98–9; Museum of London, Acc.no. A22765
31. Dickinson 1986, London 1098
32. *IGI*, snn
33. Dickinson 1986, Surrey 104–5
34. *Ibid*. London, 534
35. *Ibid*. London 724A

Table 26. Dated English sealed glass bottles and bottle seals c. *1650–1700. References to App. 1 and App. 2 are to the lists on pp. 293–6 and 297–301, respectively.*

Bottle Type	Bottle (B) or Seal (S)	Date	Description	Seal Type	Find-Place	Present Location[1]	Reference[2]	Illustrated
–	S	1650	W E	I	Thames foreshore, Bull Wharf, Queenhithe London	MoL: 80.70/14	D.259 Weinstein 1987, 4	Fig 142
–	S	1652	Iohn Iefferson with arms	A	London Wall, London	London Museum (1914); MoL: A 15318	Ruggles-Brise 1942b, 3	–
I	B	1657	RMP with king's head	T	Market Harborough, Leicestershire	Northampton Museum Z240	App. 1, **1657**	Fig 127, **1657**, Fig 129
–	S	1658?	IHW beneath suspended horned quadruped (?Golden Fleece)	T	Benton End, Hadleigh, Suffolk; found by Sir Edmund Leach	Unknown	Letter of E.R.L, 28.3.1959 to R.J. Charleston	–
I	½B	1659	Combe arms (date engraved)	A	Hemel Hempstead, Hertfordshire	Drawing in Oxford, Bodleian Library, Gough Maps 11 f.61	App. 1, **1659**	Fig 127, **1659**
–	S	1660	RM with arrowhead device	I	High Pavement, Nottingham, 1972	Unknown	Alvey 1973, 65	Alvey 1973, Fig. 9, No 8
–	S	1660	RM with arrowhead device	I	Weekday Cross, Nottingham, 1984	Private coll.	*ex inf.* C. Mortimer	–
I/II	B	1661	CR under crown to left, king's head full-face, obiterated ?oak tree to right	T	Unknown	Berry Bros. and Rudd, Basingstoke	App. 2, **1661**	L.1941, Fig 11 D.54 (Fig 22)
I/II	B	1661	CR to left, king's head full face, RAB to right	T	Unknown	Hereford Museum (missing); unknown	App. 2, **1661**	D.55 (Fig 28)
I or I/II	B	1665	TP	I	Nottingham	Unknown	App. 1, **1665**	Fig 127, **1665**, Fig 129
–	S	1666	TSB with frond to either side	I	Beverley, ER Yorks	Beverley?	Armstrong and Tomlinson 1987, 45	?
–	S	1667	WB	I	Rockley Smithies, nr. Barnsley, W.R. Yorks	Sheffield City Museums (?)	Crossley and Ashurst 1968, 52	Crossley and Ashurst 1968, Fig. 20, No 4
–	S	1667?	AH ?senior, with mermaid	T	Alvescote, Oxon	AM 1934.62	L.1941, 47, No 4, D.59, 269	L.1941, Pl IX, 4
–	?	1667	RS	I	Unknown	Museum of Archaeology and Ethnography, Cambridge, 1923.718	App. 2, **1667**	–
–	S	1668	Arms, chevron between three birds, motto BONIS ROSA AVIBUS	A	Unknown	BM 1921.0216.24	*ex inf.* C. Mortimer	–
–	S	1671	?Greyhound badge of Henages of Haunton	A	Unknown	Lincoln Museum, No 2774	–	–
I/II	B	1674	Bydder, Thistle Boon	N/?T	Unknown	In USA	App. 2, **1674**	D.55 (Fig 25), 159 (Pl 58)
–	S	1674	Cipher of William and Anne Morrell with crown	T	Oxford, New Bodleian 1937	AM 1937.555	L.1941, 47, No 12a L.1938, 154, Pl XII C 2	cf. L.1941, Pl IX, 12

Table 26. continued

Bottle Type	Bottle (B) or Seal (S)	Date	Description	Seal Type	Find-Place	Present Location[1]	Reference[2]	Illustrated
–	S	1674/5	Cipher of William and Anne Morrell with crown	T	Oxford, Radcliffe Square	AM 1915.8	L.1941, No 12 L.1938, 154	L.1941, Pl IX, 12
–	S	1674/5	Cipher of William and Anne Morrell with crown	T	Oxford, New Bodleian 1937	AM 1937.278	L.1941, 47, No 13a (cf L.1914, Fig 1.8) L.1938, 154	cf. L.1941, Pl IX, 13
I/II	B	1674/5	Cipher of William and Anne Morrell with crown	T	Oxford, Radcliffe Square	AM 1910.308	App. 1, **1675**	Fig 127, **1675**, Fig 129
–	?B	1677	Cipher of William and Anne Morrell with crown	T	Unknown	Unknown	App. 2, **1677**	–
II	B	1678	Richard Church with dolphin	T	Unknown	Fitzwilliam Museum C/G 1–1944	App. 1, **1678**	Fig 127, **1678**, Fig 129
–	S	1678	Richard Church with dolphin	T	Unknown	BM 65–4–8 111	–	–
–	S	1678	Richard Church with dolphin	T	Unknown	Museum of Archaeology and Ethnography, Cambridge, Z 26256A	–	–
–	S	1678	Wyvern on a wreath beneath a coronet (Herbert, earls of Pembroke)	C	Unknown	Salisbury Museum, 2004R.1	RB.71–2; D.222	–
I/II	B	1678	Cipher of William and Anne Morrell with crown	T	Unknown	Corning Museum of Glass 52.2.14	App. 2, **1678**	–
–	S	1678	Iasper Waters in Colchester	N	Unknown	BM 1865.0408.121	*ex inf.* C. Mortimer	–
–	S	1678	Iasper Waters in Colchester	N	Unknown	Colchester Museum 8.1958	*ex inf.* C. Mortimer	–
–	S	1679	W. Sha ...	N	Oxford, New Marston	Museum of Oxford, OXCMS 1980.87.1	*ex inf.* F. Jones	–
–	S	1680	Cipher of Anne Morrell with crown	T	Oxford, Clarendon Enclosure 1899	AM 1896–1908.M70	L.1941, 47, No 14	L.1941, Pl IX, 14
–	S	1680	Cipher of Anne Morrell with crown	T	Dean's Court, Wall St., Hereford	Hereford Museum HE 87A [4272]	*ex inf.* C. Mortimer	–
–	S	1680	Roger of Harsfeild (?Haresfield, Glos.)	N	Unknown	Salisbury Museum, 44/1999	*ex inf.* C. Mortimer	
–	S	1681	Wyvern on a wreath beneath a coronet (Herbert, earls of Pembroke)	C	Pitton, Wilts.	Salisbury Museum, vi A18a; 63/1936	RB.72; D.222	–
II	B	1681	WM (or MW)	I/?T	Unknown	J. Horne, London	App. 1, **1681**	Fig 127, **1681**, Fig 129
II	B	1682	AH[all] junior, with mermaid	T	Oxford, 27 Broad Street 1913	AM 1924.512	App. 1, **1682**	Fig 127, **1682**, Fig 129 D.59 (Fig 32)
I/II?	B	1682	AH[all] junior, with mermaid	T	Unknown	Unknown	App. 2, **1682**	D.56 (Fig. a)

Table 26. continued.

Bottle Type	Bottle (B) or Seal (S)	Date	Description	Seal Type	Find-Place	Present Location[1]	Reference[2]	Illustrated
–	S	168[2?]	AH[all] junior, with mermaid	T	River Thames	Unknown	D.183, Pl 97	–
II	B	1683	R.How at Chedworth	N	Unknown	David Burton, Tunbridge Wells	App. 1, **1683**	Fig 127, **1683**, Fig 129
?	?B	1683	Cipher of Anne Morrell with crown	T	?	AM ? Exists ?	App. 2, **1683**	cf. L.1941, Pl IX, 15
–	S	1683	Cipher of Anne Morrell with crown	T	Oxford, 3 Cornmarket Street	AM 1934.199	L.1941, No 15 D.288, L.1938, 154	L.1941, Pl IX, 15
–	S	1683?	Cipher of Anne Morrell with crown	T	Oxford, New Bodleian, 1937	AM 1937.279	L.1941, No 15 Pl XII, C.3; D.288	cf. L.1941, Pl IX, 15
II	½B	1684	EC Cambridg with dolphin	T	Unknown	Fitzwilliam Museum C/G 1–1936	App. 1, **1684b**	Fig 127, **1684b**, Fig 130
II	B	1684/5	Anthony Hall in Oxford	T	Oxford, Church Street	OXCMS 1975.25	App. 2, **1684**	–
II	½B	1684	Cipher of Anne Morrell with crown	T	Unknown	David Burton, Tunbridge Wells	App. 1, **1684a**	Fig 127, **1684a**, Fig 130
–	S	1684	... EW	I	York College for Girls, York	York Museum	*ex inf.* C. Mortimer	–
II	B	1685	Anthony Hall in Oxford	T	Unknown	Fitzwilliam Museum C/G 3–1928	App. 1, **1685b**	Fig 127, **1685b**, Fig 130
?	B	1685/6	Anthony Hall in Oxford	T	Unknown	*ex* CK Mason; unknown	App. 2, **1686**	D.59 (Fig 34)
–	S	1685/6?	Anthony Hall in Oxford	T	Oxford	AM 1896–1908, M72	L.1949, No 7	L.1941, Pl IX, 7
?	B	1685/6?	Anthony Hall in Oxford	T	Oxford, King Edward Street	AM 1874.53	App. 2, **1886**	–
II	B	1685	Cipher of Anne Morrell with crown	T	Oxford, Clarendon Quad. 1899	AM 1916.19	App. 1, **1685a**	Fig 127, **1685a**, Fig 130
–	?B (jug)	1685	Rutland arms	A	Unknown	Belvoir Castle, Leics.	App. 2, **1685**	–
?	?B	1686	CHRISTOR GILL	N	Unknown	*ex* M. W. Ashby; unknown	App. 2, **1686**	–
–	S	1686	Cipher of Anne Morrell with crown	T	Oxford, Iffley	AM 1938.139	L.1941, No 17 D.288	L.1941, Pl IX, 17
–	S	1686	Cipher of Anne Morrell with crown	T	Bankside, Southwark	MoL: A 20886	RB.137; D.304	–
II	B	1686	TL	I	Unknown	Unknown	App. 2, **1686**	Truro 7
II LXXXIX	½B	1686	CP	I	Bermondsey	MoL: MA 2836	App. 2, **1686**	*Wine Trade* 1933, Pl
–	B	1686	CP	I	Unknown	Unknown	App. 2, **1686**	–
II	B	1687	TL	I	Unknown	Luis G. Gordon; unknown	App. 2, **1687**	D.60 (Fig 38)
–	S	1687	Cipher of Anne Morrell with crown	T	River Thames	Unknown	*ex inf.* C. Mortimer	–

Table 26. continued.

Bottle Type	Bottle (B) or Seal (S)	Date	Description	Seal Type	Find-Place	Present Location[1]	Reference[2]	Illustrated
II	B	1687	RW	T	Unknown	AM 1944.70	App. 2, **1687**	–
–	S	1688	Cipher of Anne Morrell with crown	T	Oxford, New Bodleian 1937	AM 1937.270	L.1938, 254; L.1941, No 18a, Pl XII, C.4; D.288, Pl 87	L.1941, Pl IX, 18a
–	½B	1688	Cipher of Anne Morrell with crown	T	Unknown	MoL: ?	–	–
?	½B	1688	Cipher of Anne Morrell with crown	T	Unknown	?Findlater Mackie Todd and Co	App. 2, **1688**	–
?	½B	1688	Cipher of Anne Morrell with crown	T	Unknown	?Findlater Mackie Todd and Co	App. 2, **1688**	–
–	S	1688	Cipher of Anne Morrell with crown	T	Oxford, All Saints Church	Museum of Oxford: no number	*ex inf.* J. Lange	–
–	S	1688	Cipher of Anne Morrell with crown	T	River Thames	Unknown	*ex inf.* C. Mortimer	–
–	S	168?	Cipher of Anne Morrell with crown	T	Unknown	AM: no number	*ex inf.* C. Mortimer	–
?	?½B	1688/9	Cipher of Anne Morrell with crown	T	Oxford, All Saints Church	OXCMS 73.23	App. 2, **1688**	–
–	½B	1688/9	Cipher of Anne Morrell with crown	T	Unknown	Unknown	App. 2, **1689**	–
II	?B	1688	IH	I	Unknown	Colonial Williamsburg 56.392	App. 2, **1688**	–
II	?B	1688	RH with globe	T	Unknown	Unknown	App. 2, **1688**	–
II	B	1688	ES with symbol	?T	Unknown	Unknown	App. 2, **1688**	D.60 (Fig 39)
II	B	1688	TT	I	Unknown	Cartwright Hall Bradford Museums	App. 1, **1688**	Fig 127, **1688**, Fig 130
–	?B	1688	REW with king's bust	T	Unknown	Unknown	App. 2, **1688**	–
–	?B	1689	RH with globe	T	Unknown	Broadfield House Glass Museum, Dudley	App. 2, **1689**	–
II	B	1690	WTC	I	Unknown	*ex* K.S. Cassels; unknown	App. 2, **1690**	Berry 1933b
II	B	1690	Cha. Turnor	N	Unknown	Northampton Museum	App. 1, **1690b**	Fig 128, **1690b**, Fig 130
II	B	1690	Cha. Turnor	N	Oxford, 50A High Street 1906	AM 1917.1	App. 2, **1690**	Wills 1974, Fig 8
–	B	1690	RW with king's bust	T	Whitefriars, London	MoL: ?	App. 2, **1690**	–
II	½B	1690	RW with king's bust	T	Unknown	J. Horne, London	App. 1, **1690a**	Fig 127, **1690a**, Fig 130
–	S	1690	WM or MW beneath six-pointed star	I/?T	Blue Stone Quarry, Great Doward, Whitchurch-on-Wye, Herefordshire	Hereford Museum, 738.92	RB.75; D.226–7	RB.75; D.227
–	B	1690	W with 90	I	Unknown	Unknown	App. 2, **1690**	–
–	S	1691	TAE	I	Unknown	Tattershall Castle Museum	–	–

Table 26. continued.

Bottle Type	Bottle (B) or Seal (S)	Date	Description	Seal Type	Find-Place	Present Location[1]	Reference[2]	Illustrated
II	B	1691	RN	I	Devizes, Wiltshire	*ex* Francis Berry; unknown	App. 2, **1691**	D.60 (Fig 42)
–	S	1691	Wm. Oliver, Launceston	N	Unknown	Lawrence House Museum, Launceston	–	–
II	?B	1691	Crest of Warre	C	Unknown	Unknown	App. 2, **1691**	–
?II	B	1692	IG with two oak trees (engraved not sealed)	I/?T	Boscobel, Salop	*ex* Denys Bower; unknown	App. 2, **1692**	–
–	S	1692	WAH above date	I	Chatham, Kent	Rochester, Guildhall Museum	*ex inf.* C. Mortimer	–
–	S	169(2?)	RW with king's bust	T	High Trees, Holme Lacy Herefordshire	Hereford Museum 9654	*ex inf.* C. Mortimer	–
–	?B	1693	R BOTT	N	Unknown	Unknown	*ex inf.* David Burton	–
–	?B	1693	R Bott (?engraved, not sealed; ? same as above)	N	Unknown	Unknown	App. 2, **1693**	–
–	S	1693	R Erisey with 93 for 1693	N	Unknown	Unknown	D.258	–
–	S	1693	H with Apl 24th and 1693	I	Blickling Hall, Aylsham, Norfolk	Unknown	*ex inf.* C. Mortimer	–
II	B	1693	II with two mullets/stars	I	Unknown	Victoria and Albert Museum, London, C.383–1993	App. 1, **1693b**	Fig 128, **1693b**, Fig 130
–	B	1693	II with two mullets/stars	I	Unknown	Unknown	–	–
–	S	1693	RW with king's bust	T	Oxford, New Bodleian 1937	AM 1937.267	L.1938, 154; L.1941, No 35; D.317, 324	cf. L.1941, X, 35
II	½B	1693	RW with king's bust	T	Oxford?	All Souls College Library, Oxford	App. 1, **1693a**	Fig 128, **1693a**, Fig 130
II	½B	1693	RW with king's bust	T	Oxford, Site W, Westgate	OXCMS:?	App. 2, **1693**	–
–	S	1694	H. Hooton	N	Sturminster Newton	Dorset County Museum	RB.113; D.274	–
–	?B	1694	WS with I E upside down	N	Unknown	Colchester Museum, 90.1973	App. 2, **1694**	–
– –	S	169(4?)	Cipher of Anne Morrell with with crown	T	Oxford, found by E. Pulton before 1896	OXCMS 1968.4815	*ex inf.* F. Jones	–
–	S	1695	Bower with 95 for 1695	N	Unknown	Somerset County Museum, Taunton, B 2025	*ex inf.* C. Mortimer	–
–	S	1695	John Curtis	N	Ferryland, Newfoundland, Canada	Colony of Avalon Museum	*ex inf.* C. Mortimer	–
–	S	1695	RC	I	Bristol	Museum of Archaeology and Ethnography, Cambridge, Acc. no. 22.3630	RB 95; D.251	–
–	S	1695	IH	I	Unknown	National Museum of Scotland, Edinburgh, H.1995.238	*ex inf.* C. Mortimer	–

Table 26. continued.

Bottle Type	Bottle (B) or Seal (S)	Date	Description1	Seal Type	Find-Place	Present Location[1]	Reference[2]	Illustrated
II	½B	1695	John Lovering, Bideford	N	Unknown	David Burton, Tunbridge Wells	App. 1, **1695**	Fig 128, **1695**, Fig 131
–	S	1695	Arms of 2nd or 3rd Earl of Sandwich with 95 for 1695	A	Unknown	Somerset County Museum, Taunton, 90/1994	*ex inf.* C. Mortimer	–
II	B	1695	IW	I	Unknown	Unknown	App. 2, **1695**	D.61 (Fig 44)
II	½B	1695	RW with king's bust	T	Oxford	*ex* Mrs. Ragg; unknown	App. 2, **1695**	Berry 1935, Fig I
–	?B	1695	RW with king's bust	T	Oxford	Unknown	App. 2, **1695**	–
–	?B	1696	RW with king's bust	T	Unknown	*ex* CK Mason; unknown	App. 2, **1696**	L.1941, X, 36
–	S	1697	FC (or ?FG)	I	Dorset	Unknown	*ex inf.* C. Mortimer	–
II	B	1697	IC with star between and 97 for 1697	I	Unknown	Somerset County Museum, Taunton, B.1866	App. 1, **1697**	Fig 128, **1697**, Fig 131
–	½B	1697	CP below ...	I	Unknown	Unknown	App. 2, **1697**	–
–	S	1697	RW with king's bust	T	Oxford, Iffley	AM 1938.138	L.1941, No 37 D.317	L.1941, X, 37
II	B	1698	D.Musgrave	N	Unknown	David Burton, Tunbridge Wells	App. 1, **1698a**	Fig 128, **1698a**, Fig 131
?II	½B	1698	CP	I	Nottingham	J.K. Clifford	App. 1, **1698**	Fig 128, **1698c**, Fig 131
II	?B	1698	WR with two mullets	I	Unknown	Unknown	App. 2, **1698**	–
II	B	1698	Merchant's mark with central S	M	Unknown	David Burton, Tunbridge Wells	App. 1, **1698b**	Fig 128, **1698b**, Fig 131
II	B	1699	GS	I	?Norfolk or Suffolk	Corning Museum of Glass 71.2.7	App. 2, **1699**	Price 1910, 118
–	S	1699	Slofs	N	Ferryland, Newfoundland, Canada	County of Avalon Museum	*ex inf.* C. Mortimer	–
II	½B	1699	RW with king's bust	T	Oxford	*ex* Mrs. Cecil Bell; unknown	App. 2, **1699**	–
II	½B	1699	King's bust in armour, no initials	T	Oxford	*ex* Mrs Alexander Brown; unknown	App. 2, **1699**	–
?	?B	1699	King's bust in armour, no initials	T	Unknown	Cheltenham Museum and Art Gallery 1941.8	App. 2, **1699**	–
II	½B	1699	King's bust in armour, no initials	T	Oxford, 12 High Street	AM 1928.502	App. 1, **1699a**	Fig 128, **1699a**, Fig 131
II	½B	1699	King's bust in armour no initials	T	Oxford	AM 1910.313	App. 1, **1699b**	Fig 128, **1699b**, Fig 131
–	S	1699	King's bust in armour, no initials	T	Southwark	MoL: ?	L.1914, 299n; D.309	–
–	S	1699	King's bust in armour, no initials	T	Unknown	BM 1880.0701.3	–	–
–	S	1699	King's bust in armour, no initials	T	Unknown	OXCMS: ?	*ex inf.* C. Mortimer	–
II	½B	1699	REW with king's bust in armour	T	Oxford	*ex* Mrs R.G. Bell; unknown	App. 2, **1699**	Berry 1935, Fig II; L.1941, Fig 11
II	B	1699	REW with king's bust in armour	T	Oxford	AM 1913.926	App. 1, **1699c**	Fg 128, **1699c**, Fig 131
II	½B	1699	REW with king's bust in armour	T	Oxford, 50A High Street, 1906	AM 1896–1908 M66	App. 1, **1699d**	Fig 128, **1699d**, Fig 131
II	½B	1699	REW with king's bust in armour	T	Unknown	Maryland, USA	App. 2. **1699**	–
II	½B	1699	REW with king's bust in armour	T	Unknown	David Harris, Hampton Court	App. 2, **1699**	–

Table 26. continued.

Bottle Type	Bottle (B) or Seal (S)	Date	Description	Seal Type	Find-Place	Present Location[1]	Reference[2]	Illustrated
II	½B	1699	REW with king's bust in armour	T	Oxford, Greyfriars	OXCMS 1975.27	App. 2, **1699**	–
–	B	1699	Beni Wall	N	Unknown	Unknown	App. 2, **1699**	–
–	B	1699	IW	I	Unknown	Winterthur, Delaware, USA	App. 2, **1699**	–
II	B	1700	IC with floret and scroll	I	Unknown	*ex* Col. Vivian; unknown	App. 2, **1700**	*Wine Trade* 1933, Pl XCa; D.66 (Fig 49)
–	B	1700	IC with floret and scroll (slightly different from last)	I	Unknown	Cecil Higgins Art Gallery, Bedford; stolen; unknown	App. 2, **1700**	–
II/III	B	1700	Daniell Dowsing de Norwich	N	Unknown	Cecil Higgins Art Gallery, Bedford, G.59	App. 1, **1700b**	Fig 128, **1700b**, Fig 131
–	?B	1700	Henry Galshell	N	Unknown	*ex* Trapnell; unknown	App. 2, **1700**	–
–	?B	1700	Edouard Gaston	N	Unknown	*ex* P.M. Turner;	App. 2, **1700**	–
II	B	1700	MM	I	Unknown	David Burton, Tunbridge Wells	App. 2, **1700**	–
II/III	B	1700	TM with fleurets above and between letters	I	Hastings beach, Sussex	Salisbury Museum, M vi A 5	App. 1, **1700a**	Fig 128, **1700a**, Fig 131
II	?B	1700	William Stonas	N	Unknown	Unknown	App. 2, **1700**	–
–	S	1700	J.Webb	N	Wolseley Road, Plymouth	City Museum, Plymouth	D.318	–
II	B	1700	Francis Young de Rye	N	Unknown	David Burton, Tunbridge Wells	App. 2, **1700**	–

1 Museums: AM, Ashmolean Museum, Oxford; BM, British Museum, London; MoL, Museum of London (amalgamation of London and Guildhall Museums); OXCMS, Oxfordshire County Museum Service (includes Museum of Oxford items).

2 In this and the next col., references are abbreviated: App. 1 and App. 2, see above, pp. 293–6 and 297–301, respectively; D, Dumbrell 1983; L, Leeds, plus year of publication; RB, Ruggles-Brice 1949. For references, see Bibliography.

9

COINS, JETTONS AND TOKENS

COINS, JETTONS, AND RELATED NUMISMATIC AND OTHER MATERIAL *by* HUGH PAGAN
TOKENS *by* ROBERT H. THOMPSON

i. ENGLISH REGAL COINS

Tudor and Stuart

The excavations of the palace and Banqueting House produced only the merest handful of coins of Tudor and Stuart rulers. Of these, only three, respectively a shilling of Queen Elizabeth I, a half groat of James I and a rose farthing of Charles I, derived from the palace site itself. The Banqueting House was the source of a very worn half groat of Queen Mary (as sole ruler in 1553–4), a shilling of Charles I, a milled farthing of Charles II, and two farthings of William and Mary.

1 Mary (as sole ruler 1553–4). Half groat, very worn and clipped. Inscriptions largely illegible, but the letters MAR of MARIA are visible on the obverse and the final letter A of VERITAS TEMPORVM FILIA is visible on the reverse.
0.98g. Die-axis: 360°.
SF500; BH FG6 1; BH Phase 7

2 Elizabeth I. Sixth coinage (1583–1601). Shilling.
i.m. on each side of coin illegible.
6.14g. Die-axis: 90°.
It is unfortunate that the initial marks on this coin cannot be read (that on the obverse is obscured by a flaw in the metal at the relevant point in the inscription, while that on the reverse is obscured by encrustation) and that the coin cannot therefore be more closely dated than the bracket 1583–1601.
SF142; W5 2a; Phase 5

3 James I. Second coinage (1604–19). Half groat.
i.m. cinquefoil (?) (1613–15).
0.97g. Die-axis: 270°.
SF95; V1 4; Phase 6

4 Charles I. Shilling. Tower mint.
i.m. sceptre (1646–9).
5.94g. Die-axis 270°.
Dies of coin not represented in the British Museum, but see SCBI Brooker 569 for the style of the obverse bust and SCBI Brooker 567–9 for the general variety.
SF508; BH EIV III 2; BH Phase 5

5 Charles I. Rose farthing (duration of issue 1636–*c.* 1644).
i.m. crescent.
0.88g. Die-axis: 360°.
This is a specimen of Peck type 2a.[1]
*SF131; X15 10a=**D2**; Phase 5*

6 Charles II. Farthing. Date uncertain (1670s).
Farthings of this type, the only currency issue of official farthings made in Charles II's reign, were struck in each of the years 1672–5 and 1679, but on this specimen only the numbers 167 are clear and the final number is uncertain.
SF524; BH BV VIIext 2; BH not phasable

1. Peck 1964, No 328

7 William and Mary. Farthing. 1694.
SF517a; BH BV I 2; BH not phasable

8 William and Mary. Farthing. 1694.
SF517b; BH BV I 2; BH not phasable

Later coins

9 George II. Halfpenny. Dated 1738.
SF380; P/Q 15/16 12; Phase 6

10 George II. Halfpenny. Dated 1748.
SF423; R1 1; Phase 8

11 George III. Halfpenny. Dated 1773.
SF275; Q7 1; Phase 8

12 George III. Halfpenny. Dated 1775.
SF427; R13 III 3; Phase 6

13 George III. Halfpenny. Date illegible.
Either of the same 1770–5 issue as **10** and **11** or a contemporary forgery of it.
SF51; X4 1; Phase 8

14 George III. Penny. Dated 1797. Soho issue.
SF 50a; X4 1; Phase 8

15 George III. Penny. Dated 1797. Soho issue.
SF 50b; X4 1; Phase 8

16 George VI. Halfpenny, bronze. Dated 1952.
Not seen by the present writer.
SF3; V4 I/II 2; Phase 6

ii. JETTONS

Five jettons by Nuremberg manufacturers were recovered from the palace and Banqueting House. Of these, three (**17**–**19**) date from the middle of the sixteenth century, one (**20**) from the 1580s, and one (**21**) from the second half of the seventeenth century. One further specimen (**22**), pierced and fragmentary, may be a German jetton of the sixteenth century (but see below), and a more fragmentary specimen (**23**), too decomposed for any certain identification, may for convenience be included under this heading.

17 Jetton, Nuremberg. Issuer Georg Schultes, mid sixteenth century. Rose/orb type.
Inscription on obverse and reverse not entirely legible, but elements of Georg Schultes's name are visible on both sides.
1.02g. Die-axis: uncertain. Diameter 25mm.
A terminal date for this jetton is supplied by the fact that its manufacturer Georg Schultes died in 1559. Schultes's production appears to date largely to the 1550s and there are links between jettons in Georg's name and those in the name of his son and successor Hans.
*SF202; W8 5=**G7**; Phase 4*

18 Jetton, Nuremberg. Issuer Hans Schultes (?), mid sixteenth century. Rose/orb type.
Meaningless inscriptions on each side of jetton, but with wedges as stops in obverse inscription.
1.57g. Die-axis: uncertain. Diameter 25mm.
The wedge stops suggest that this is an issue of Hans Schultes, who employs the wedge frequently as a stop on jettons carrying his name.
SF100; U8 2a; Phase 5

19 Jetton, Nuremberg. Issuer Hans Schultes (?), mid sixteenth century. Lion of St. Mark (?)/orb type.
Inscriptions not legible.
3.14g. Die-axis: uncertain. Diameter 27mm.
This identification is conjectural as regards the obverse type and issuer.
SF336; Q5 6; Phase 3

20 Jetton, Nuremberg. Issuer Hans Krauwinckel. 1580s.
Lion of St. Mark/orb type.
O. S MARCVS EVANGELLIST GOTT.
R. HANS KRAVWINCKEL NVRENBER.
5.33g. Die-axis: 360°. Diameter 28mm.
This is from the same dies as the specimens listed as nos.1474–6 in Mitchiner (1988),[2] which Mitchener dates to the 1580s. Their fabric certainly suggests that they are of this date.
SF254; W8 3; Phase 5

21 Jetton, Nuremberg. Issuer Conrad Lauffer, third quarter of the seventeenth century (?).
Bust of Louis XIV/arms of France type.
Inscriptions only partly legible (obverse of jetton largely effaced from wear and corrosion, but the Lauffer surname is visible on the reverse followed by the word RECHENPFENING).
2.60g. Die-axis: 360°. Diameter 25mm.
An attribution to Conrad Lauffer (who died 1668) places the date of manufacture of this jetton

2. Mitchiner 1988, 430, Nos 1474–6

before 1668, but its appearance suggests that it was not struck earlier than *c* 1660.
SF521; BH BV VI 2; BH not phasable

22 Jetton (?).
A pierced base metal disk, of bracteate fabric, with an obverse design struck from a die and surrounded by an inscription in Gothic lettering. This may be a jetton – it is certainly more likely that it is a jetton than a coin – and if a jetton, its fabric would suggest that it was of German origin. However, it carries a central piercing, and in reality may be a button with a die-struck design.
SF425; Q10 III 6; Phase 5

23 Decomposed base metal disk, possibly a jetton.
*SF74; U7 8=**G9**; Phase 4*

OTHER NUMISMATIC OR RELATED ITEMS

24 Roman sestertius. Late second century AD. Very worn.
Kindly identified by Dr. Roger Bland of the Department of Coins and Medals at the British Museum, as a sestertius of either Marcus Aurelius or Commodus, most probably the latter.
*SF21; U8 II/IV 3=**Great cellar**; Phase 4*

25 Great Barr medal. 1902.
Copper specimen of a medal struck to commemorate the celebrations at Great Barr, Staffordshire, on 26 June 1902, for the coronation of King Edward VII and Queen Alexandra. Pierced hole for suspension. 32.89g.
Although of a recorded category of such medals, struck from a common obverse die and reverse dies differentiated according to the town for which they were produced, there is no specimen of the Great Barr medal in the British Museum. A specimen is however listed as no. 4543 K in Whittlestone and Ewing 1999.
SF519; BH BV III 1; BH Phase 7

26 Small, thin silver disk.
Of coin-like appearance, but not of dimensions suitable for a hammered coin of the sixteenth or seventeenth century.
*SF161; W1 5d=**G2**; Phase 4*

27 Brass disk. Unmarked.
SF247; W8 3; Phase 5

iii. TOKENS

Of the nine seventeenth century tokens found at the palace and Banqueting House, two (**35** and **36**) came originally from Ewell, outside the gates of Nonsuch Park; one (**32**) from Epsom, a mile and a half down the Arundel road; two (**29** and **34**) from Kingston upon Thames, five miles to the north; and four (**28**, **30**, **31**, **33**) from the metropolis (to be no more specific), sixteen miles to the north-east.

In the following descriptions weight is given to two decimal places of grammes, and by conversion in grains, the contemporary measure. This is followed by the die-axis (position of the reverse relative to the obverse) in degrees of a circle, and the condition at time of loss, ignoring the green corrosion on **28**, **29**, **33**, **34,** and **35**.

28 Copper token.
Obverse. AT•THE•PLOW around a plough.
Reverse •IN•BLACK•FRIERS•I650 around •N• /W•M/
0.80g. = 12.3gr. Die-axis 180°. Condition: fresh.
Mullet initial marks. Williamson gives a London example (with the reading FRYERS): Blackfriars.[3]
*SF412; Q14 III 5=**SA G**; Phase 5*

29 Copper token.
Obverse. <•THOM>AS•EDMONDES around arms: quarterly, (1) three <lions passant guardant>, (2) <three escallops [?]>, (3) a lion rampant, and (4) a crescent.
Reverse. •<I>N<•KIN>G•S<TOE•I6<50> around <•E•/T•M>
1.02g.=15.7gr. Die-axis 180°. Condition: fresh.
Enough can be read on this corroded piece to complete the legends as supplied within angle brackets; impressions from the same dies are not readily available, but all varieties read thus, with mullet initial marks. Further examples occur in Wetton, Dickinson, and Williamson, who

3. Williamson 1889-91, 541; London 345

describes the charges in the second quarter as fleurs-de-lis; they appear rather to be scallop shells.[4] Williamson's attribution of the token to Kingstone (now Kingston) in Kent has been shown to be an error for Kingston upon Thames on the evidence of local finds in 1921 and 1930 (with the Nonsuch token providing a further such find), and from documentation of Thomas Edmunds as headborough of one of the liberties of Kingston in 1664.[5] It can be added that he was a mercer, [6] and had been one of the chamberlains in 1648.[7] The arms have not been attributed.
Surface find from the Banqueting House site.

30 Copper token.
Obverse. •AT•THE•BLACK•LYON around a lion rampant.
Reverse. •IN•TVTELL•STREETE around IOHN /HARI/SON
1.22g.=18.8gr. Die-axis approx. 135°. Condition: fresh.
Williamson[8] has a similar example, but with obverse and reverse transposed. Tothill Street, Westminster.
Mullet initial marks; dateable to the mid 1650s.
Same dies as the Norweb specimen.
SF258; X7 7; Phase 5

31 Copper token.
Obverse. •THE•FLOWERPOT•WITH around a pot of flowers.
Reverse. •IN•BISHIPSGATE around •T• /L•M
1.05g.=16.2gr. Die-axis 180°. Condition: fresh.
Williamson gives a further example (with the reading FLOWER.POT).[9] Bishopsgate within, now Bishopsgate (street). Same reverse die as the Norweb specimen, but from a later obverse die with centrifugal mullet as initial mark. The original dies, observable on the Norweb specimen, both have centripetal mullets, and are dateable to the mid 1650s. This second obverse die need not be much later than the first.
SF516; BH D5/D6 Baulk 3; BH Phase 4

32 Copper token.
Obverse. •ANTHONY•ARNOLD around a stag lodged.
Reverse •IN•EPSVM•I657 around •A• /A•M/
1.03g.=15.9gr. Die-axis 300°. Condition: fresh.
Further examples in Williamson and Wetton.[10] Same dies as both Norweb specimens, for which, however, the dies were set at 120°. Mullet initial marks.
SF143; X7 1; Phase 8

33 Copper token.
Obverse. •AT Y^{E} GOLDEN PLOWE around a plough.
Reverse. •IN NEWGAT MARKET around •H• /I•I/•
0.94g.=14.5gr. Die-axis 90°. Condition: fresh.
Further example in Williamson.[11] Newgate Market, which before the Fire was in the centre of Newgate Street.[12] Same dies as the three Norweb examples, for all of which, however, they were set at 360°. Cinquefoil initial marks. In the same style (A) as an example in Preston-Morley and Pegg, which is dated 1657.[13]
SF505; BH E6 II 5; BH Phase 4

34 Copper token.
Obverse. •CHARLES•SALTER•IN•I665 around the Tallow-Chandlers' Arms.
Reverse. •KINGSTONE•VPON•THAMES around •S• /CM/•
1.45g.=22.4gr. Die-axis 270°. Condition: fresh.
Examples in Williamson and Wetton.[14] The arms may indicate no more than that Salter was free of the Worshipful Company of Tallow-Chandlers of London, for he was described in 1661 as a mercer.[15] Same dies and axis as the British Museum and one of the Norweb specimens, the other being at 180°. Rosette initial marks, and rosette stops in the reverse field.
*SF291; W8 7=**Great cellar** (Bay 1); Phase 4*

35 Copper token.
Obverse. *Fardinando/Downeing/1665*
Reverse. •OF•YEWILL•HIS•HALF•PENY around a lion rampant.
2.29g.=35.3 gr. Die-axis 90° Condition: fresh.
Examples in Hooper, and Wetton.[16] Hooper documents Ferdinand Duninge 1660, Fardinand Downing 1664; the same name presumably lies behind Ferdinand 'Doveney' 1661.[17] Same dies as two specimens in the Norweb Collection, for which, however, they were set at 180°. Traces here of overstriking. Reverse initial mark a cinquefoil.
*SF99; U8 3=**Great cellar**; Phase 4*

4. Wetton and Wetton 1959, 38; Kingston 5. Dickinson 1986, p.211; Surrey 140B. Williamson 1889-91, 373; Kent 366
5. Hooper 1942–3, 25–6
6. Daly 1974, 36, No. 343; 50, No. 508; 58, No. 609; 85, No. 897; 94, No. 1009
7. Wilkins 1982, xvii, n.2
8. Williamson 1889–91, 774; London 3165
9. Williamson 1989–91, 535; London 256
10. Williamson 1889–91, 1122; Surrey 69. Wetton and Wetton 1959, 34; Epsom 2
11. Williamson 1889-91, 682; London 2023
12. Harben 1918, 433
13. Preston-Morley and Pegg 1981, Pl 1, No 9
14. Williamson 1889-91, 1138; Surrey 151 and note. Wetton and Wetton 1959, 38; Kingston 15
15. Webb 1982, 36
16. Hooper 1942–3, 23 and pl.iii.5, correcting Williamson 1889–91, 1122; Surrey 71 (which reads FERDINANDO DOW...). Wetton and Wetton 1959, 34; Ewell 1a
17. Webb 1982, 1

36 Lead token.
Obverse. Unidentified device, apparently incorporating a human or animal form and a long, straight object.
Reverse. •OF•YEWILL•HIS•HALF•PENY around a lion rampant; incuse impression from the reverse of a token such as **35**. 17.87g.=275.8gr. Die-axis uncertain. Condition: reverse sharp.
There is a comparable object, formed from pieces of lead bearing impressions from two unrelated tokens, from the Bushey hoard.[18] These lead tokens are presumably contemporary, made by one of the issuers (?) at a sudden lack of small change.
SF525; BH BV VIIext 2; BH not phasable

Postscript

The Norweb specimens from the same dies as the Surrey tokens from Nonsuch have been published by Thompson and Dickinson 1996 as follows:

29, Norweb 4629–32; **32**, Norweb 4572; **34**, Norweb 4645; and **35**, Norweb 4573.

Each of the tokens was unworn when lost, and so can be taken to have been current around Nonsuch shortly after it had been made. **28–33** date from the 1650s, and four of these (**28**, **30**, **31**, **33**) are metropolitan issues. All the later pieces, on the contrary, were locally issued, indeed locally made in the case of **36**. The proportion of metropolitan issues in the earlier period is unexpectedly high, even if all the tokens then issued formed a complete mix in currency. Those from London (as defined by Williamson) which are dated from 1648 to 1659 amount to 25 per cent. of the English total (407:1641). The addition of the undated tokens (2178:5141), a large proportion of which probably date from the 1650s, would raise the London portion to only 38 per cent.[19] These comparisons have been made in case the London tokens from Nonsuch are traces of some particular metropolitan connection with the area, or are characteristic of the unresearched local circulation of tokens in the 1650s; but the numbers are of course too small to constitute evidence in themselves.

iv. A COMPARISON OF NUMISMATIC DATES AND PHASES

by MARTIN BIDDLE

The coins, jettons, and tokens are one of the few categories of finds bearing actual or closely ascertainable dates.[20] These dates can be examined in relation to the phases into which the archaeological sequence of the palace and Banqueting House has been divided.[21]

Jetton **19** from *Phase 3* (1538–46) is likely to date from after 1559. It is therefore intrusive into the layer in which it was found or the layer has been wrongly phased.

There are two jettons, two tokens, and two other items from contexts attributed to *Phase 4* (1538–1682/8). Jetton **17**, a possible jetton **23**, and a thin silver disk **26** come from garderobes; **23** and **26** are undatable; **17** was struck in the mid sixteenth century. A Roman sestertius of the late second century **24** and two tokens **34–5**, both struck in 1665, were found on the floor of the *Great cellar*. None of these contradicts the broad dating of Phase 4 to 1538–1682/8, but **17** was almost

18. Berry and Wood 1975, No 2
19. Figures from Greenall 1987, 4, 19–20
20. See above, p 38, 45, Tables 2, 3
21. See above, p 12–13

certainly residual by about a century in Garderobe 7. The two tokens of 1665, both found on the cellar floor may reflect the use of the palace by the Exchequer in 1665–6, but other finds on the cellar floor go down to the latest years of the occupation of the palace in the 1680s (Concordance I).

There are two coins (**2** and **5**), three jettons (**18, 20**, and **22**), an undatable bronze disk **27**, and two tokens (**28** and **30**) from the demolition deposits of *Phase 5* (1682–90). Four of these are datable to the mid or later sixteenth century (**2, 18, 20**, and perhaps **22**), and three to the mid seventeenth century (**5, 28**, and **30**). All seven datable items are residual in the demolition deposits, four by more than a century and three by thirty years or so.

Of the ten items from *Phase 6* (1682/90–1933), *Phase 7* (1933–40), and *Phase 8* (1940–59), all but three (**3** of 1613–15 from Phase 7; **16** dated 1952 from Phase 6, and **32** dated 1657 from Phase 8) were struck between 1738 and 1797. The latter (**9–15** from Phases 6 and 8) probably reflect the tidying up and cultivation of the site of the palace in the eighteenth century.[22]

Of the eleven coins and other numismatic items from the Banqueting House, only five were found in deposits which could be phased: **31** and **33** both struck in the mid 1650s in Phase 4 (1667); **4** struck in 1646–9 in Phase 5 (1667–1930); and **1** struck in 1553–4 and **25** dated 1902 in Phase 7 (1930–60).

The coins and other numismatic items were therefore almost all residual in the contexts in which they were found, many of them by a century or more. Whether this reflects long continued circulation or simply the generally high degree of residuality must remain uncertain.

22. See above, p 2, 62–3

10

CLAY PIPES

by D. R. Atkinson

(Figs 144–6)

i. Introduction

Of the clay pipe fragments excavated from the palace and Banqueting House, 290 were of sufficient size to support typological analysis. The bold numbers (**1–28**) refer only to the following catalogue and to the illustrations; individual pipe numbers (Nos. 1–453) are given in the catalogue entries and Concordance III. Phasing information for the illustrated examples is given in the catalogue, and for all the pipes in the concordance. Featureless stem fragments from the palace were discarded. Those from the Banqueting House were retained.

The pipes are classified according to Atkinson and Oswald,[1] the standard typology for the pipes of south-eastern England.

ii. Catalogue

1 Atkinson and Oswald Type 2
Only one example of this type was identified (No 1). The pipe, which has no milling and an elongated heel flush with the stem, is polished and unmarked. An early seventeenth- century type, but on the basis of its size a date of *c* 1620 is more likely.
**1; W1 5b; Phase 5*

2 Atkinson and Oswald Type 2
One example of this variant type was identified (No 2). It has a round heel and is polished and unmarked. It is datable to *c* 1620.
*2; Y5 III/IV 4; Phase 5

3–6 Atkinson and Oswald Type 5/7
One of the six examples of this type (No 25) is a small variety datable to *c* 1630–40. Two (Nos 4 and 5) have a stamp in the form of a 'sun' on a small heel. This stamp is very common around London with many variants of the mark known. They date to *c* 1630–40. Two pipes in this group have small heel bowls and date to *c* 1620–40. Two of the examples, including one of those with a 'sun' mark, are a variant form with relatively pinched-in lip and very small heel. Another (No 6) has the stamp W/K in relief, a mark recorded at other London sites, including the Thames, and datable to *c* 1620.
Nos 3–5, 25, 255, 444
3: **25; X7 6; Phase 5.* ***4:*** **3; Q1 3; Phase 5.* ***5:*** **4; S8 2; Phase 5.* ***6:*** **5; W5 6; Phase 5*

7 Atkinson and Oswald Type 6
Small milled bowls with spurs. The spur varies from a sharp, forward pointing form to a short stubby one.
A London type, of which there are sixteen examples, all unmarked. This type rarely occurs with any form of mark.

1. Atkinson and Oswald 1969

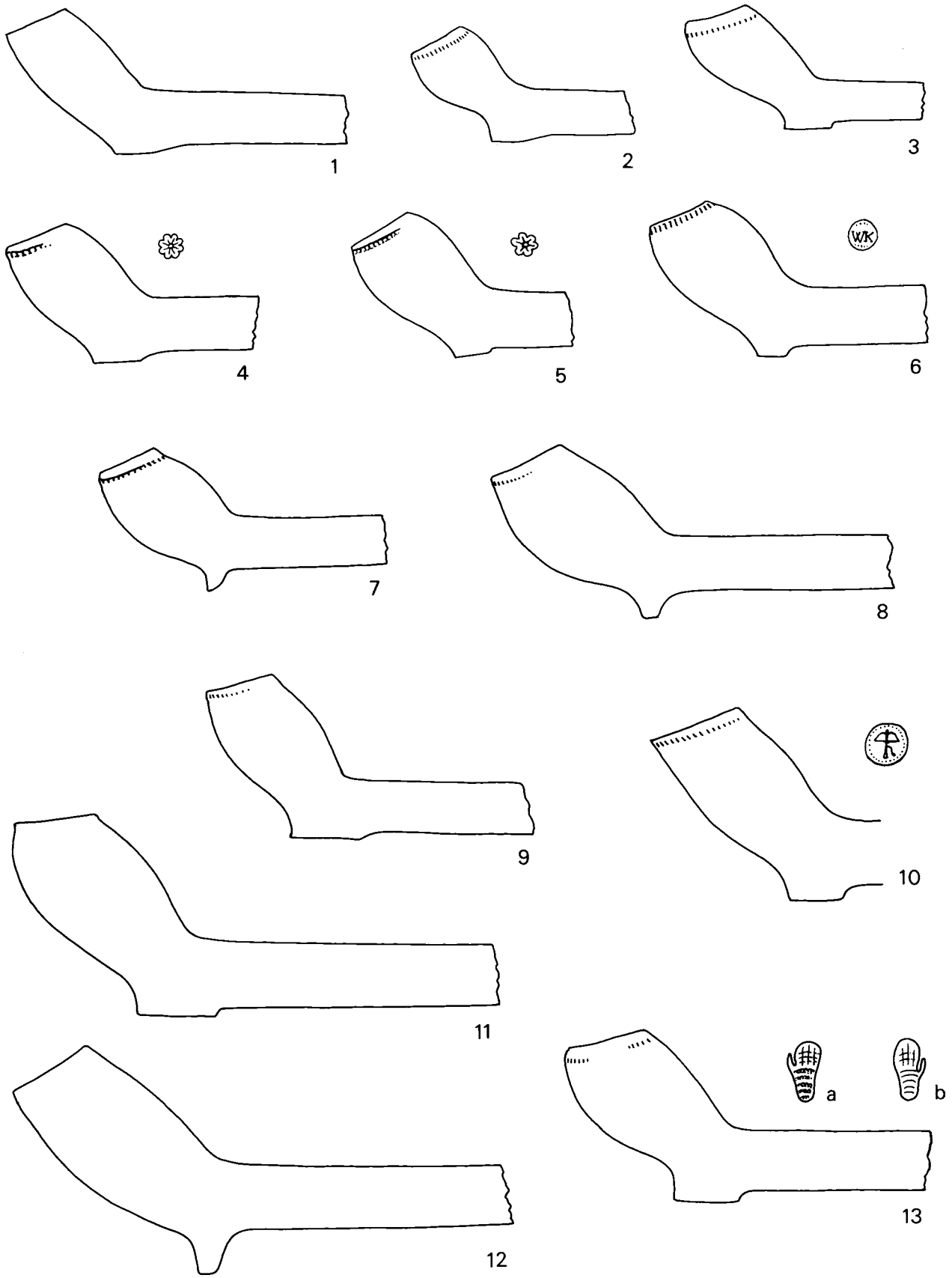


Fig. 144 Clay pipes: ***1–13*** *(1:1).*

One polished example. Datable to *c* 1620–30.
Nos 6–19, 402, 411
**16; Y4 2; Phase 5*

8 Atkinson and Oswald Type 9
Spur bowls of a type very common in London and south-eastern England. Rarely occur with any form of mark. Twenty-eight examples, all unmarked. On the basis of their size they may be dated to *c* 1660.
Nos 27–48, 311, 337, 388, 393, 398, 451
**40; W12 6; Phase 5*

9 Atkinson and Oswald Type 10/11
Six examples of this type, five of which (Nos. 20–4) have roughly heart-shaped heels, and one (No 26) a small round heel. These pipes may be dated to *c* 1640–50.
Nos 20–4, 26
22; U7 8=G9**; Phase 4*

10 Atkinson and Oswald Type 12
One example of a polished Dutch bowl with a relief 'crossbow' mark on a flat heel. The bowl tends towards the funnel shape developed in Holland in the last decades of the seventeenth century. Datable to *c* 1660–70.
**72; X14 5; Phase 5*

11 Atkinson and Oswald Type 13
This group may be divided into three sub-groups. The first consists of fourteen bowls (Nos 53–5, 57, 60–3, and 65–70), of which eight (Nos. 57, 61, 63, 65–7, 69, and 70) appear to be from the same mould. All are unmarked and are examples of a common type found in the London area, dating to the reign of Charles II. The second sub-group comprises four bowls (Nos 56, 58–9, and 64), smaller, but similar in shape to the pipes discussed above and probably, therefore, a little earlier in date: *c* 1640–60. The final sub-group contains a single flat heeled, polished bowl (No 71), datable to *c* 1620–40.
Nos 53–71. Fragments of uncertain subtype: Nos 290, 324, 328.
**70; X14 5; Phase 5*

12 Atkinson and Oswald Type 15
This group of 116 pipes represents the bulk of the pipes found at Nonsuch. A London spur type with thick bowls and long stems, and no unusual features. This type is very common in London and the south east and is very rarely marked, as is the case with these examples. The stem of one example (No 111) is preserved to 165mm, and of another (No 112) to 200mm. Datable to 1660–80.
Nos 99–146, 148–201, 269–70, 277, 313, 333, 348, 360, 418, 423–4, 435, 438, 443, 445
**200; Y6 8; Phase 6*

13 Atkinson and Oswald Type 16
This group consists of four bowls with a form of relief gauntlet mark on the heel, probably a product of a London maker copying the contemporary gauntlet trademark of Amesbury, Wiltshire. The shape of the bowls is clearly also an attempt to imitate the genuine Wiltshire variety. Identical specimens are known from the river Thames and other London sites. Three (Nos 49 and 51–2) have a 'left hand' mark. The fourth (50) has a 'right hand' mark. Datable to *c* 1660.
Nos 49–52
***13a** (pipe and left-hand mark): *50; X14 3; Phase 6.*
***13b** (right-hand mark): *49; Q8 3; Phase 5*

14–15 Atkinson and Oswald Type 18
Seventeen examples of this type were identified at Nonsuch. This variety with straight sided, more cylindrical, bowl with the heel flush with the bowl, was developed in London from the mid seventeenth century. It occurs in various sizes and became larger during its period in use. The largest examples appeared *c* 1690–1700, before giving way to the new eighteenth-century types with more upright bowls with larger capacities. Throughout the period of its use this type was very rarely marked. One polished example, slightly smaller than the others. All date to *c* 1660–80.
Nos 147, 202–12, 257, 287, 288, 325, 372
***14:** *202; Q8 11; Phase 5. **15:** *203; W2 5c=**G3**; Phase 4*

16 Cf. Atkinson and Oswald Type 18
This group of twenty-six pipes (Nos 73–98) is very similar to Type 18, in that the flat heel is flush with the base of the bowl and does not project out, as is more usual in the heel pipes of the period. The bowl is more bulbous than that of Type 18. This is another London type which is commonly found in the south-eastern counties and, as in these examples, is usually unmarked. The type dates to *c* 1650–60.
**86; X7 6; Phase 5*

17–21 Atkinson and Oswald Type 20
Twenty-five bowls of this type were identified. Two basic sub-groups may be determined: bowls with spur heels (Nos 213–14, 216–24, 228–31, and 235), and elongated bowls with projecting flat heels (Nos 215, 225–7, and 234). A further two bowls (Nos 232 and 233) have no heels preserved. One other (No 434) is a variant type with a more bulbous bowl. All the bowls are unmarked. Datable to *c* 1670–90.
Three large variants of Type 20 occur (Nos 225, 234, and 442) and are unpolished and unmarked. Occasional examples from London sites are stamped with relief initial marks on the base or back of the bowl, and the dated variety SA/1683 is known.

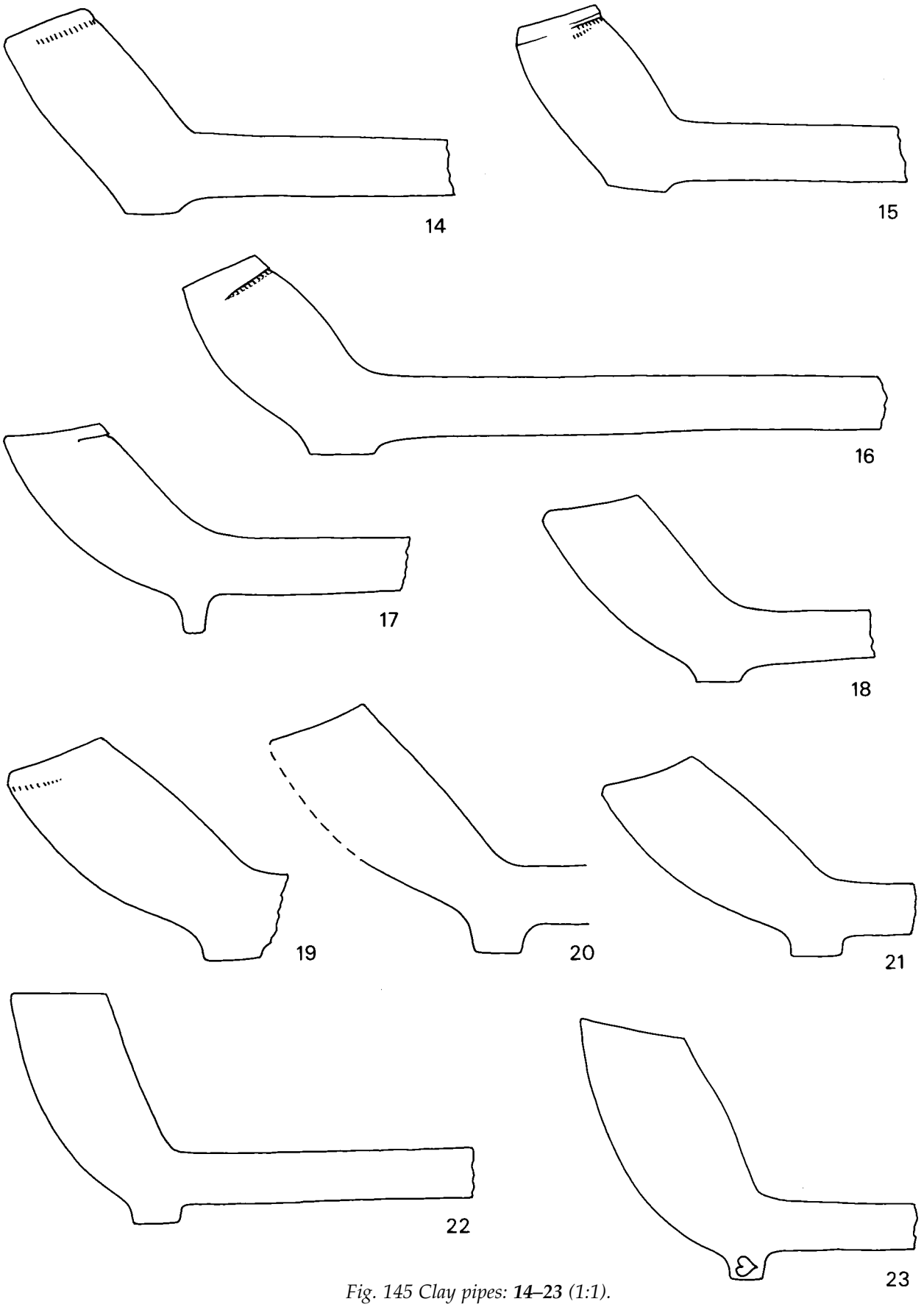


Fig. 145 Clay pipes: ***14–23*** *(1:1).*

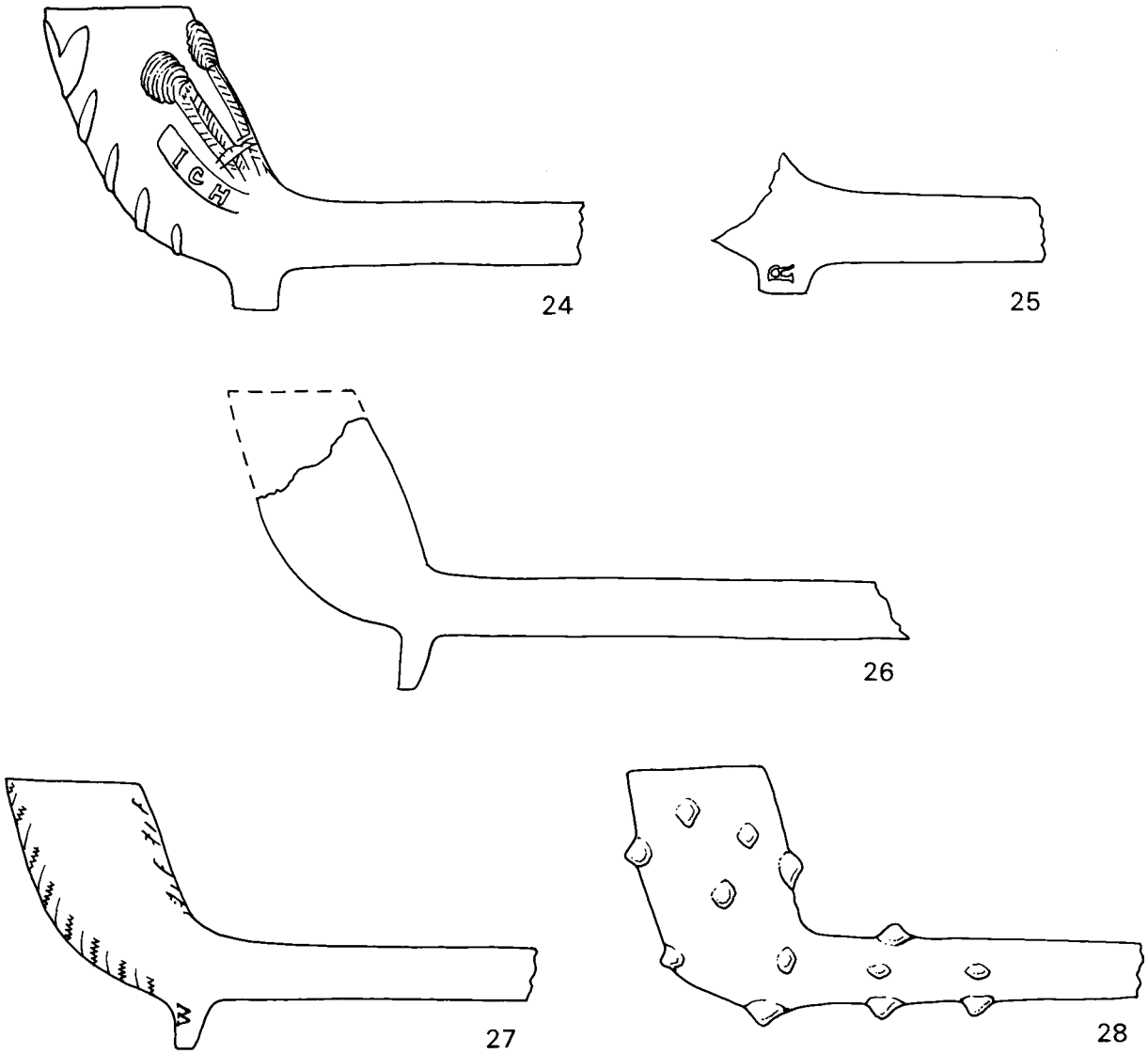


Fig. 146 Clay pipes: ***24–28*** *(1:1).*

Nos 213–235, 434, 442
17: **231; X8 4; Phase 5.* ***18:*** **226; W8 3=**G6/7**; Phase 4.* ***19:*** **225; W4 II/IV 4b=**G4**; Phase 4.* ***20:*** **234; Y4 2; Phase 5.* ***21:*** **442; BH BV VIIext I; unphased*

22–5 Atkinson and Oswald Type 25
Ten examples of a type common in the south east of England from *c* 1710 onward. Four are decorated (Nos 236–9). Two bowls in this group (Nos 236 and 238) have a hollow heart mark in relief on each side of the base. This mark is recorded from other Surrey sites and dates to *c* 1750–60. One example (No 237) has no initials on the base, but the bowl is decorated with the Prince of Wales feathers with large bold leaves up the front mould line. The motto 'Ich dien' is present but is poorly preserved. This bowl dates to *c* 1750–60. The final example (No 239), datable to *c* 1720–40, has the initials R/I or R/T on the base.
Nos 236–44, 452
22: **242; X5 III/IV 3; Phase 5.* ***23:*** **238; T1 2; Phase 6.* ***24:*** **237; CH XI 1; Phase 8.* ***25:*** **239; X10 III 2; Phase 6*

26–7 Atkinson and Oswald Type 26/28
Ten examples. One plain pipe (No 245) with only half the bowl and a large spur preserved, dating to *c* 1760. Two examples (Nos 249–50) have heavy fluting and date to *c* 1790. One heavily fluted piece (No 246) has the initials G/T on a large spur and dates to the late eighteenth century. Two bowls (Nos 247 and 251) have the initials R/C on

the base, one (No 247) with a pointed spur, the other (No 251) with a square heel. Both have small leaves running up the rear mould line and date to *c* 1840–60. One further example (No 453) has small leaves on both the front and rear mould lines and the initials W/T on the spur, and is datable to *c* 1840. One piece (No 253) has the initials J/F on a square base, with small leaves running up the sides of the stem, and is datable to *c* 1800–20. Two mid nineteenth century pieces have pointed spurs, No 248 with a star in relief, and No 252 with a dot in relief on either side of the base. Both are rather crudely made.
Nos 245–53, 453
26: **245; CH XI 1; Phase 8.* ***27:*** **453; PGW II 2; Phase 5/6*

28 Atkinson and Oswald Type 30
One example. Spiky decoration and no spur. Datable to the second half of the nineteenth century.
**254; CH VIII 1; Phase 8.*

iii. SUMMARY

Almost without exception the clay pipes from Nonsuch are of well-recorded London varieties. It seems probable that some of the pipes were locally manufactured; groups within some of the types (for example Type 13) show distinct similarities in their moulding, and a large number of the late seventeenth-century pipes at Nonsuch undoubtedly came from the same mould, indicating a local source of supply for the workers at the time. The nearest clay pipe manufacturing centre to Nonsuch was at Epsom.[2]

There are no examples from the very earliest period of pipe manufacture (*c* 1580–1620), and only one early type, datable to *c* 1620, was found (**1**). The period *c* 1620–60 is well represented by the standard types in use at the time with spur or heel respectively. There are maker's initials on one of these pipes (**6**) and maker's marks in the form of a 'sun' (**4, 5**) or gauntlet (**13a, 13b**).

The heaviest concentration of pipes appears to date from the reign of Charles II. Most of them are small, which is to be expected as the larger varieties appeared towards the end of the seventeenth century, although these retained the earlier seventeenth-century style. There are a few eighteenth-century examples, all ubiquitous Type 25 pipes of the first half of the century (**22–5**). One of these is marked with initials (**25**). Additionally there are a few later eighteenth-century pipes, one of the armorial type with the Prince of Wales feathers (**24**), and two plain bowls with a Surrey maker's 'heart' mark on the base (**23**). There is also one example of the contemporary large spur type (**26**). A few fragmentary pieces represent the end of the eighteenth century when fluted decoration appears, and the early nineteenth century when moulded leaf patterns on the stem were introduced. For the later nineteenth century up to *c* 1860 there are a few pieces with initials on the spurs and leaves up the mould lines of the bowl (**27**). Finally, there is a single specimen of a modern type with spike decoration on the bowl, datable to *c* 1870–80 (**28**). One foreign pipe appears in this corpus, a Dutch bowl of *c* 1670 with a crossbow mark stamped on the base (**10**).

It would appear to be no coincidence that the heaviest concentration of clay pipes from Nonsuch more or less coincides with the demolition of the palace in 1682–90 (Type 15). The steady fall off in numbers after that date is very marked and only sporadic examples from the eighteenth and nineteenth centuries attest to any activity on the site at that time.

Although the palace was in use from Henry VIII's time and smoking pipes began in the late Elizabethan period, no pipe of a date before *c* 1620 appears on the site, about thirty years into the age of social smoking. If rubbish including broken pipes of the earliest period was disposed of down garderobe shafts, clearance from time to time for sanitary reasons would account for the absence of early pipes. How often were the shafts cleaned out and where were the contents deposited?

2. Higgins 1981

11

PEWTER VESSELS

by Rosemary Weinstein
with analyses of the alloys *by* Roger Brownsword

(Figs 147–153; Table 27)

i. Introduction

Expenditure by royal households on pewter (tin/lead alloy) during the sixteenth century appears to be modest, whilst silver plate was regarded as a sound investment, and merited extensive purchases.

By 1526 £40 a year was considered an acceptable sum for pewter for Henry VIII's household at Eltham, compared with £20 for ashen cups and £5 for leather pots.[1] The parsimonious Princess Elizabeth spent only £14 13s. 8d. on the purchase and repair of pewter during her residence at Hatfield in 1551–2, out of a total budget of £4,000.[2]

Spoons, salts and flatware (dishes, bowls, plates, saucers and porringers) were the most commonly made pewter items of the sixteenth century. All except salts are represented by the twelve pewter pieces from Nonsuch. Apart from very exceptional pieces, most royal pewter would have been regarded as 'kitchen stuff', and ten of the twelve Nonsuch pieces were indeed found in the kitchen on the east side of the palace, in the well in Room 24.

The pieces from the well, with the exception of one early sixteenth-century spoon (**11**; *c* 1500–1550), form a coherent group, all being of late sixteenth- or early seventeenth- century date, which is consistent with the evidence of other material from this context. Some of the pieces bear the arms of Fitzalan, earl of Arundel, or of Lumley, keeper of Nonsuch until 1609. This suggests a clear-out, perhaps following Lumley's death that year. It is of interest, however, that two of the plates (**5** and **6**) are folded and bent. Whilst accidental damage under the weight of other rubbish is the most likely cause for this distortion, the deliberate bending of metal objects in the 'good luck' ritual of 'well wishing' cannot be discounted.[3] Perhaps this also accounts for the fact that the diamond-point spoon (**11**) was in pristine condition, although at least four of the dishes were no longer serviceable when finally discarded, having been used for archery target practice (**7**–**10**).

While the diamond-point spoon (**11**) and later 'slip top' spoon (**12**) are known types, the Nonsuch flatware items are unusual, and provide new information on pewter forms.

1. Society of Antiquaries 1790, 195–6
2. Camden Society 1853, 23–4
3. Merrifield 1987, 110–112

Fig. 147 Pewter saucer from London, diam 13 cm. Late 16th century. Museum of London, *Acc No Z6403 (see this page).*

Fig. 148 Pewter saucer, from Kennet Wharf, Vintry Ward, City of London, diam 17.9 cm. Initials I M on underside of the rim. Late 16th century. Museum of London, *Acc No 8144 (see this page).*

As their name implies, saucers contained the pungent sauces, used for disguising or enhancing the taste of the food, that were typical of the period. The two saucers from the well, (**1**) with the Fitzalan and (**2**) with the Lumley arms, and a third from a garderobe pit, heavily fragmented and corroded (**3**), may be dated stylistically to the late sixteenth century. Other examples of all three types of saucer are in the collection of Museum of London (Figs 147–8).

Porringers were used for pottage or stew, the semi-liquid spoon meats which formed the main type of food for the majority of people until the eighteenth century; the wealthier the household, the more meat the pottage would have contained. The type of porringer with a deep bowl found at Nonsuch (**4**), is a late sixteenth to early seventeenth century form, although the cast fleur-de-lys ear is as yet unrecorded amongst handle types. Similar touches (a crowned rose), although with different initials to either side, appear on two dishes belonging to the Pewterers' Company, dating to the late sixteenth and early seventeenth century,[4] and resemble spoon makers' touches in their diminutive size. Pewter flatware from *The Mary Rose* (sunk 1545) bears the earliest known examples of the crowned rose touch.

The plate with a very shallow well (**5**), bears the touch of Richard Glover (R and G in a beaded circle to either side of a gloved hand or gauntlet). Glover was Master of the Pewterers Company in 1606 and 1611.[5] He appears regularly to have supplied pewter (some still extant) to Sir Thomas Cottle whose daughter Mary married Sir Richard Edgcumbe of Cothele, Cornwall, in 1608.[6] Glover was a well known tin dealer.[7] A few other similar flat plates survive[8] (Fig 149).

4. Worshipful Company of Pewterers 1979, 17,20; Michaelis 1949
5. Cotterell 1929, No 1894
6. The late Ken Bradshaw *pers comm*. Edgcumbe 1888. Sir Thomas Cottle was an eminent merchant of Antwerp who settled in London in 1558, fleeing religious persecution under Philip II. He spent his later years at Mount Edgcumbe. See also two nine-inch plates with this touch, dated *c* 1590, in the Isher Sale Sotheby 1956, Lots 137 and 184. Also a bowl from Port Talbot, in the National Museum of Wales, Cardiff
7. Hatcher and Barker 1974, 113 n.6, 235
8. For example Sotheby 1980, No 80; exhibited at the Reading Museum and Art Gallery Sept/Oct 1969 and illustrated in the catalogue, Anon., No 8

Fig. 149 Pewter plate, diam 15.5 cm. Maker's mark I with lion rampant. c 1600. Private collection *(see p 329).*

Fig. 150 Pewter almsdish, by William Curtis, diam 24.7cm. Enamelled copper boss (2.7 cm diam) in centre with pre-Stuart Royal Arms in colours on a niello background. Late 16th century. Worshipful Company of Pewterers, *S1/102 (see this page).*

Broad- and narrow-rimmed dishes are both characteristic forms of the sixteenth century, but the two narrow-rimmed dishes (**9**,**10**) and the two other yet smaller dishes (**7**, **8**) have a bouge and well of continuous curved shape, i.e., there is neither flat nor 'bumpy' concave bottom to these vessels. They would have rocked slightly on a flat surface. **9** and **10** are both marked with W and C either side of a crowned rose emitting eight rays (thought to be the touch of William Curtis[9]) and **9** also carries the Lumley house mark of three parrots on the rim. **8** has an unrecorded mark of two gloves or gauntlets. Other dishes of this form are known, one being from the wreck of a ship in 1569 in Yarmouth roads, Isle of Wight.[10] Current opinion holds that such vessels were used as voiders, receptacles held in the hand of the servant and used for collecting scraps from the table. This would account for the absence of a flat bottom to steady the dish. Voiders of various sizes feature in the inventories of larger institutions.[11] The form is also known in heraldry.[12]

An alms dish by William Curtis, pewterer of dishes **9** and **10**, is in the collections of the Worshipful Company of Pewterers (Fig 150)[13]. Curtis was brother of Alderman Sir Thomas Curtis of Bishopsgate Ward (lord mayor in 1557). William Curtis was Master of the Company seven times between 1566 and 1586, and in 1564 donated to the Company an Ordinance book which is now deposited at Guildhall Library.[14] He appears to have been a controversial character.

The larger of Curtis' two dishes (**10**) was damaged by placing on a hot surface, probably in the palace kitchen; the large central hole shows how the upper layer of molten metal flowed down towards the heat source. Both this dish and three other voiders (**7–9**), together the largest

9. Welch 1902, Vol I, 278
10. Homer 1989
11. Inventory of Sir William Norris of Speke Hall, Lancs, in 1624: in Shelley 1947, 86
12. Homer 1986, 106
13. Worshipful Company of Pewterers 1979, 13, S1/102
14. Welch 1902, Vol II, Additional Appendix, 11. Guildhall Library MS 7115: Ordnance Book of 1564, with supplement of 1572

Table 27. Pewter vessels: analysis of the alloys[1] by Roger Brownsword.

Catalogue No.	Tin (%)	Lead (%)	Copper (%)	Antimony (%)	Bismuth (%)	Iron (%)
1	98.6	0.34	0.88	0.06	0.12	ND
4	98.7	0.26	0.93	0.06	0.07	ND
5	98.1	1.09	0.58	0.02	0.18	0.05
6	96.6	1.18	1.72	0.06	0.24	0.14
7	98.4	0.58	0.83	0.04	0.13	0.04
8	98.1	0.73	1.02	0.08	0.15	ND
9	97.4	0.93	1.31	0.05	0.14	0.10
10	98.2	0.31	1.19	0.05	0.14	0.12
11	98.4	0.54	0.99	0.05	0.10	ND
12	96.4	1.40	1.42	0.08	0.05	0.62

[1] Vessel 3 is not included.

of the pewter vessels, became targets for archery practice when they were discarded. They bear the characteristic perforation holes caused by the type of arrow head known as bodkin bolts, normally used against armoured targets where greater force of penetration was required than that provided by the conventional long arrow head. The high speed penetration of the 3in. bodkin head is shown by the ruptured and splayed metal seen on the under surface at each point of contact. The variety of size of holes indicates impact at different speeds, angle, and force of penetration.[15]

It is interesting to note that three of the pewter flatware items (**1**, **5**, and **8**) bear touches incorporating a hand or hands.

The Nonsuch pewter was made of high quality copper-hardened alloys (Table 27).[16]

ii. CATALOGUE

1 Spice plate or saucer. Diam.130mm, width of rim 12mm.
Shallow curved well with boss in the centre. Narrow rim with beaded edge and house mark of a shield bearing the lion rampant of Fitzalan in the first and fourth quarters and the Maltravers fret in the second and third. Nonsuch was in the ownership of Henry Fitzalan, 12th earl of Arundel, from 1556 until his death in 1580.
Unidentified maker's mark or touch of initials, W W with hand pointing upwards, on the underside of the rim.
Late 16th century.
There is a similar example in the Museum of London collections from King Street, Westminster, with bulls head touch mark.[17]
SF321; Y4 34=Well**; Phase 4*
As its name implies, a saucer would have contained a pungent sauce for disguising or enhancing the taste of food.

2 Spice plate or saucer fragment. Diam.130mm, width of rim 19mm.
Shallow curved well and remains of boss in centre. Narrow plain rim with the house mark of the arms of Lumley: between three parrots a fess. Lord Lumley was son-in-law of the earl of Arundel and lived at Nonsuch from about 1556 until his death in 1609.
Unidentified touch of R C? and bull's head, with crown above, on underside of the rim. Late 16th century.
There is a similar example in the Museum of London collections.[18]
SF314; Y4 34=Well**; Phase 4*

15. I am grateful for advice from colleagues at the Tower of London and to Professor Peter Pratt, Royal School of Mines, on this point. For a discussion of the destructive impact of arrows, see also Hardy 1976, 206–98. London Museum 1954, 65–71
16. I am grateful to Dr. Ron Homer for reading this text
17. Accession No. A.774
18. Accession No Z6403

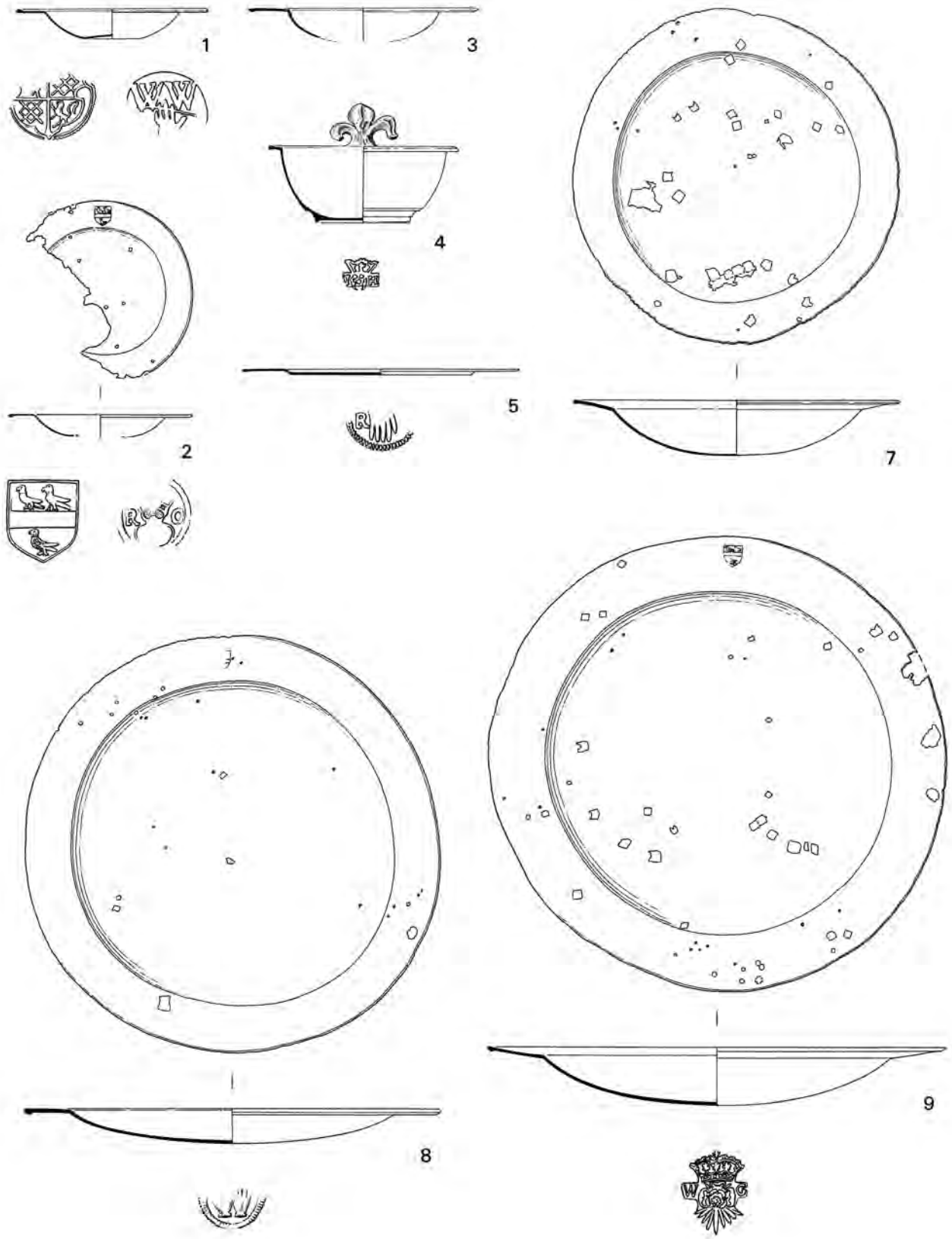


Fig. 151 Pewter: ***1–5, 7–9*** *(1:4, marks 1:1).*

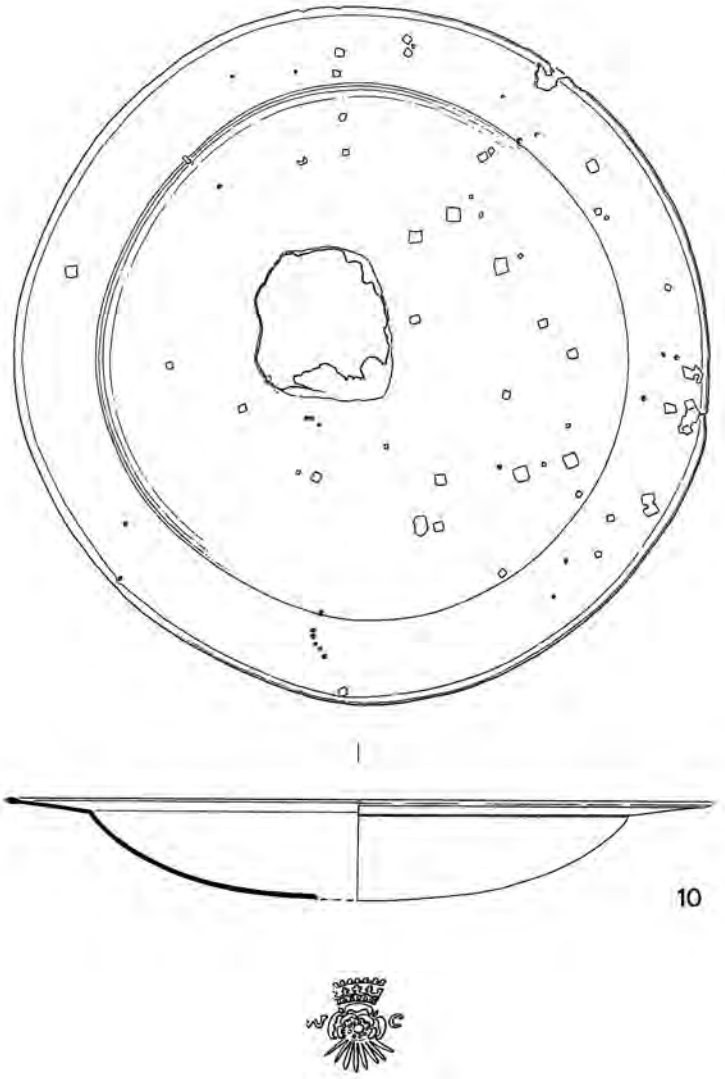


Fig. 152 Pewter: ***10*** *(1:4, mark 1:1).*

3 Spice plate or saucer, highly corroded and fragmentary, no visible marks. Diam.approx. 160mm, width of rim 30 mm. No visible marks. Late 16th century. There is a similar saucer in the Museum of London collections, from Kennet Wharf, Vintry Wharf.[19] (Fig 148)
SF312; W12/13 8=G11**; Phase 4*

4 Porringer fragment. Diam.of bowl 133mm, Height 50mm. Deep cup-shaped bowl with moulded rim and standing flange at base. Single ear or handle of a cast fleur-de-lys, the upper surface in relief, flat beneath. This type of handle or ear is as yet unparalleled.
Unidentified touch mark of IH with a crowned Tudor rose between, struck under centre of base. Late 16th/early 17th century.
A similar mark of a crowned rose, although with different initials, appears on a late 16th- century saucer in the collections of the Pewterers Company.[20] For a comparable body type, see Michaelis (1949).[21]
SF313; Y4 35=Well**; Phase 4*

5 Plate, folded double, Diam.195mm, width of rim 35mm. Flat rim with single reeded shallow edge and very shallow well.
Touch mark of R and G in beaded circle to either side of a gloved hand or gauntlet on the underside of the rim. This mark has been identified

19. Accession No 8144; Anon. 1983, 17
20. Worshipful Company of Pewterers 1979, No S1/109
21. Michaelis 1949, 47, Types II*a* and II*b*

with Richard Glover, Master of the Pewterers Company in 1606 and 1611.[22] Glover was active *c* 1584–1625.
SF315; Y4 33=Well**; Phase 4*

6 Plate, folded double, one fifth of rim missing; fragile condition. Diam.approx. 230mm, width of rim 35mm.
No visible marks. Late 16th century. Not drawn.
*SF316; Y4 35=**Well**; Phase 4*

7 Dish, highly corroded, Diam.225mm, width of rim 28mm.
No visible marks. Late 16th century. This dish is unusual in having neither a flat nor 'bumpy' boss-shaped bottom, the bouge and well forming a continuous arc of a circle, so making it rock slightly when placed on a table. Bears some random diamond-sectioned perforations, probably arrow damage, as **8–10**. Another vessel of this form comes from the wreck of a ship in 1569 in Yarmouth Roads, Isle of Wight.[23]
SF317; Y4 33=Well**; Phase 4*

8 Dish. Diam.290mm, width of rim 32mm. Shape as **7**.
Lumley arms on the rim. Touch marks of two gloves or gauntlets with hand pointing upwards and narrow open 'wrists'. Similar arrow damage to **7**.
SF318; Y4 35=Well**; Phase 4*

9 Dish. Diam.320mm, width of rim 40mm. Shape as **7** and **8**.
Lumley arms on the rim. Maker's touch mark W C with crowned rose between and eight curved tapering rays issuing beneath. This mark is thought to be that of William Curtis, Master of the Pewterers' Company seven times between 1566 and 1586.[24] The collections of the Pewterers' Company have an alms dish by the same maker.[25] Similar arrow damage to **7** and **8**.
SF319; Y4 33=Well**; Phase 4*

10 Dish. Diam.370mm, width of rim 43mm. Shape as **7–9**.
Maker's touch mark W C as on **9**. Similar arrow damage to **7–9**. In addition, this dish has a large central hole where the metal has melted, probably as a result of being placed on a hot surface in the palace kitchen.
SF320; Y4 33=Well**; Phase 4*

11 Spoon, diamond point; apparently unused. Fig-shape bowl and tapering stem of hexagonal section. Maker's mark W W with lion rampant above, the only known example of this mark on a diamond point spoon. *c* 1500–1550.
See Homer (1975)[26] and Hilton Price (1908)[27] for other examples. It is interesting to speculate whether this spoon, in pristine condition in the well, might represent a good luck token, or an accidental loss at a time when many people would have carried their own personal spoon.
SF395; Y4 36=Well**; Phase 4*

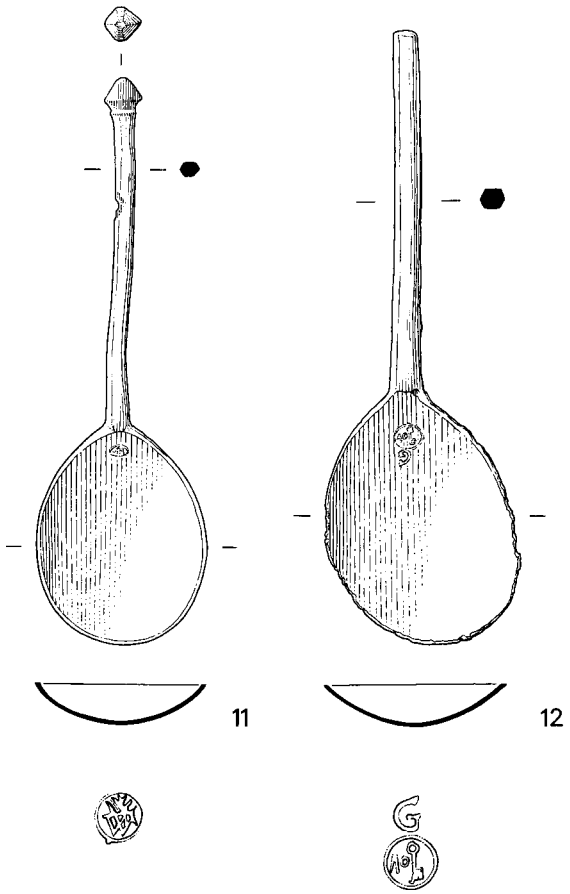


*Fig. 153 Pewter: **11**, **12** (1:2, marks 1:1).*

12 Spoon, slip top. Oval bowl with stem of hexagonal section. *c* 1600.
One of the commonest type of pewter spoons, the date range for this type of stem or handle being from *c* 1500–1650. Indistinct maker's mark, ? a key with G above.
SF90; X15 IV 6 (probable error for X15 IV F6) ie 3 or 8=G12**; Phase 5*

22. See notes 5–7
23. See above, note 10
24. See above, note 14
25. See above, note 13
26. Homer 1975, 31
27. Hilton Price 1908, 38–40, 74–5

12

LEAD OBJECTS

by Geoff Egan

(Figs 154–64)

i. Catalogue: The Palace

Architectural and other features

1–4 Tudor roses. **1–2** are demi five-petalled double roses retaining one sepal, crudely pierced from the front by three squared holes, presumably for nails. **2** retains traces of gilding, and has smaller nail holes. Diam. of both examples, 75mm. **3** is a five-petalled double rose, pierced at the centre, from the front, for fixture by a corroded iron nail. Diam. 32mm. **4** is similar to **3**, but has no nail.
**1 SF377; Q9 I 5; Phase 5. *2 SF137; X15 9; Phase 5. *3 SF346; Q13 I 4; Phase 5. 4 L101; R13 I 2; Phase 6*

1–2 were cast as demi roses, and were probably set against a straight border, or against a different halved device; see for example the conjoined demi roses and pomegranates, symbolising the marriage of Henry VIII and Katherine of Aragon, depicted on the Great Tournament Roll of Westminster from 1511.[1] Since it would have been perfectly possible to produce demidiated conjoined devices in one casting, the former explanation may be preferable.

5–8 Portcullises. **5** has studs in relief at the points of intersection of the grid. At the top, a chain with rectangular links is gathered symmetrically and doubly looped. Broken off from each side, it curves towards scrolled terminals at the ends. Pierced from the front by four circular holes (one situated in one of the scrolled ends of the chain). These holes were presumably for nails, for attachment of the piece. 85 x 63mm. **6** is a fragment similar to **5** but from a different mould, and lacking a pierced hole at the corresponding point. Possibly cut off above the third horizontal bar of the grid. **7** is a similar fragment, comprising the left side chain, and **8** is a fragment with a central ridge instead of chain links, and a nail hole at the end.
**5 SF328; Q10 III 4; Phase 5. *6 L202; V14 3; Phase 3. *7 L83; P/Q 15/16 6; Phase 5. *8 L373; X14 4; Phase 5*

Portcullises with chains composed of rectangular links formed the main device of the trapper of the horse of one of the King's pages at the Westminster Tournament held in 1511 to celebrate the birth of a prince to Henry and Katherine of Aragon.[2]

9 Fragment of the left side of a fleur de lis, 37 x 29mm. Bifacially bevelled, and retaining traces of gilding. Stylistically very similar fleurs are shown on the trapper of a horse at the 1511 Westminster Tournament.[3]
**SF134; X14 5; Phase 5*

10 Convex oval, narrowing to bifacially bevelled stem at one end. Gilded, and pierced for fixture. L. 71mm. Possibly the central part of a fleur de lis, although there are no obvious points of breakage at the sides.
**L411; X15 9; Phase 5*

1. Anglo 1968, Vol II, Pls I and XII membrane 19
2. Anglo 1968, Vol I, 93 and Vol II, Pl X membrane 16
3. Anglo 1968, Vol II, Pl XI membrane 17

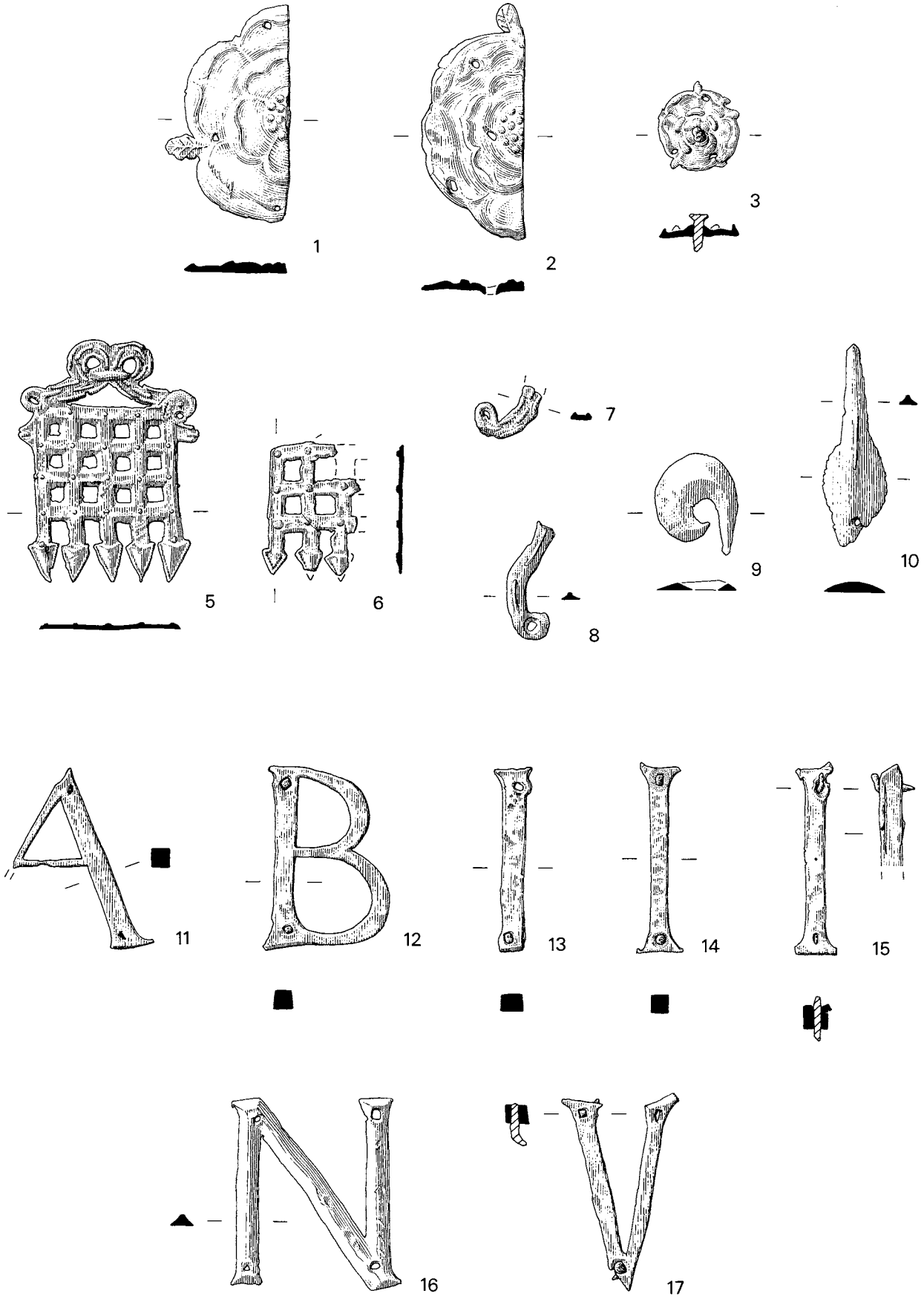


Fig. 154 Lead: architectural and other fixtures, ***1–3***, ***5–17*** *(1:2).*

The union rose, the most obvious symbol of the Tudor dynasty, the fleur de lis from the arms of the realm, and the portcullis were all instantly recognisable royal badges, and therefore formed appropriate decoration for the most ornate of Henry VIII's palaces.[4]

From their distribution, most of these motifs seem likely to have come from the Inner Court. However **1**, found at the northern end of the palace, is probably from the Outer Court buildings, and **2** was found in the South-East Tower.

Gilded leadwork was used to enhance the splendour of a number of Tudor royal buildings.[5] No close parallels for the heraldic motifs listed above have been traced, but among the work presumably undertaken by the joiners and casters of lead noted in the Revels Accounts are 400 'Littel Rosis of Leade' put on beams in a temporary banqueting hall built at Greenwich for the visit of ambassadors from France in 1527.[6]

11–17 Roman-style capital letters with serifs, 65mm in height. **11–15** and **17** are rectangular in section. **11** is a letter A, with the lower stroke broken off, and two surviving crude holes. The stroke at the right is three times as wide as that which has broken off. **12**, a letter B, has two squared holes at top and bottom, both of which have corroded iron, presumably from nails. **13–15** are examples of the letter I, with crude holes near each end. A corroded iron nail is retained in one of the holes in **13**, and **14** has two nails. **15** is cut partly through from one side in the same plane as the letter. **16**, a letter N, is triangular in section and is crudely formed, with a squared hole at each of the four ends of the vertical strokes. **17** is a letter V and has three holes, two with corroded iron nails.

**11 L433; X16 2; Phase 6. *12 SF372; Q14 III 3; Phase 8. *13 SF232; W8 5=G6/7; Phase 4. *14 SF450; Q10 III 6; Phase 5. *15 SF40; U10 II/IV 2; Phase 6. *16 SF397; S8 2; Phase 5. *17 SF238; R8 6; Phase 5*

These seven letters are probably from captions and mottoes accompanying the decorative panels on the external walls of the palace, or possibly from interior decoration.

Although there is no trace of gilding they would almost certainly originally have been embellished in this way, like some of the other decorative items.

18–44 Arabesques. The thirty-two fragments of flimsy arabesque mounts can be attributed probably to eight basic forms (**A**-**H**), of which only one example of form **A** (**23**) survives in a complete state. The three small fragments designated **H**-**J** may be otherwise unrepresented parts of forms **B**-**G**, or from completely different ones. Form **A** is asymmetrical and survives in complementary mirror-image versions, which may have been set in corresponding pairs (perhaps to each side of some other decorative element), and the same seems likely for the much smaller fragments designated form **E**. Form **F**, to which Form **G** may perhaps be related, though simpler in outline appears to have a central motif similar to a fleur de lis, while form **H**, if indeed it is from an arabesque, takes the somewhat more naturalistic shape of a bud. Form **D**, which is larger than the surviving parts of the others, may have provided some kind of framing for different design elements. The surviving gilding on several fragments, together with the copper-alloy pins for fixing (see **19** and **33**), can be compared with those on the heraldic lead mounts (rose (**4**), portcullis (**7**) etc.), and strips (**57** etc).

18–29 Form A

18 is gilded, **19** has a copper-alloy pin. **23** is complete, measuring *c* 120 x *c* 60mm. **25–29** are mirror images of **18–24**.

**18 L311; R15 4; Phase 5. *19 L288; W13 7; Phase 5. 20 L174; U14 4; Phase 5. 21 L330i and ii; X7 7; Phase 5. *22 L400; X15 10a=D2; Phase 5. *23 L358; W10 10; Phase 6. 24 L33i; P/Q 15/16 19; Phase uncertain. 25 L63; Q14 III 5=SA G; Phase 5. 26 L332; X7 7; Phase 5. *27 L417; X15 10=D2; Phase 5. 28 L33 ii and iii; P/Q 15/16 19; Phase uncertain. *29 L378; Q1 5; Phase uncertain*

30 Form B

A single fragment, measuring *c* 80 x *c* 75mm.

**30 L416; X15 10=D2; Phase 5*

31–32 Form C

Two fragments. **32** measures *c* 110mm x *c* 60mm.

**31 L179i; U14 5; Phase 5. *32 L393; X14 5; Phase 5*

33–4 Form D

33 has a copper-alloy pin, **34** measures *c* 150mm x *c* 120mm.

**33 L133; T15 IV 2; Phase 5. *34 L290; W13 8=SA B; Phase 5.*

35–38 Form E

35 has a pinhole, **36** does not. **37–8** are mirror images of **35–6**. **37**, L. *c* 105mm.

**35 L50; Q10 III 6; Phase 5. *36 L424; X15 10b=Dump 2; Phase 5. *37 L296; W15 5=SA C; Phase 5. 38 L75; P/Q 15/16 5; Phase 6*

4. cf Anglo 1969, 37, 65 and 68
5. Anglo 1969, 213; Biddle *et al* 1959, 185–86, Fig 20, Nos 8–10; cf Woods 1982, 251 and 254–55, Figs 22 and 23, Nos 1–13; lead leaves survive as part of the ceiling ornaments in Wolsey's Closet at Hampton Court: Weaver 1909, 216–17, Fig 368, and RCHM 1937, 36 and Pl 81
6. Anglo 1969, 211–13

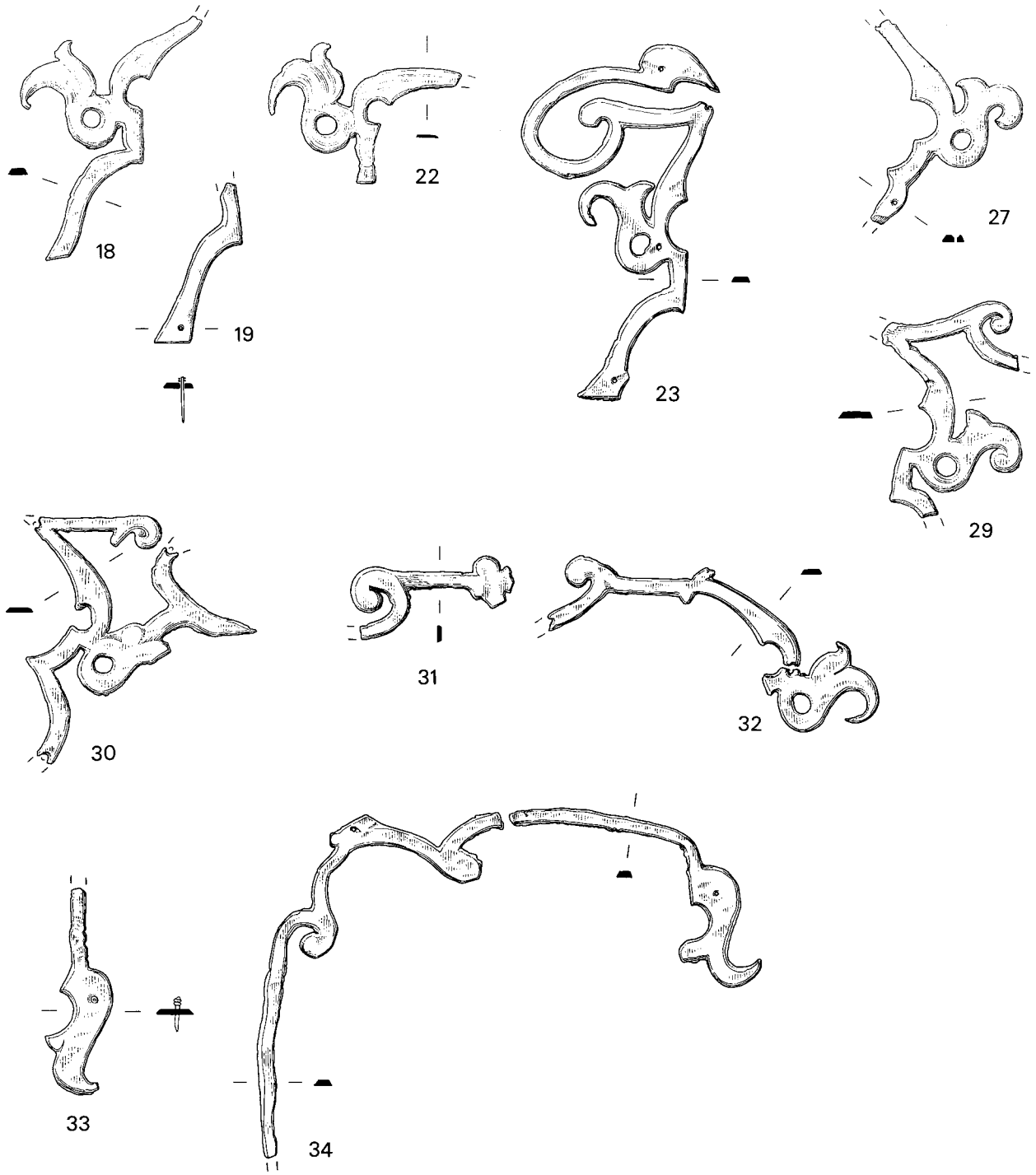


Fig. 155 Lead: architectural and other fixtures, ***18***, ***19***, ***22–3***, ***27***, ***29–34*** *(1:2).*

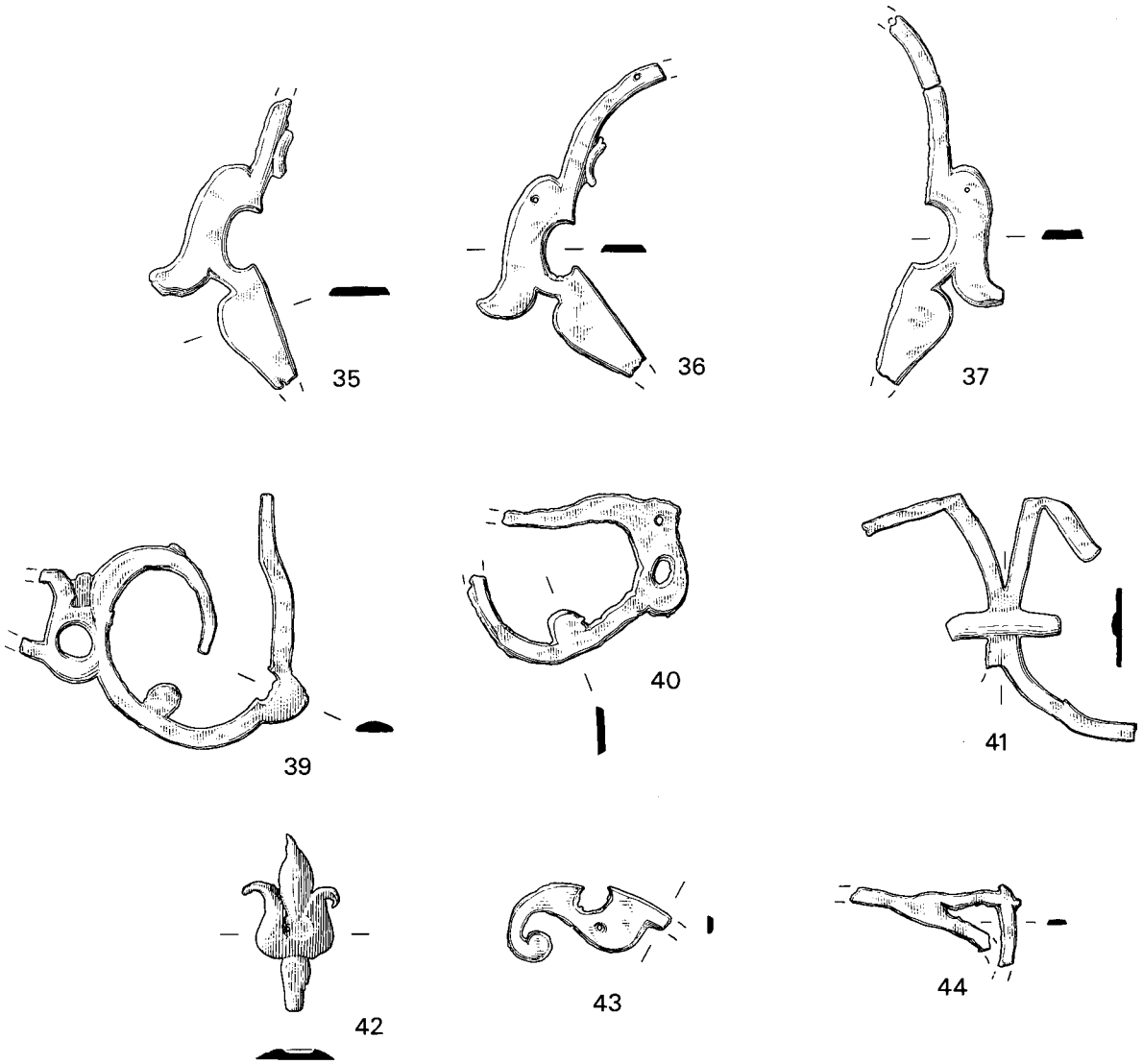


Fig. 156 Lead: architectural and other fixtures, ***35–7***, ***39–44*** *(1:2).*

39–40 Form F
39 measures *c* 80mm x *c* 75mm.
***39** L203i; V14 3; Phase 3.* ***40** L179ii; U14 5; Phase 5*

41 Form G
One fragment, measuring *c* 80mm x *c* 75mm.
**L203ii, V14 3; Phase 3*

42 Form H
A single, bud-shaped fragment.
**L365; X14 4; Phase 5*

43 Form I
A single fragment.
**L178; U14 5; Phase 5*

44 Form J
**L179iii; V14 5; Phase 5*

45–48 Small arabesque fragments, of indeterminate form.
***45** L371i-iv; X14 4; Phase 5.* ***46** L38i; U14 5; Phase 5.* ***47** L371i-iv; X14 4; Phase 5.* ***48** L393ii; X14 5; Phase 5*

It is possible that the 1610 Speed illustration of the south front of the palace depicts this kind of arabesque on the external wall at (?)first-floor level, although the scale is wrong if these lead mounts are indeed what is shown. The surviving arabesques, two of which (**39** and **41**) are from the palace construction phase, are important

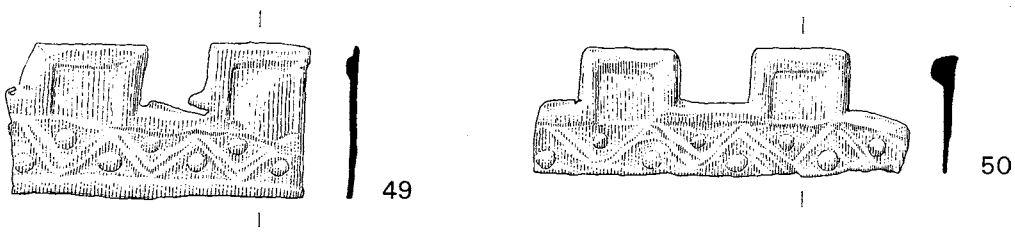


*Fig. 157 Lead: architectural and other fixtures, **49**, **50** (1:2).*

finds. They are among the earliest examples of this kind of renaissance-style motif, and probably the only ones in lead, extant in the country. This decoration derives from classical and Eastern decoration, via the palace of Fontainbleau.[7]

49–52 Decorative strips. All examples are flat strips broken off at one end, and perhaps cut off at the other. Along one side an embattled edge with a heavy, raised border. The other side has a running double zig-zag, with a raised boss in each of the opposed triangular fields. Solder on the back indicates that the strips were attached to flat objects. **49–50** have dimensions of 80 x 41mm and 97 x 32mm respectively.
49 L177; U14 5; Phase 5. *50 L50i and ii; Q10 III 6; Phase 5. **51 L349; X8 2; Phase 5. **52** L78; P/Q 15/16 7; Phase 6*

These crudely decorated borders are probably cresting from rainwater drainpipe heads. Weaver gives examples of late 16th century and 17th century pipe-heads with embattled cresting at Windsor Castle and Haddon Hall.[8]

53–61 Plain, D-sectioned strip mounts, varying from 8.5 x 2mm to 10 x 2.5mm in section. All are broken off or apparently otherwise damaged at one end, while the other terminates as originally cast. They are pierced by crude, roughly squared holes. **53–4** each retain a nail; **53**, of L. *c* 145mm, is distorted and has two nail holes, **54** is in two pieces and is 142mm in length. **55–6** are folded, **55** having four nail holes, with one end apparently melted, and **56** having two nail holes. Their lengths are *c* 265mm and *c* 255mm. **57–61** are of lengths 156mm, 267mm, 155mm, 145mm and 103mm respectively.
*53 L299; W15 III 4; Phase 5. **54** L157; Q14 III 2; Phase 6. **55** L337; X7 7 ; Phase 5. **56** L43i; Q9 III 1; Phase 8. *57 L291i; W13 8=**SA B**; Phase 5. **58** L183; U15 I/III 2; Phase 5. **59** L206i; V15 III 2; Phase 5. **60** L198; V14 1; Phase 8. **61** L432; X15 I/II/III/IV 1; Phase 8*

The copper-alloy nails in **53** and **55** are similar to those surviving on some arabesques (**19** and **47**). Although no gilding is visible on the present strips, they may well have been used as part of the decorative scheme, perhaps to frame or divide the more complicated elements.

62–65 Piping. **62–64** are apparently seamless, cast tubes. **62–63**, both of Diam. *c* 35mm and with sides *c* 5mm thick, with lengths 210mm and 220mm respectively, are roughly hacked at both ends. The ends of **63** have been subsequently abraded. **64**, Diam. 42mm and L.55mm, has walls of 5–10mm thickness. It is neatly cut off at both ends, and tapered by paring at one end so that it could fit into a hole or tube just under 40mm Diam. **65** is a tapered tube made from rolled and soldered sheeting; Diam. *c* 17mm tapering to 11mm, and L.125mm. The solder along the seam is corroded. Slightly flattened at the broad end, abraded at the other. The outer surface is covered with oblique, parallel marks, possibly from filing.
62 L442; Y4 33=Well**; Phase 4. **63** L444; Y4 34=**Well**; Phase 4. *64 L445; Y4 34=**Well**; Phase 4. *65 L13; P/Q 15/16 16=**G19**; Phase 4*
Marks on **62–63** are consistent with asset stripping.

66–73 Probable nail-head caps, each disc apparently consisting of two thicknesses attached around the perimeter. One side has a central hole, presumably for the shank of a nail, the head of which would have been set between the two layers; these would probably then have to be crimped together. Diameters range from 11–22mm. **70** has a trace of rust on the interior. None seems to be complete, but there is a possible complete parallel from Gloucester.[9]
66 L49; Q10 II 6; Phase 5. **67 L137; T15 IV 2a;*

7. For the early development of the arabesque, with buds sprouting from highly stylised non-naturalistic strapwork, see Ward-Jackson 1967
8. Weaver 1909, 25–6, Figs 37–8 and 30–1, Figs 48–50 for late 16th century examples, and 41–3, Figs 75–77 for 17th century examples
9. Egan forthcoming b, No 637

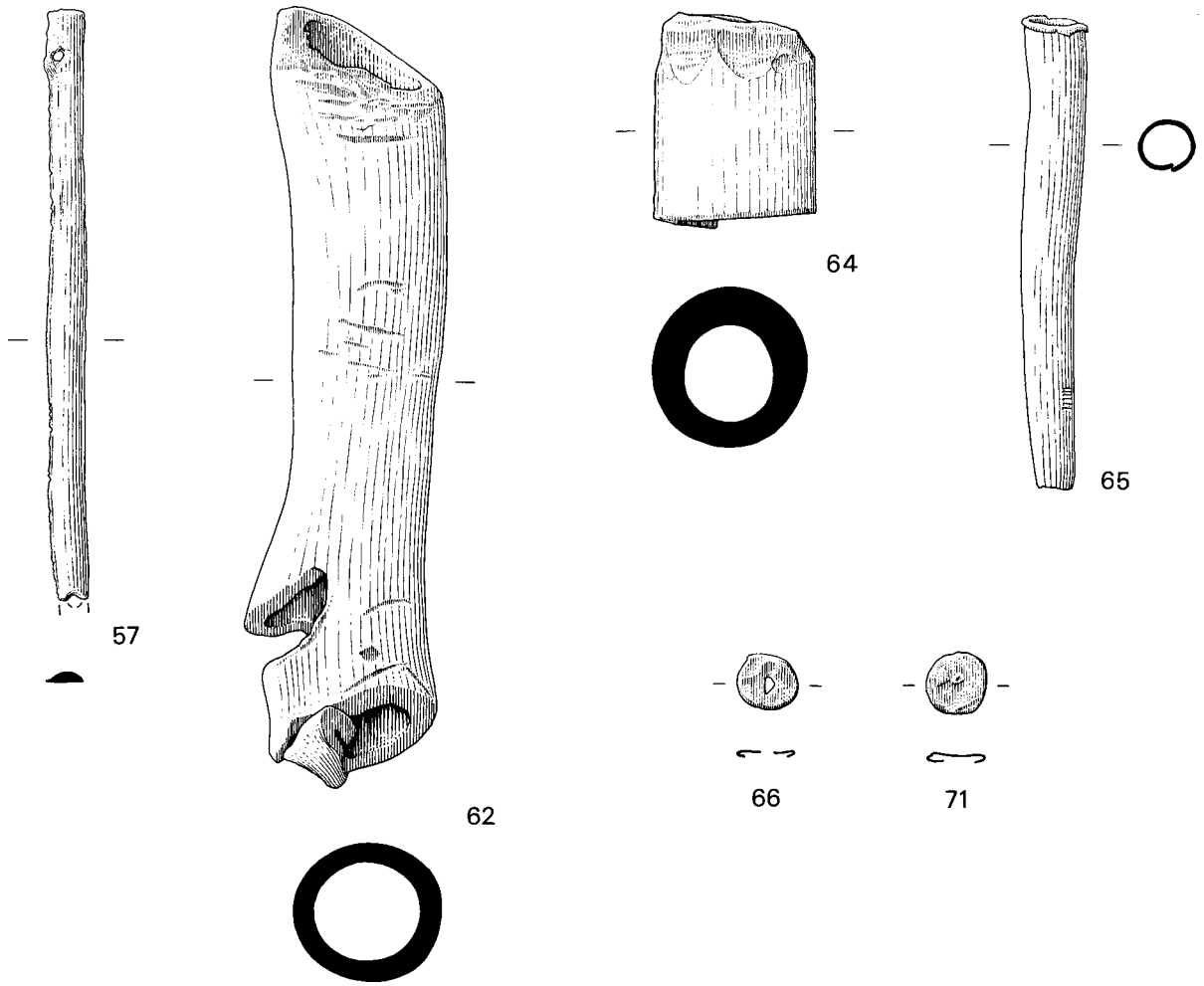


Fig. 158 Lead: architectural and other fixtures, ***57****,* ***62****,* ***64–6, 71*** *(1:2).*

Phase 5. ***68*** *L205; V14 5; Phase 5.* ***69*** *L406; X15 5a; Phase 6.* ***70*** *L407; X15 5a; Phase 6.* ****71*** *L208; W1 1; Phase 8.* ***72*** *L136; P/Q 15/16 19; Phase uncertain.* ***73*** *L46; Q9 I 5; Phase 5*

Presumably these coverings were attached when the nails had been driven almost fully into what they were to hold down. Slight signs of layering on the top of **67** suggest that the caps would have been hammered when in position, to drive the nails in further, and to make the coverings themselves secure. This elaborate arrangement was presumably to ensure that water could not penetrate at the points where lead sheeting was nailed in place.

A simpler, but less satisfactory, way of protecting iron nails from the weather was to drive them through a strip of lead sheeting which was then folded back over the nail heads.[10]

74–97 Sheeting fixtures. Edges are cut unless otherwise stated.

74 Rectangular sheet, *c* 290 x 110mm, folded and hammered to give a semi-circular profile in the middle part, where one edge is folded over double and hammered; pierced by two large, crude holes on each side, one of which retains an incomplete iron nail.

Probably for anchoring a drain to a flat surface. The folding over on one side may have been to cater for an angle in the pipe that was secured.

10. Duncan and Moorhouse 1987, 140–41, Fig 73, Nos 306 and 307.1

Most of the round drainpipes in Weaver are 18th century or later in date, and most of the square ones that are dated are earlier.[11]
L446; Y4 34=Well**; Phase 4*

75 Squarish sheet, *c* 100 x 100mm. Two opposed pairs of cuts define a central area, which has been made narrower by folding over one of the central panels; multiple scoring along one cut.
Possibly intended for a similar purpose to that of **74**, but not completed.[12]
*L448; Y4 34=**Well**; Phase 4*

76 Approximately square sheet, 120 x 115mm. Two sides retaining scoring marks, probably for guidance in cutting out. Crudely scratched X or XI on one face. Pierced by an iron nail near one corner.
The Roman numerals could be from checking the number of sheets, or from some other aspect of works at the palace. In view of the unremarkable item on which they appear, they almost certainly had a quite different purpose to the scratched assembly marks on some of the decorative slate panels.
*L443; Y4 33=**Well**; Phase 4*

77 Crude, rectangular sheet, *c* 68 x 12mm. Two round holes from nails, with traces of rust adhering; imprints indicate that the nails had round heads. Transverse ridge at centre.
Probably to hold a thin fitting against a surface. Similar objects were found at Kirkstall Abbey (Yorkshire)[13] and Denny Abbey (Cambridgeshire).[14]
L291 ii; W13 8=SA B**; Phase 5*

78 Slightly corroded rectangular sheet, 200 x 110mm, pierced by three rectangular holes along each of the longer sides, some with traces of rust, probably from nails. There is a scored grid of four by two setting-out lines for 18 cut circular holes, of diameter 7–9mm, which are fairly regularly spaced in three rows of six. One of the scored lines has been ignored in cutting the holes. Probably a grille for drainage or the passage of air.
L440; Y4 31=Well**; Phase 5*

79 Crude rectangular sheet, 58 x 20mm. One edge possibly originally as cast. Squarish hole near one end, abraded.
L172; U13 II 4; Phase 5

80 Subrectangular sheet, *c* 165 x 75mm. One possible nail hole. Perhaps deliberately folded along one of the longer sides.
L185; W12/13 7; Phase 5

81 Distorted subrectangular sheet, *c* 140 x 73mm. Holes for two nails near the corners on one side.
L285; W12/13 7; Phase 5

82 Distorted, subrectangular sheet, *c* 100 x 60mm, roughly cut or torn along three sides. Holes for two nails. Part of one iron nail survives.
Probably originally folded on two sides around a rectangular object *c* 50mm wide. Bears marks which are possibly from contact with wood.
L303; W15 IV 4; Phase 5

83 Crude rectangular sheet, *c* 122 x 57mm. Two round holes from nails, which imprints indicate had round heads. Hammered along one of the shorter sides; the others are apparently as cast. The sheet seems to have been folded lengthways twice, scraped with a bladed instrument along the fold, and then flattened again: one of the longer sides appears to have been cut at an angle along the edge of the other face. There are several knocks grouped near the middle and towards one end.
**L131; T14 II 1; Phase 8*

84 Subrectangular sheet, *c* 110 x 95mm as folded. Shaped by folding along scored lines and hammering to form the right-angled corner of a cornice having a rounded profile with an angled step to each side (one of the steps appears only on one face). Three edges are straight – one of these is originally as cast – and the fourth is irregularly cut. Two squarish holes from nails; imprints indicate round heads.
**SF182; X14 4; Phase 5*

85 Distorted sheet, *c* 110 x 80mm; apparently similar to **84**, but with a rounded profile and only one step. Folded over and hammered along one side. Two of the other sides seem to be as originally cast. Hole with rusted nail.
*L**??**; P/Q 15/16 12; Phase 6*

For **84** and **85** see the late 16th- and 17th-century sheet cornices in rainwater drainpipe-heads.[15]

86 Distorted and corroded triangular sheet, *c* 210 x 130mm. Folded, probably originally at a right-angle, along the longest side, and in the other direction along the two shorter ones. Holes for three iron nails, two of which survive. Marks on the main triangular area are probably an imprint of the rings of a cut timber, which the sheet was hammered against or nailed to.
Presumably to cover a structural timber which projected at an angle.
**L289; W13 7; Phase 5*

11. Weaver 1909, 23–64
12. cf Weaver 1909, 39–41, especially Nos 69 and 71
13. Duncan and Moorhouse 1987, 140–41 Nos 302–4, Fig 73
14. Goodall and Christie 1980, 261, Nos 3–5, Fig 5
15. Weaver 1909, 27, Fig 43; 46, Fig 82; 51, Figs 93–4; 55, Fig 103

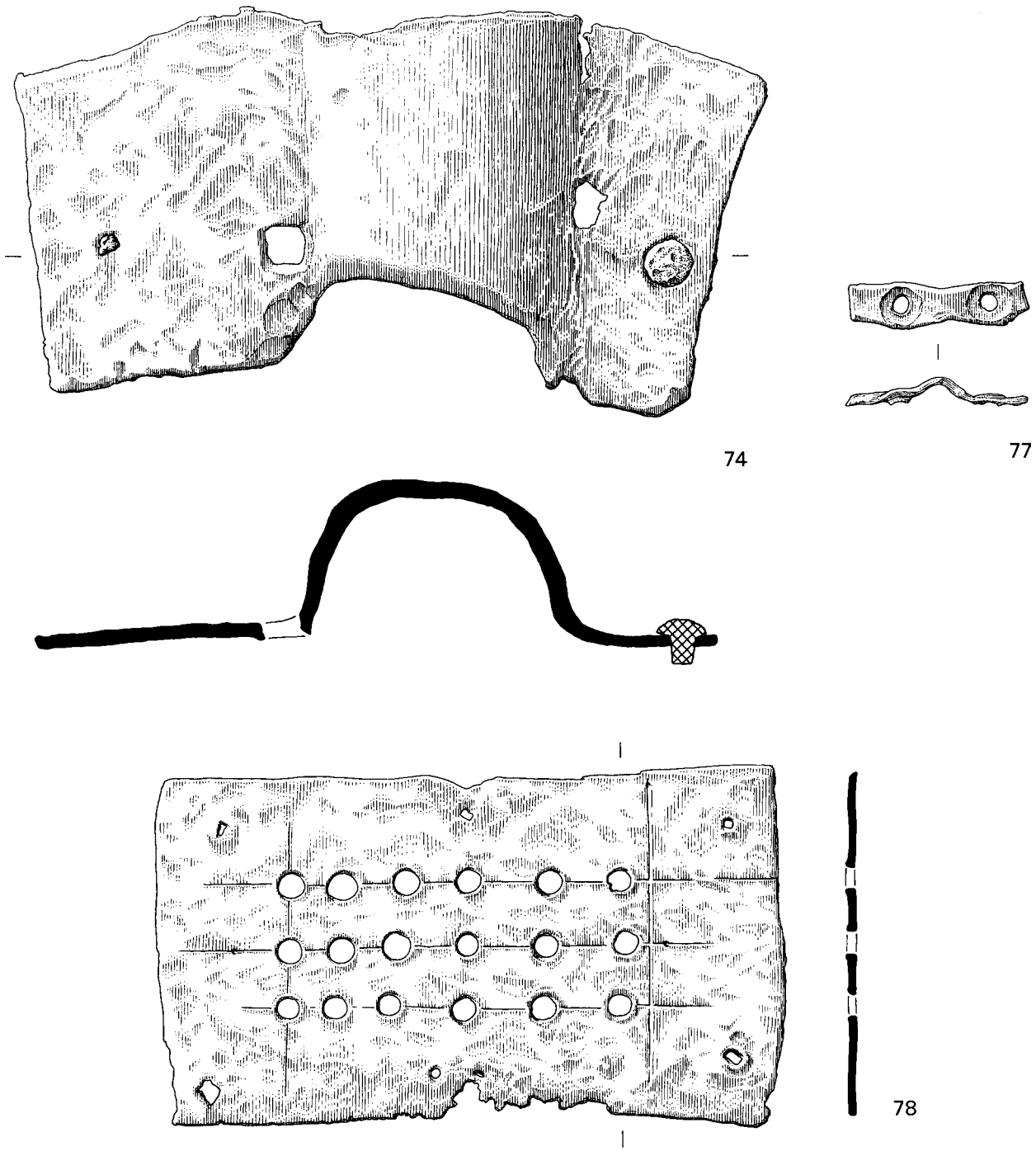


Fig. 159 Lead: architectural and other fixtures, ***74***, ***77–8*** *(1:2).*

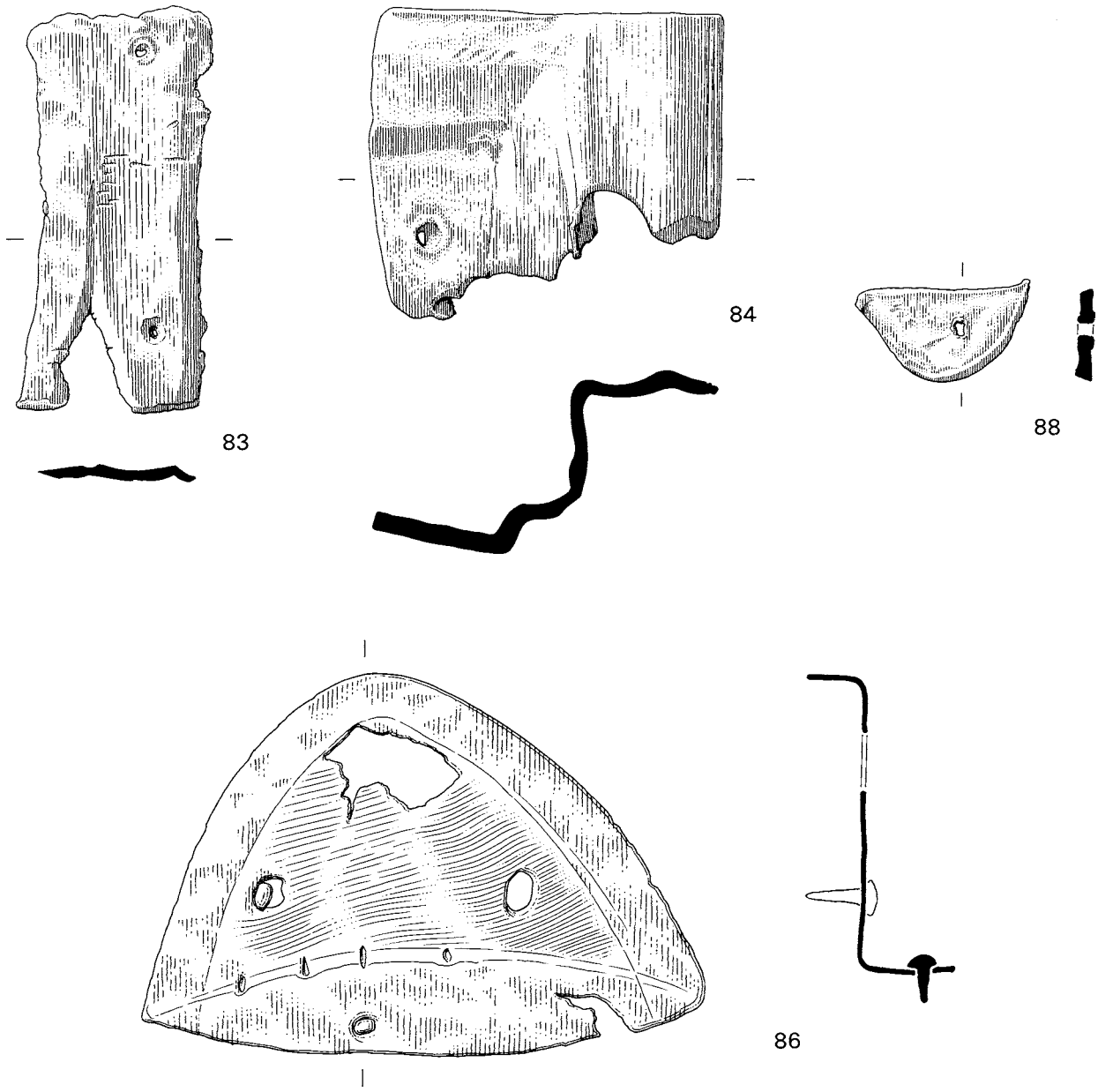


Fig. 160 Lead: architectural and other fixtures, ***83–4***, ***86***, ***88*** *(1:2).*

87 Triangular sheet with one round corner, 60 x 37mm. Has one crude hole.
L169; U10 II/IV 2; Phase 6

88 Subtriangular sheet with one rounded corner, *c* 48 x 40mm. One nail hole. Possibly cut around the nail from a larger piece during retrieval of lead for recycling.
**L283; U10 II/IV 2; Phase 6*

89 Folded subtriangular sheet, *c* 115 x 63mm, torn along one side and part of another. Hole, possibly for nail.
L279; W11 1; Phase 8

90 Regular hexagonal sheet, greatest breadth 71mm. A central mark is probably from a compass used in setting out crudely scratched guidelines for the perimeter. Multiple scratches on the other face include some almost parallel rough lines.
L460; Z3 I 3; Phase 5

91 Fan-shaped sheet, *c* 290 x 280mm. A series of serrations have been cut along the curved edge. Eight concentric scored arc lines have their central point at the angle, and were probably guides to help in setting out twenty cut round holes, each of Diam. 14–17mm, although only the outer row

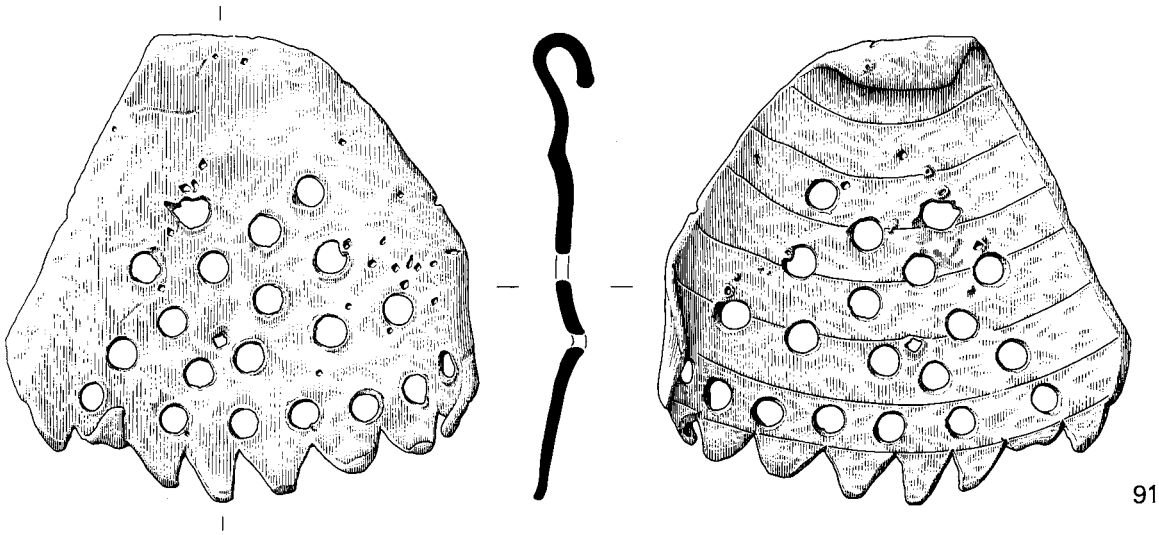


Fig. 161 Lead: architectural and other fixtures, ***91*** *(1:4).*

of seven holes fully respects any of the lines. There are several apparently randomly placed lozenge-shaped punched marks, and one round one, on the opposite face from the scored lines. Three of the lozenge marks have fully pierced the sheet.
L447; Y4 34=Well**; Phase 4*

Presumably a grille against leaves for a major drain or roof gulley. The basic sheet is approximately a 65E sector of a circle: thus six similar objects could have been cut from a sheet 580mm square.
A similar, though smaller and cruder piece of sheeting was excavated at Kirkstall Abbey (Yorkshire).[16]

92 Irregular trapezoidal sheet, *c* 116 x 50mm. One side is an original cast edge. Three crudely pierced round holes for nails. Imprints indicate these had round heads.
L428 ii; X15 III 2; Phase 5

93 Sheet with irregular outline, 50 x 42mm, with a hole for a nail, and other marks. Possibly originally folded at right angle near one side.
*L60; Q14 III 5=**SA G**; Phase 5*

94 Sheet with irregular outline, *c* 93 x 48mm, and two straight sides cut at a right angle. Two holes for nails.
L315; X5 III/IV 1; Phase 8

95 Sheet with irregular outline, *c* 80 x 65mm, cut on one side. The remainder is torn, and has holes for two nails.
L294; W15 1; Phase 8

96 Irregular piece of thin (1mm) sheeting, perhaps rolled from an originally thicker sheet, *c* 87 x 85mm, with two compass-scored contiguous pairs of concentric circles. One pair of circles is incomplete and has a diameter line and part of two smaller concentric pairs of circles within and respecting the outer circle of the main pair.
L356; X8 7; Phase uncertain

97 Crude strip 75 x 12 x 4mm. One iron nail survives, with the square hole for another.
L86; R8 3; Phase 5

98 Strip 32 x *c* 10 x 3.5mm, with a square hole for a nail.
L74i; P/Q 15/16 5; Phase 5

99–100 Settings for bars, etc. Lead melted and poured around the end of bars (e.g. saddlebars in windows) to fix them in prepared holes in masonry, etc. **96**, L.60mm, was for a square section iron bar *c* 23 x 23mm. Rusted iron from the bar adheres to the inside of the void. **97**, L.80mm, was for a square section bar *c* 20 x 20mm.
99 L156; U8 2a; Phase 5. **100 L412; X15 9a; Phase uncertain*

101 Possible setting for a bar. Irregular, conoid form, rounded at the narrow end and with a groove around the wide end, which is concave. Flat on one side.
L115; S8 2; Phase 5

102 Conical plug, H.53mm, Diam. at base 40mm. Presumably the filling from a void.
L261; W8 3; Phase 5

16. Duncan and Moorhouse 1987, 137–8, No 250, Fig 71

Other objects

103 Ingot. Part of cast object with triangular section, surviving as a three-armed fragment, one arm being slightly curved. Broken off at one end and perhaps cut off at one and possibly both of the others. An incomplete rectangular stamp with an angel holding a balance survives on the broadest face (the opposite corner of the triangle has been flattened locally from this stamp).
The object is probably part of a complex grid-form ingot, a strake, which is more familiar in pewter or tin,[17] although as strakes were sold to plumbers and glaziers, lead would also be appropriate. The stamped device is presumably the archangel who holds a sword and a balance in the crest of the arms of the Plumbers' Company.[18] Compare the archangel holding a balance, stamped by the Company on lead weights in London in the 17th century to indicate an accurate metal content.[19] The present stamp was presumably to show that the Plumbers' Company had confirmed that the strake was of full weight and good quality metal.
Another strake fragment with a similar stamp (from a different punch) has been found in a Thames-foreshore deposit during excavation in a cofferdam at Vintry's in the City of London.[20]
L12; P/Q 15/16 16=G19**; Phase 4*

104 Possible ingot. Crude, cast subrectangular object with concave long sides, *c* 87 x 52 x 14mm, with casting seam from a two-part mould. One face has been cut smooth, but retains the original surface in a central depression. Weight 464.89 gms.
Probably an ingot; the trimming of one side suggests either a particular weight was needed, or the object was adapted for some specific purpose. The removal of small amounts of lead for soldering etc. seems an unlikely explanation because of the relative difficulty of cutting from the faces rather than from the sides.
Very few lead ingots attributable to the Tudor period are known; those that have been published are of a different form from **104**.[21]
**SF165; V8 5; Phase 5*

105–6 Possible plumb bobs. **105** is of H.50mm, Diam. 28mm at base and weight 138.23gm. The whole surface has been pared or smoothed. A ridge near the apex is probably where a loop has been broken off. Contains a piece of charcoal as inclusion. **106** is a crudely cut diamond-shaped piece of lead sheeting with twisted hook at one corner and with rough faces, and is possibly a makeshift plumb bob.
***105** L52; Q11 III 2; Phase 6. **106** L22; P/Q 15/16 16=**G19**; Phase 4*

Compare with the faceted 'sounding leads' in the arms of the Plumbers' Company.[22]

107 Cast conical object, H.45mm, Diam. at base 27mm, top apparently broken off. Trimmed at apex by a blade.
Weight 150.85gm. A polygonal item (interpreted as a weight) with a suspension loop at the top, was found in an early 16th-century context at Eltham Place (S. E. London) [23]
**SF292; W10 7; Phase 3*

108 Flat vessel lid. The major segment of a circle of Diam.45mm x 34mm across, with a rectangular tab horizontally holed for the iron rod of the hinge (now rusted). There are two concentric grooves close to the centre of the disc, and another near the circumference.
The discovery of this piece of pewterware in the Kitchen Court area may reflect a culinary use.
SF261; Y9 1; Phase 8

109 Crude container (?). Crudely cut irregular hexagonal sheet with rectangular tab on one side, folded or distorted so as to produce a dished profile. A white material (?plaster) adheres to the concave surface. Perhaps a very rough and ready container for the white material.
**L286; W13 1; Phase 8*

110–112 Musket balls. **110**, of Diam. 14mm, is distorted by two marks, possibly from impact. **111–12** are of Diam. 12mm. **112** has been gnawed by rodents.
***110** L21; P/Q 15/16 16=**G19**; Phase 4. **111** L41; Q8 1; Phase 8. **112** L181; U14 II/IV 1; Phase 8*

113–14 Buckles. **113** is a corroded, incomplete double oval frame, 20 x *c* 25mm. **114**, also corroded, is a circular frame of Diam.15mm, with traces of an iron pin.
****113** L252; W5ext 5=**G5**; Phase 4. **114** L42; Q8 1; Phase 8*

These are both standard forms for shoe buckles from the late 14th to the 16th century.[24]

17. Bromley and Child 1960, 199–200; (cf the version in the Pewterers' Company arms of 1533). Michaelis 1955, 96
18. ibid. 200–5; the arms were formally granted in 1588, though this device may have been used by the Company prior to this date
19. Le Cheminant 1979, 281 and 291
20. VHA 89 Acc. no 910; see Egan 1996, 84, Fig 1A
21. Dunning 1952, 199–202
22. Bromley and Child 1960, 205
23. Woods 1982, 259 and 263, Fig 30, No 51
24. cf for **113** Egan and Pritchard 1991, 86–7, Nos 350–375, Fig 53; for **114**, *idem*. 61–64, Nos 115–210, Fig 39

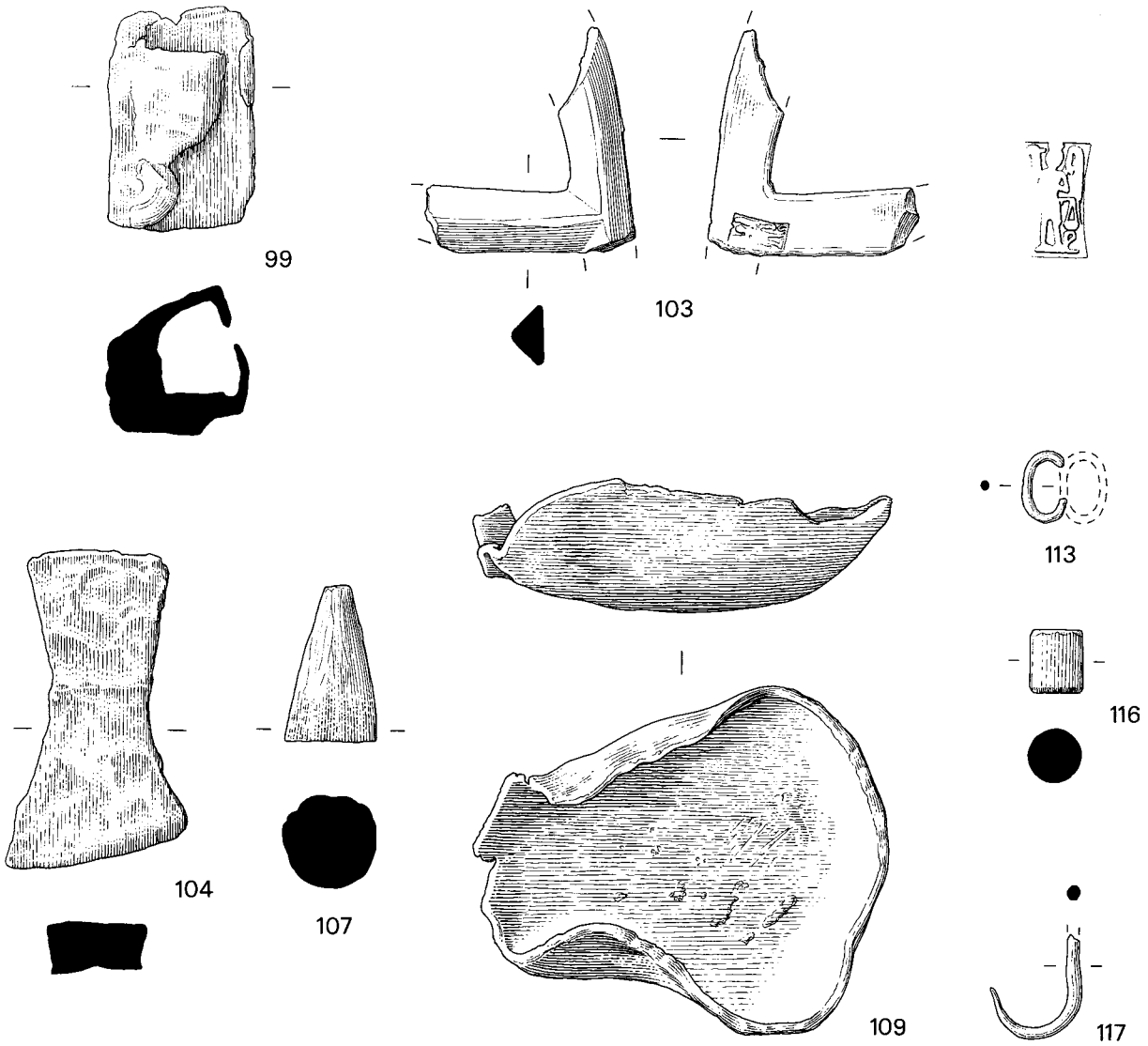


Fig. 162 Lead: architectural and other fixtures, ***99****; other objects,* ***103–4****,* ***107****,* ***109****,* ***113****,* ***116–17*** *(1:2, except mark on* ***103****, 1:1).*

115 Stylus. Cast rod, L.63mm, with one end pared to a point, broken off at the other. Perhaps used for ruling lines etc. on masonry during construction or repair.[25] Cf. Window Lead **430**.
*L265; W8 4=**G6/7**; Phase 4*

116 Very regular rod, Diam. 14mm, L.17mm. Slightly abraded around circumference at each end.
L441; Y4 32=Well**; Phase 4*

117 Rod, Diam.3mm, with one end tapered, and perhaps broken off at the other. The surface appears to have been pared all over lengthways by a blade. Too narrow to be a pencil; function unknown.
**L449ii; Y5 I/II 2; Phase 6*

118 Elongated arrow-shaped object, L.100mm, apparently cast. Filed towards pointed end.
L51; Q10 III 6; Phase 5

Waste

119 Casting sprue, L. *c* 105mm. Irregular strip with 13 clipped stubs, which are at most *c* 10mm apart.

25. cf Courtney 1989, 128 and 130, lead No 2, Fig 22, with references

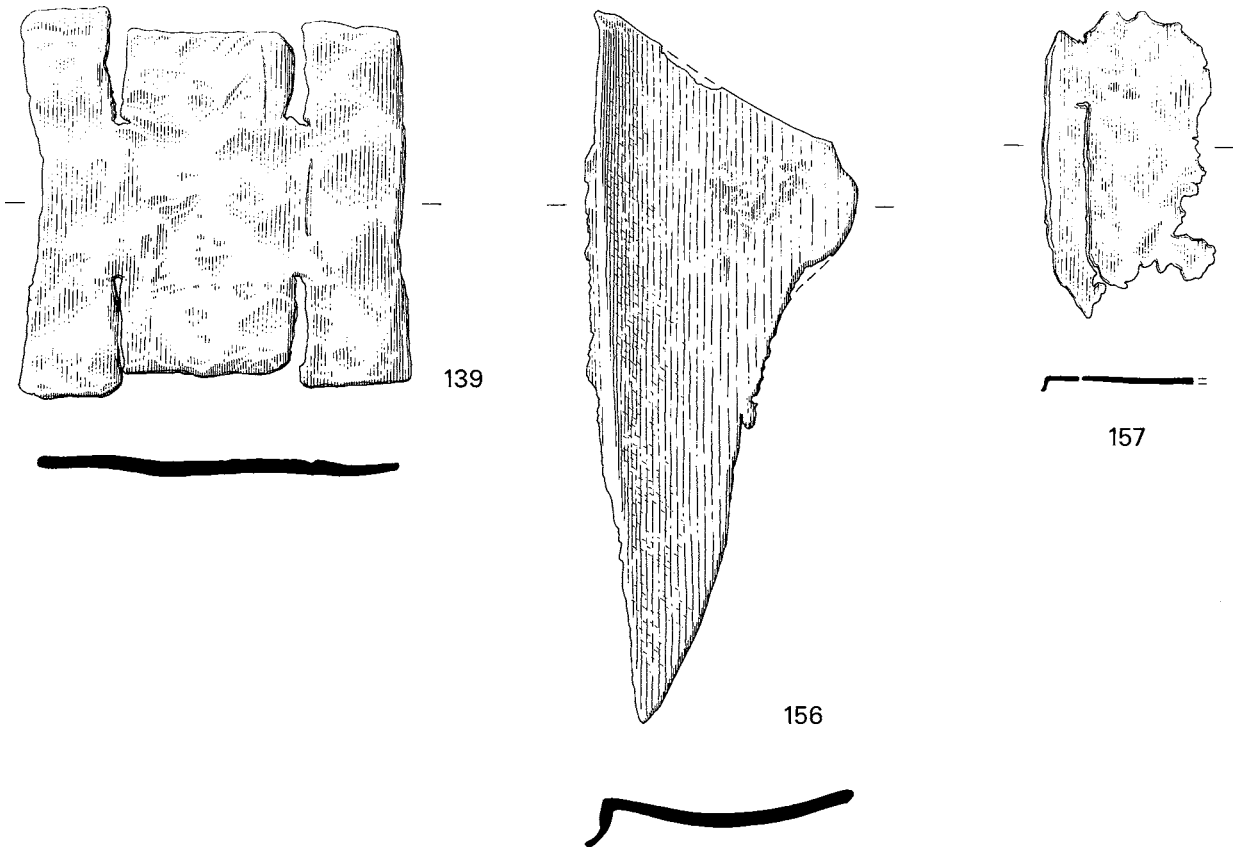


Fig. 163 Lead: waste, ***139, 156–7*** *(1:2).*

There is no category of object among the lead finds from the site which would obviously have been connected to waste of this kind: the musket balls (**110–12**) are too large, while it seems improbable that cames would have had such narrow sprues.
L45; Q9 I 4; Phase 5

120 Casting waste. Diamond-sectioned strip, L. 31mm, with flange at one corner. Cut off at one, perhaps both ends.
L313; X4 11; Phase 5

121–159 Sheet offcuts of various shapes. **121–155** have smooth faces and vary in size from 21 x 21mm to 190 x 50mm. **156–159** have rough, uneven faces and vary in size from 68 x 55mm to 187 x 70mm. **116** has crude multiple piercing along one side, and **119** has incised zig-zag and herringbone lines. **124**, at 6mm, is the thickest of the sheeting offcuts. **136** has parallel scoring on one face.

121–155 *Phase 3:* ***121*** *L471; CH XX 2.* ***122*** *L277; W10 7.* ***123*** *L314; X5 I/II 4.*
Phase 4: ***124*** *L24; P/Q 15/16 16=**G19**.* ***125*** *L23; P/Q 15/16 16=**G19**.* ***127*** *L158; U8 2b=**Great cellar**.* ***128*** *L160; U8 2b=**Great cellar**.*
Phase 5: ***126*** *L147; U1 6.* ***129*** *L77; P/Q 15/16 8.* ***130*** *L96; R8 6.* ***131*** *L98; R8 6.* ***132*** *L144; U1 2.* ***133*** *L304; W15 4.* ***134*** *L312; X4 11.* ***135*** *L326i; X7 6.* ***136*** *L326ii; X7 6.* ***137*** *L359; X10 III 5.* ***138*** *L368; X14 4.* ****139*** *L377; X14 4a=**D2**.* ***140*** *L428 i; X15 III 2.*
Phase 6: ***141*** *L68; P/Q 15/16 4.* ***142*** *L74ii; P/Q 15/16 5.* ***143*** *L10; P/Q 15/16 12.* ***144*** *L11i; P/Q 15/16 12.* ***145*** *L11ii; P/Q 15/16 12.* ***146*** *L121; U1 2.* ***147*** *L182; UV 14 II/IV 2.* ***148*** *L282; W11 7a.* ***149*** *L464; CH VI 2.*
Phase 8: ***150*** *L152; U7 1.* ***151*** *L193; V8 1.* ***152*** *L302; W15 IV 1.* ***153*** *L358; X10 III 1.* ***154*** *L469; CH XVIII 1.* ***155*** *L310; X4 5*

156–159 *Phase 4:* ****156*** *L215; W1 5d=**G2***
Phase 5: ****157*** *L308; X4 3.* ***158*** *L439; Y4 31*
Phase 6: ***159*** *L169 U11 II/IV 3*

160–184 Sheet offcuts (small trimmings).
Phase 4: ***160*** *L18iii; P/Q 15/16=**G19***
Phase 5: ***161*** *L31ii; P/Q 15/16 17=**SA F**.* ***162*** *L470iv; CH XVIII 2.* ***163*** *L4iii; P/Q 15/16 6a.* ***164*** *L95ii; R8 6.* ***165*** *96ii; R8 6.* ***166*** *L105iii; R15 4.* ***167*** *L231ii; W4 II/IV 3.* ***168*** *L334ii; X7 7.* ***169*** *L336iv; X7 7.* ***170*** *L367iii; X14 4.* ***171*** *L370iv; X14 4.* ***172*** *L378iv; X14 4a=**D2**.* ***173*** *L418iv; X15 10=**D2**.* ***174*** *L430ii; X15 IV*

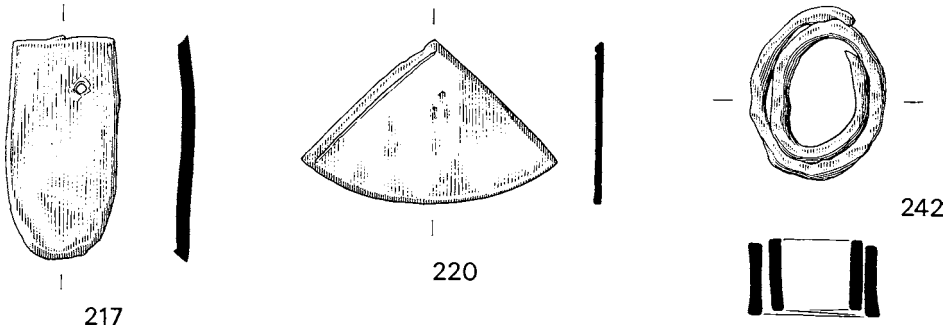


Fig. 164 Lead: architectural fixtures from the Banqueting House, ***217, 220****; waste from the Banqueting House,* ***242*** *(1:2).*

3. ***175*** *L438iii; Y4 29.* ***177*** *L383ii; X14 5.* ***180*** *L409ii; X15 9*
Phase 6: ***176*** *L74; P/Q 15/16 5.* ***178*** *L401iv; X15 5a.* ***179*** *L403v; X15 5a*
Phase 8: ***181*** *L427ii; X15 II 1;* ***182*** *L451; Y6 2.*
Phase uncertain: ***183*** *L35iii; P/Q 15/16 19.* ***184*** *L360iii; X11 I/II 2*

185–212 Irregular trimmings from sheeting.
Phase 3: ***185*** *L6; P/Q 15/16 9.* ***186*** *L145; U1 3.* ***187*** *L168; U10 II/IV 3.* ***188*** *L170; U12 II/IV 3.* ***189*** *L171; U12 II/IV 3.*
Phase 5: ***190*** *L?4i; P/Q 15/16 6a.* ***191*** *L95i; R8 6.* ***192*** *L136; T15 IV 2a (two pieces).* ***193*** *L139; T15 IV 2d=****SA D****.* ***194*** *L275i; W10 4a.* ***195*** *L298; W15 III 3.* ***196*** *L438i; Y4 29.* ***200*** *L197; V8 5*
Phase 6: ***197*** *L??; P/Q 15/16 12i.* ***198*** *L166; U10 II/IV 2 (rolled into a circle).* ***199*** *L189; V4 I/II 2.* ***201*** *L295; W15 2a.* ***202*** *L318; X5 III/IV 2.* ***203*** *L360i; X11 I/II 5.* ***204*** *L384i; X14 5.* ***205*** *SF12; Y5 I/II 2.* ***206*** *L449i; Y5 I/II 2.* ***207*** *L458; Y8 2*
Phase 8: ***208*** *L162; U8 I/II 1.* ***209*** *L163; U8 I/II 1.* ***210*** *L170; U12 II/IV 1.* ***211*** *L434; Y4 1*
Phase uncertain: ***212*** *L281; W11 6*

213 Group of flimsy and irregular spirals and curved pieces; probably trimmings.
*L26; P/Q 15/16 16=****G19****; Phase 4*

214–215 Runnels. **214** is in two pieces.
214 *L128; T7 III 4=****G26****; Phase 4.* ***215*** *SF210; V14 1; Phase 8*

ii. CATALOGUE: THE BANQUETING HOUSE

Architectural and other fixtures

216–217 Subrectangular sheeting fixtures. **216**, *c* 85 x *c* 25mm, is hammered on one face near a hole for a nail. **217**, 58 x 30mm, has a rounded end and one hole for a nail, and like **88**, above, was possibly cut around the nail from a larger piece during the retrieval of lead for recycling.
216 *L511; D6 IV 6; BH Phase 5.* ****217*** *L533; E6 II 2; BH Phase 5*

218–220 Settings for bars etc. **218** is a possible setting for a rectangular object *c* 7 x 30mm and another object within a rectangular void. **219** is a possible setting from a flat-bottomed or flat-sided void with a subsidiary channel off at a right-angle. **220** is a quadrant of a circle of Diam. 48mm, with a scored line along one side.
218 *L493; D5 IV 5; BH Phase 4.* ***219*** *L502 D6 II 4; BH Phase 4.* ****220*** *L504; D6 III 7; BH Phase 4*

Waste

221–243 Sheet offcuts, ranging in size from 125 x 37mm to 28 x 17mm. **221–2** have smooth faces, **223–243** have rough, uneven faces. **224–5** are scored along one side, and **236** on one face. **242** is a strip 18mm wide, rolled into a spiral.
221 *L524; E5 II 4; BH Phase 5 or 2.* ***222*** *H4/5 1; BH Phase 7.*
BH Phase 2: ***223*** *L472; BC 6 4.* ***224*** *L497; D6 I 4.* ***225*** *L545i; F6 I 3.* ***226*** *L545ii; F6 I 3*
BH Phase 3: ***227*** *L478; D5 I 2.* ***228*** *L503; D6 II 6.*
BH Phase 4: ***229*** *L513; D6 IV 7.* ***230*** *L514; D6 IV 7.* ***231*** *L540; E6 N/S Blk 3.* ***232*** *L532; E6 I 4.* ***233*** *L538; E6 IV 7.*
BH Phase 5: ***234*** *L482; D5 II 3.* ***235*** *L520; E5 I 2* ***236*** *L522i; E5 II 2.* ***237*** *L522ii; E5 II 2.* ***238*** *L531ii; E5 IV 4.* ***239*** *L549; F7 IV/G7 III 2.*
BH Phase 6: ***240*** *L508; D6 IV 4.* ***241*** *L509; D6 IV 4.* ****242*** *L489; D5 IV 4.* ***243*** *L547; FG6 2.*

244–5 Sheet offcuts (small trimmings).
244 *L539iii; E6 IV 7; BH Phase 4.* ***245*** *L534; E6 III 2; BH Phase 5.*

246–278 Irregular trimmings from sheeting. **259** has a cast flange along one side.
BH Phase 2: ***246*** *L516; E4 III 3.* ***247*** *L543i; F3 IV 6* ***248*** *L547i; FG6 3.* ***249*** *L542; F3 IV 6 (three pieces).* ***250*** *L544; F5 II/III 2.* ***251*** *L550; G4 8*
BH Phase 3: ***252*** *L477; D5 IV 5*
BH Phase 4: ***253*** *L490; D5 IV 5.* ***254*** *L492; D5 IV 5.* ***255*** *L496; D5/6 3.* ***256*** *L500; D6 II 4.* ***257*** *L512; D6 IV 7.* ***258*** *L519; E5 I 3.* ***259*** *L520; E5 I 5.* ***260*** *L523; E5 II 3.* ***261*** *L541i; E6 N. Blk 3.* ***262*** *L540; E6 I/IV 3.* ***263*** *L539i-iv; E6 IV 7.*
BH Phase 5: ***264*** *L476i-ii; D5 3 (two pieces).* ***265*** *L481i-ii; D5 II 3 (two pieces).* ***266*** *L482i; D5 II 3.* ***267*** *L487; D5 III 4.* ***268*** *L506; D6 III 2.* ***269*** *L535; E6 III 6 (six pieces).* ***270*** *L536; E6 IV 2 (two pieces).* ***271*** *L537i-ii; E6 IV 6.* ***272*** *L548; FG6 7 (five pieces)*
BH Phase 6: ***273*** *L525; E5 III 2*
BH Phase 7: ***274*** *L499; D6 II 1.* ***275*** *L507; D6 IV 1.* ***276*** *L546; FG6 1.* ***277*** *L551; BV VIIIext 1*
BH not phasable: ***278*** *L474; C7 III 2*

13

WINDOW LEAD

by Geoff Egan

(Figs 165–7; Table 28)

i. Introduction

Window lead is by far the most extensively represented category of the metal finds from Nonsuch, several hundred fragments having been recovered. The great majority of these come from demolition and later contexts, from both the palace and Banqueting House. A small amount was also recovered from the construction phases of both buildings and from the earlier Cuddington Church.

Five basic forms of window lead occur (**A**-**E**). A number of deposits produced several of these forms in association. The comprehensiveness of the demolition of Nonsuch has ensured a complete absence of leads in primary situ in the structures. As a result, no attempt can be made to relate a particular form to programmes of repair and alteration to the palace.

Two plain, relatively thick, cast cames with lozenge-section flanges (**1**–**2**) are in the medieval tradition (form **A**).[1] **1** derives from Cuddington Church and **2** from the palace construction. There are also a variety of lighter leads, milled in vices after initial casting (forms **C**-**E**). This more economical use of metal is characteristic of the post-medieval tradition. Lightweight leads which lack the reeding usual on milled pieces may be an early milled variety (form **B**).[2] Elsewhere in England rubble from ecclesiastical buildings demolished during the Dissolution in the 1530s has produced only cast cames, whilst milled leads with reeding can be dated to the early seventeenth century onwards. This leaves a period of over half a century during which developments are less certain.[3]

Leads of each of forms **B**-**E** were found in occupation and demolition contexts at both the palace and Banqueting House. One piece of unmilled form **B** lead (**3**) is attributed to a pre-palace, Cuddington, context. One piece of milled form **C** (**121**) is attributed to the palace construction phase, as are three pieces of milled form **D** (**165**–**7**) and seven of form **E** (**283**–**9**), also milled. These items seem to be the earliest evidence in the country so far for the milling method of producing reeded leads.

Minor variations in reeding may have resulted from the use of different vices, or of different force and speed using the same vice, during the milling process.[4] The highest reeding count per

1. cf. Knight 1985, type A
2. cf. Knight 1985, type D, one piece of which was found at Battle Abbey in an early fifteenth-century context (1985, 154–56)
3. Knight 1983–4, 49–51
4. Barry Knight pers. comm

10mm for each of forms **C**-**E** is the closest indication of the pattern of lines on the vice wheels which produced these leads. The leads defined here as form **C** exhibit a notable range of variability, and may comprise the products of more than one similar wheel or vice. The contemporaneous use of vices from a single source would be appropriate for a major phase of installation, such as the primary construction of the palace.

On the basis of routine examination, none of the milled leads appears to bear an inscription giving date of manufacture and maker. Inscribed leads, which were produced from at least the early seventeenth century, have been found at Oatlands Palace nearby, although there they are dated 1723, somewhat later than the demolition of Nonsuch.[5]

Of particular interest among the Nonsuch leads are fragments of very thick cames which would require milling prior to use (**385–8**). These indicate that milling was carried out on the site – the scale of the enterprise (whether for primary construction or repairs) being sufficient to make local manufacture a reasonable expedient – and was almost an aspect of estate management. The casting of cames could also have taken place on the site, but no moulds or obvious miscastings were recovered to provide confirmation. A fragment of an ingot (see **103**, above p 346) and some of the other casting waste could be connected with this primary process, but in no specific instance is this certain. Other leadworking could readily account for their presence.

In this consciously prestigious large-scale construction project, the Continental architectural style of the palace was accompanied by the new technology for window-lead production, developed abroad, of milling with toothed vice wheels. It is remarkable that all three of the main forms of milled lead identified at the palace (forms **C**-**E**) were present from its beginning, and that there is no clear evidence for the use of other forms of vice wheel throughout the period of maintenance (unless any of the few suggested variants were in fact produced by different forms of wheel). The implication may be that only three vices with toothed wheels and one with plain wheels (for form **B**) were used during the initial construction, and that some or all of these vices were kept at the palace to produce any leads needed for maintenance during the next century, or more (over 1,300 feet [*c* 400 m] of window lead was repaired or replaced in the mid 1660s[6]). Given the quantity of the Nonsuch data, it is unfortunate that it appears impossible to date more closely the cessation of production of leads of any of forms **B** to **E** during the period that the palace was maintained.

The measured weights of the various forms of window lead make clear the relative heaviness of the cast 'medieval' cames (form **A**) compared with the milled leads (forms **B**-**E**), which fall fairly closely together. (Although the heaviest of these, form **B**, is also thought to be typologically the earliest, it must be emphasised that the excavated evidence does not indicate any difference in the date of the use of forms **B**-**E**). The unmilled waste is more than twice as heavy as the form-**A** cames. The following figures (Table 28), each of which has been calculated for a nominal length of 10mm, cannot be considered precise, owing to differential corrosion and the unevenness of the ends of the pieces weighed. Two different figures were obtained for form **B**, from lengths selected because they appear to represent the extremes of variation observed within that form.

A few further features among the window lead can be mentioned. Ties soldered at the joins of two or more leads were used for attaching them to iron window bars. Ties are of a specially cast D-section form, and there are also examples apparently made from knife-trimmed, approximately lozenge-section, flanges of unmilled cames (cf. form **A**, although the trimmed ties are generally of neater outline). In three cases the two ends have been neatly spiralled for decorative effect (e.g. **420**).

5. Egan *et al* 1986, 305, No 7

6. Dent 1981, 202

Form	Catalogue no.	Weight (gm)
A	2	13.90
B	25	9.66
	23	10.80
C	137	7.99
D	200	8.22
E	323	7.54
unmilled waste	338a	33.59

Table 28. Window lead: measured weights per nominal 10 mm length of Forms A-E and unmilled waste.

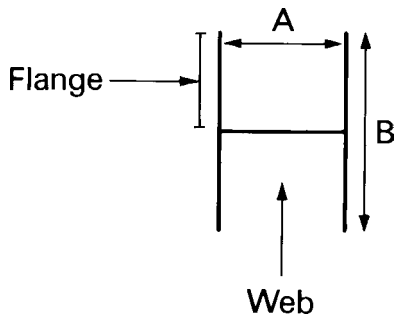


Fig. 165 Window lead: diagram illustrating dimensions given in the catalogue.

Some leads of types **B**, **D** and **E** have had both flanges along one side trimmed off, making a U section rather than the usual H-shaped one. These were presumably for use along the edge of a light (e.g. **293** etc., form **E**). Other edges seem not to have been treated in this way (e.g. **311–2**, also of form **E**). There is a variation on this practice in **208–9**, where only one flange has been removed along the outside of what was probably a hinged, rectangular quarry for opening for ventilation. No parallel is known; at Hampton Court and elsewhere, decorative openwork lead panels set in walls served a similar function but without provision for closure against inclement weather.[7] While the majority of joins between leads are, as usual, effected with solder (**28** is a neat example), at least one angle was formed by folding a single length (**180**).

Two leads have had the flanges folded over, apparently by rolling, to make a cylindrical, rod-like section (**238** has been only partially treated in this way). There is no obvious functional explanation, and the practice may have been a way of idling away the time.

A few quarries survive in a complete enough state to indicate their shape and configuration within lights, and there is also a limited amount of glass still in place, almost all colourless/greenish. Diamond-shaped quarries (with triangular ones at the edges of the lights) and rectangular quarries are in the majority among the surviving material (**53** being smaller than the others of this shape). Rounded shapes are also present, including a more complex outline with surviving blue glass (**384**, possibly from a heraldic light; the lead is of indeterminate form). The rectangular, opening quarry noted above (**208–9**) is another form. There are hints of further variations in some much smaller, triangular pieces of glass, **134**, **382**, **383**. The first two of these are so tiny that they must have been part of some larger pattern to have been worth using at all.

Dimensions of leads are given as A x B (Fig 165), with the number of milled reeds per 10mm noted in brackets. Most counts are from a 5mm length.

ii. CATALOGUE

1–2 (Form A)

Cast cames with lozenge-shaped flanges, *c* 8 x 3mm; crudely produced. They are unlikely to be waste from the production of lozenge-section ties, as those are more neatly made. Both cames are presumably of medieval date. **1** certainly, and **2** probably, derive from Cuddington church, although **2** was recovered from a palace construction level.

Palace

1 *L463; CH V 5; Phase 2.* ****2*** *L462; CH II 3; Phase 3*

7. eg Knight 1985, 154–5, Nos 1A and B

3–120 (Form B)

Thin leads, lacking reeding, but possibly milled; some voids from bubbles in the web during casting; usually *c* 4 x *c* 6mm. Sometimes found completely flattened.

At least one lead of form **B** was found in a Cuddington context (**3**). The majority are from the main palace and the Banqueting House. They include joins for diamond-shaped quarries, such as **75**; **53** retains the glass, which measures 32 x 26mm, while **113** and **116** have triangular glass from the edges of the lights, respectively *c* 55 x *c* 50mm and *c* 25 x *c* 20mm. There are also right-angled joins for rectangular quarries (**28** and **37**). Leads **3**, **11**, **17** and **94** are somewhat wider at 5mm, and are also slightly heavier that the others of this group, while **101** is slightly narrower. The two flanges in **59** have been removed along one side for the edge of a light. **9** comprises a lead of form **B** soldered at a join between quarries to three leads of form **E**.

Palace

Phase 2: ***3*** *L38; Q5 7*
Phase 3: ***4*** *L465i; CH XI 5.* ***5*** *L408i; X15 7.*
Phase 4: ***6*** *L14i; P/Q 15/16 16=**G19**.* ***7*** *L16ii; P/Q 15/16 16=**G19**.* ***8*** *L20; P/Q 15/16 16=**G19**.* ***9*** *L127ii; T7 III 3=**G26**.* ***10*** *L157i; U8 2b=**Great cellar**.* ***11*** *L159i; U8 2b=**Great cellar**.* ***12*** *L235i; W4 II/IV 7=**G4**.* ***13*** *L237i; W4 II/IV 7=**G4**.* ***14*** *L238i; W4 II/IV 7=**G4**.* ***15*** *L240i; W4 II/IV 7=**G4**.* ***16*** *L241i; W4 II/IV 7=**G4**.* ****17*** *L242i; W4 II/IV 7=**G4**.* ***18*** *L266; W8 5=**G6/7**.* ***19*** *L267; W8 7=G6/**Great cellar**.*
Phase 5: ***20*** *L81i; P/Q 15/16 6.* ***21*** *L82i; P/Q 15/16 6.* ***22*** *L84i; P/Q 15/16 6.* ***23*** *L7; P/Q 15/16 6.* ***24*** *L62i; Q14 III 5=**SA G**.* ***25*** *L55i; Q14 III 5; Phase 5=**SA G**.* ***26*** *L106; R15 4.* ***27*** *L165; U10 5.* ****28*** *L209i; W1 3.* ***29*** *L225; W4 3a.* ***30*** *L226; W4 3b.* ***31*** *L229i; W4 II/IV 2.* ***32*** *L230i; W4 II/IV 3.* ***33*** *L231i; W4 II/IV 3.* ***34*** *L232i W4 II/IV 3a.* ***35*** *L244; W5 7.* ***36*** *L248i; W5ex 2a.* ***37*** *L258i; W6ex 2 2;* ***38*** *L297; W15 4.* ***39*** *L309i; X4 4.* ***40*** *L319i; X5 II/IV 6.* ***41*** *L333i; X7 7.* ***42*** *L336i; X7 7.* ***43*** *L344; X8 2.* ***44*** *L345; X8 2.* ***45*** *L346; X8 2.* ***46*** *L351; X8 2.* ***47*** *L352i; X8 2.* ***48*** *L353i; X8 2.* ***49*** *L354i; X8 2.* ***50*** *L355i; X8 2.* ***51*** *L378i; X14 4a=**D2**.* ***52*** *L379i; X14 4a=**D2**.* ****53*** *L3147; X15 10=**D2**.* ***54*** *L413i; X15 10=**D2**.* ***55*** *L414i; X15 10=**D2**.* ***56*** *L415i; X15 10=**D2**.* ***57*** *L418i; X15 10=**D2**.* ***58*** *L419i; X15 10a=**D2**.* ***59*** *L420i; X15 10a=**D2**.* ***60*** *L421i; X15 10a=**D2**.* ***61*** *L423i; X15 10a=**D2**.* ***62*** *L426i; X15 10b=**D2**.* ***63*** *L429; X15 IV 3.* ***64*** *L430i; X15 IV 3.* ***65*** *L431; X15 IV 6.* ***66*** *L437; Y4 14;* ***67*** *L450; Y4 III/IV 4.* ***68*** *L454i; Y7 4.* ***86*** *L380; X14 5.* ***87*** *L382; X14 5.* ***88*** *L389i; X14 5.* ***89*** *L391; X14 5.* ***90*** *L392i; X14 5.* ***91*** *L394i; X14 5.* ***96*** *L404; X15 9.* ***98*** *L410i; X15 9.*
Phase 6: ***69*** *L67i; P/Q 15/16 4.* ***70*** *L72i; P/Q 15/16 5.* ***71*** *L73i; P/Q 15/16 5.* ***72*** *L74i; P/Q 15/16 5.* ***73*** *L79i; P/Q 15/16 7.* ***74*** *L56; Q14 III 2.* ***75*** *L141i; T15 IV 2.* ***76*** *L195i; V8 2.* ***77*** *L254; W6 2c.* ***78*** *L362; X14 3.* ***79*** *L363; X14 3.* ***80*** *L364; X14 3.* ***81*** *L366i; X14 4.* ***82*** *L367i; X14 4.* ***83*** *L369i; X14 4.* ***84*** *L370i; X14 4.* ***85*** *L372; X14 4.* ***92*** *L398; X15 5.* ***93*** *L401i; X15 5a.* ***94*** *L402i; X15 5a.* ***95*** *L403i; X15 5a.* ***97*** *L409i; X15 5.*
Phase 8: ***99*** *L1i; P/Q 15/16 1.* ***100*** *L2; P/Q 15/16 2.* ****101*** *L?; U16 I/II 1.* ***102*** *L190; V8 1.* ***103*** *L293i; W15 1.* ***104*** *L340; X8 1.* ***105*** *L343; X8 1.*
Phase uncertain: ***106*** *L466; CH XI 34.* ***107*** *L467; CH XI 46.* ***108*** *L468; CH XI 46.* ***109*** *L161; U8 6.* ***110*** *L357; X8 7.* ***111*** *L360i; X11 I/II 2.*

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BH Phase 2: ***112*** *L473i; BC6 2.*
BH Phase 3: ***113*** *L514; E5 III 8.* ***114*** *L529; E5 III 8.*
BH Phase 4: ***115*** *L528; E5 III 7.* ***116*** *L565i; E6 I 4.*
BH Phase 5: ***117*** *L486i; D5 III 3.* ***118*** *L510; D6 IV 5.*
BH Phase 6: ***119*** *L526; E5 III 2.*
BH Phase 7: ***120*** *L518; E5 I 1.*

121–64 (Form C)

Milled, reeding slightly more widely spaced on one side of web than the other, *c* 4 x *c* 7mm (7 reeds per 10mm). There are several variants in reeding, and some leads measure 3mm x up to 8 or as little as 5mm. Leads of form **C** were found in contexts relating to the construction of the palace (**121**), as well as to the occupation and demolition of the main building and the Banqueting House.

121 has joins of three leads *c* 70mm+ apart, presumably for rectangular quarries, and **134**, **152** and **155** have joins for four leads. Variations in the marks from milling include shorter, less prominent transverse ridges between the usual reeding, for example on **132**, while **128** and **156** have the reeding along one side spaced very unevenly.

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Phase 3: ***121*** *L272i; W10 3*
Phase 4: ***122*** *L19; P/Q 15/16 16=**G19**.* ****124*** *L268; W8 7*
Phase 5: ***125*** *L470i; CH XVIII 2.* ****126*** *L4i; P/Q 15/16 6a.* ***123*** *L31; P/Q 15/16 17.* ***127*** *L40i; Q7 III 3.* ***128*** *L91; R8 7.* ***129*** *L96i; R8 6.* ***130*** *L104i; R15 4.* ***131*** *L105i; R15 4.* ****132*** *L123i; T1 5.* ***133*** *L173; U14 4.* ***134*** *L188i; V2ext 3.* ***135*** *L224; W4 3.* ***136*** *L227; W4 4.* ****137*** *L248ii; W5ext 2a.* ***138*** *L255i; W6 3.* ***139*** *L309ii; X4 4.* ***140*** *L327; X7 6.* ***141*** *L331i; X7 7.* ***142*** *L361; X14 2.* ***143*** *L366ii; X14 4.* ***144*** *L378ii; X14 4a=**D2**.* ***145*** *L413ii; X15 10.* ***146*** *L423ii; X15 10a.* ***147*** *L461; Z5 I/II 3.* ***153*** *L384i; X14 5.* ***154*** *L386; X14 5.* ***159*** *L410ii; X15 9*
Phase 6: ***148*** *L69i; P/Q 15/16 4.* ***149*** *L84ii; P/Q 15/16 4.* ***150*** *L80i; P/Q 15/16 7.* ***151*** *L8i; P/Q 15/16 12.* ***152*** *L292; W4 I/IV 2.* ***155*** *L400; X15 5.* ****156*** *L401ii; X15*

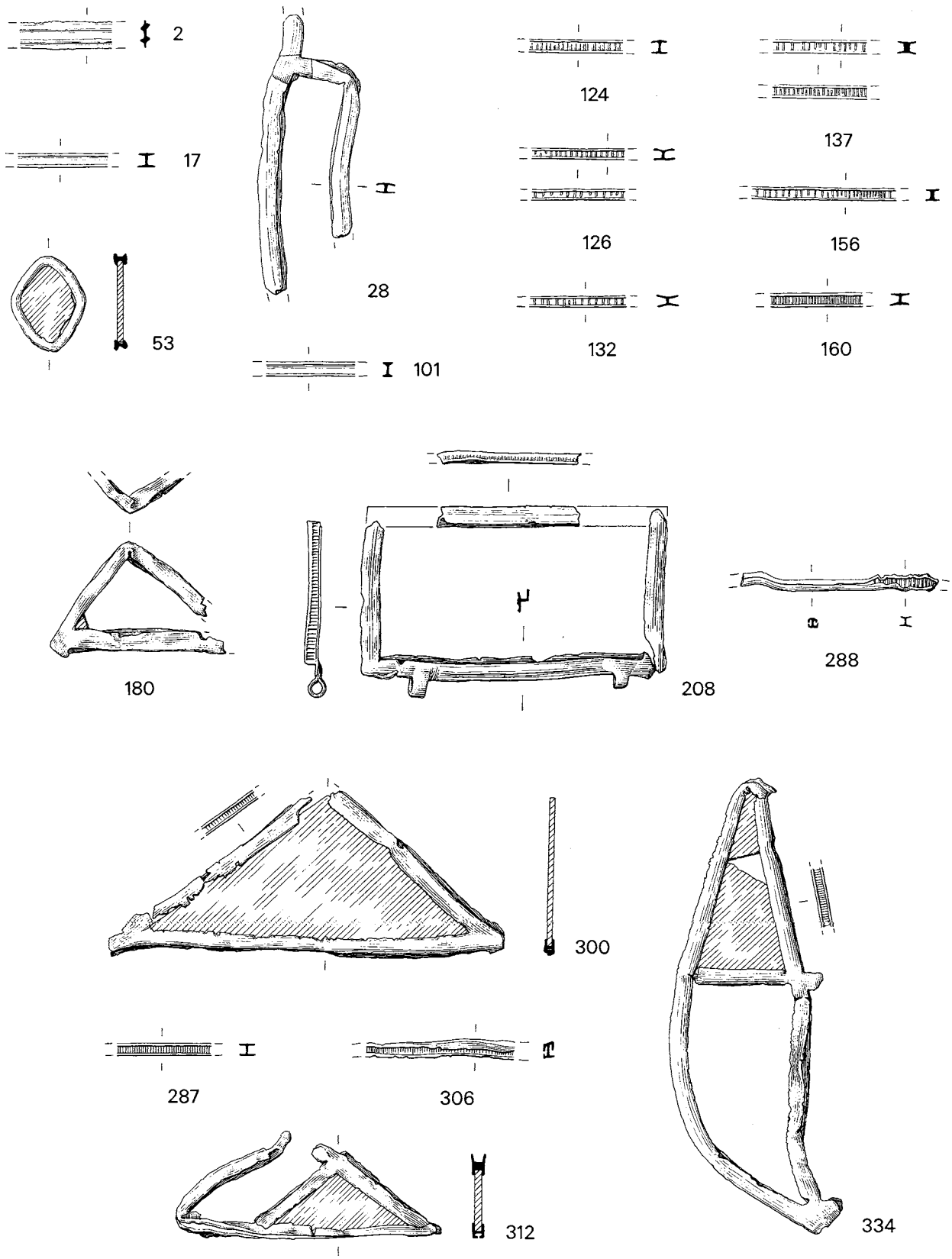

Fig. 166 Window lead: ***2, 17, 28, 53, 101, 124, 126, 132, 137, 156, 160, 180, 208, 287–8, 300, 306, 312, 334*** *(1:2).*

5a. ***157*** *L402ii; X15 5a.* ***158*** *L303ii; X15 5a.*
Phase 7: ****160*** *L287; W13 5*
Phase 8: ***161*** *L43; Q8 1*
Phase uncertain: ***162*** *L35ii; P/Q 15/16 19*

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BH Phase 4: ***163*** *L517; E5 3. BH Phase 5:* ***164*** *L498; D6 I 1.*

165–282 (Form D)

Milled, regularly spaced reeding: some leads are very corroded; *c* 4 x *c* 6mm (some 12, usually 10–-11 reeds per 10mm).

Leads of form **D** were found in contexts relating to the main palace building, including its construction (**165–7**), and the Banqueting House. Several joins of three and four leads survive. Leads **205**, **252–3** and **256** are for triangular quarries from the edges of lights, and glass of this shape is retained in **190**, **184** and **272** (all *c* 25 x 25mm). Lead **188** has a join of three leads ?at right angles, while **177** has two joins of four leads *c* 80mm apart. **180** is folded to form a right-angled corner, which retains a fragment of glass. Both flanges have been cut off along one side of **226**, **233**, **239** and **257** for the edges of lights, and **208–9** have one flange only trimmed off, for a hinged, rectangular opening quarry. Leads **187** and **224** have less evenly spaced reeding than the majority of this form. There are D-section ties on **214** and **219**. Lead **185** has been rolled to form a rod prior to being discarded, and part of **238** has been treated in the same way.

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Phase 3: ***165*** *L6i; P/Q 15/16 9.* ***166*** *L256; W6 7.* ***167*** *L408ii; X15 7.*
Phase 4: ***168*** *L14ii; P/Q 15/16 16=**G19**.* ***169*** *L15; P/Q 15/16 16=**G19**.* ***170*** *L16i; P/Q 15/16 16=**G19**.* ***171*** *L17; P/Q 15/16 16=**G19**.* ***172*** *L18i; P/Q 15/16 16=**G19**.* ***173*** *L19ii; P/Q 15/16 16=**G19**.* ***174*** *L20ii; P/Q 15/16 16=**G19**.* ***175*** *L25i; P/Q 15/16 16=**G19**.* ***176*** *L28; P/Q 15/16 16=**G19**.* ***177*** *L30; P/Q 15/16 16=**G19**.* ***179*** *L85ii; P/Q 15/16 6b.* ****180*** *L109; S1 12=**G31**.* ***181*** *L111; S1 13=**G31**.* ***182*** *L114; S1 14=**G31**.* ***183*** *L127i; T7 III 3=**G26**.* ***184*** *L553; T7 III 3=**G26**.* ***185*** *L157ii; U8 2b=**Great cellar**.* ***186*** *L159ii; U8 2b=**Great cellar**.* ***187*** *L267ii; W8 7=**6/Great cellar**.* ***188*** *L269; W8 7=**G6/Great cellar**.*
Phase 5: ***189*** *L469; CH XVIII 2.* ***190*** *L564; CH XVIII 2.* ***191*** *L82; P/Q 15/16 6.* ***192*** *L76; P/Q 15/16 8.* ***178*** *L31; P/Q 15/16 17.* ***193*** *L61i; Q14 III 5=**SA G**.* ***194*** *L87i; 8 3.* ***195*** *L89; R8 3.* ***196*** *L95i; R8 6.* ***197*** *L97; R8 6.* ***198*** *L100; R8 10.* ***199*** *L105ii; R15 4.* ***200*** *L122; T1 3.* ***201*** *L130; T8 2a.* ***202*** *L150; U2 II/IV 2.* ***203*** *L155; U8 2a.* ***204*** *L176i; U14 4.* ***205*** *L188ii; V2ext 3.* ***206*** *L207; V15 III/IV 2.* ***207*** *L209ii; W1 3.* ****208*** *L212; W1 5b.* ***209*** *L213; W1 5b.* ***210*** *L212a; W1 5c.* ***211*** *L216; W2 2.* ***212*** *L220; W3 4.* ***213*** *L249; W5ext 2a.* ***214*** *L258ii; W6ext 2 2.* ***215*** *L259i; W6ext2.* ***216*** *L263; W8 3.* ***217*** *L300; W15 III 4.* ***218*** *L306i; W15 IV 3.* ***219*** *L309iii; X4 4.* ***220*** *L320; X5 III/IV 19.* ***221*** *L329i; X7 7.* ***222*** *L331; X7 7.* ***223*** *L334; X7 7.* ***224*** *L338ii; X7 7.* ***225*** *L355ii; X8 4.* ***226*** *L378iii; X14 4a=**D2**.* ***227*** *L379ii; X14 4a=**D2**.* ***228*** *L397; X15 10=**D2**.* ***229*** *L413iii; X15 10=**D2**.* ***230*** *L414ii; X15 10=**D2**.* ***231*** *L415ii; X15 10=**D2**.* ***232*** *L419ii; X15 10a=**D2**.* ***233*** *L421ii; X15 10a=**D2**.* ***234*** *L422i; X15 10a=**D2**.* ***235*** *L423iii; X15 10a=**D2**.* ***236*** *L426ii; X15 10b=**D2**.* ***237*** *L436; Y4 4a.* ****238*** *L452i; Y6 2.* ***239*** *L453; Y7 3.* ***240*** *L454ii; Y7 4* ***241*** *L456i; Y7 7.* ***260*** *L381; X14 5.* ***261*** *L394ii; X14 5.*
Phase 6: ***242*** *L65i; P/Q 15/16 4.* ***243*** *L66; P/Q 15/16 4.* ***244*** *L72ii; P/Q 15/16 5.* ***245*** *L5; P/Q 15/16 7.* ***246*** *L79ii; P/Q 15/16 7.* ***247*** *L80ii; P/Q 15/16 7.* ***248*** *L8ii; P/Q 15/16 12.* ***249*** *L102i; R14 I/II 2.* ***250*** *L149i; U2 5.* ***251*** *L154; U7 II/IV 3.* ***252*** *L264i; W8 4.* ***253*** *L272ii; W10 2.* ***254*** *L323; X6 2.* ***255*** *L325; X6 2.* ***256*** *L367ii; X14 4.* ***257*** *L369ii; X14 4.* ***258*** *L370ii; X14 4.* ***259*** *L376; X14 4.* ***262*** *L403iii; X15 5a.* ***263*** *L405; X15 5a.*
Phase 7: ***264*** *L287; W13 5*
Phase 8: ***265*** *L1ii; P/Q 15/16 1.* ***266*** *L191; V8 1.* ***267*** *L192; V8 1.* ***268*** *L307; W16 1.* ***269*** *L427i; X15 II 1.*
Phase uncertain: ***270*** *L34ii; P/Q 15/16 19.* ***271*** *L35ii; P/Q 15/16 19*

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BH Phase 4: ***272*** *L475; D4 IV 8.* ***273*** *L483; D5 II 4.* ***274*** *L484; D5 II 4.* ***275*** *L485; D5 II 4.* ***276*** *L491; D5 IV 5.* ***277*** *L527; E5 III 7.*
BH Phase 5: ***278*** *L480; D5 II 3.* ***279*** *L486ii; D5 III 3.* ***280*** *L488; D5 III 4.* ***281*** *L537iii; E6 IV 6.* ***282*** *L505; D6 III 1.*

283–381 (Form E)

Milled, with fine, slightly irregular reeding, *c* 4 x *c* 6mm (mostly 14, some up to 16 reeds per 10mm); some very corroded. There are joins of three and of four leads of this form, one of the latter, **352**, having the joins *c* 50mm apart. **296** is for triangular quarries at the edge of a light. **311–2** are also for the edges of lights, but these have the flanges along one side flattened, and retain glass respectively 30 x 30mm and 35 x 30mm. Further surviving triangular quarries in leads are **314-15** (both *c* 25 x 25mm), **289** and **358** (both *c* 30 x 30mm), **334** (*c* 65 x *c* 35mm) and **300** (*c* 80 x *c* 40mm). Leads with both flanges trimmed along one side for light edges are **293**, **327**, **305**, **307**, **345** and **356**. There is a cut lozenge-section tie on the join of **286**, while **9** (see form **B**, above) comprises three leads of form **E** soldered together with one of form **B**.

Palace

Phase 3: ***283*** *L6; P/Q 15/16 9.* ***284*** *L107; R15 5.* ***285*** *L204; V14 3.* ***286*** *L229ii; W4 II/IV 2.* ****287*** *L230ii; W4 II/IV 2.* ***288*** *L271; W9 4.* ***289*** *L562; W11 4*
Phase 4: ***290*** *L16iii; P/Q 16/16 16=**G19**.* ***291*** *L18ii; P/Q 15/16 16=**G19**.* ***292*** *L20iii; P/Q 16/16 16=**G19**.* ***293*** *L29; P/Q 15/16 16=**G19**.* ***294*** *L110; S1 13=**G31**.* ***295*** *L111; S1 13=**G31**.* ***296*** *L112i; S1 14=**G31**.* ***297*** *L113i; S1 14=**G31**.* ***298*** *L124; T7 III 3=**G26**.* ***299*** *L125; T7 III 3=**G26**.* ****300*** *L3141; T7 III 3=**G26**.* ***301*** *L126; T7 III 5=**G26**.* ***302*** *L184; U16 3 (palace garden soil).* ***303*** *L235ii; W4 II/IV 7=**G4**.* ***304*** *L236i; W4 II/IV 7=**G4**.* ***305*** *L237ii; W4 II/IV 7=**G4**.* ****306*** *L238ii; W4 II/IV 7=**G4**.* ***307*** *L239i; W4 II/IV 7=**G4**.* ***308*** *L240ii; W4 II/IV 7=**G4**.* ***309*** *L241ii; W4 II/IV 7=**G4**.* ***310*** *L242ii; W4 II/IV 7=**G4**.* ***311*** *L556; W4 II/IV 7=**G4**.* ****312*** *L557; W4 II/IV 7=**G4**.* ***313*** *L558; W4 II/IV 7=**G4**.* ***314*** *L559; W4 II/IV 7=**G4**.* ***315*** *L560; W4 II/IV 7=**G4**.*
Phase 5: ***316*** *L270; W13 8=**SA B**.* ***317*** *L470ii; CH XVIII 2.* ***318*** *L3; P/Q 15/16 6.* ***319*** *L81ii; P/Q 15/16 6.* ***320*** *L4ii; P/Q 15/16 6a.* ***321*** *L39; Q5 III 3.* ***322*** *L54; Q13 I 4.* ***323*** *L55ii; Q13 III 5.* ***324*** *L62ii; Q14 III 5=**SA G**.* ***325*** *L64; Q14 III 5=**SA G**.* ***326*** *L87ii; R8 3.* ***327*** L88; R8 3. ***328*** *L90; R8 3.* ***329*** *L93; R8 3.* ***330*** *L104ii; R15 4.* ***331*** *L105i; R15 4.* ***332*** *L106ii; R15 4.* ***333*** *L108; S1 11.* ****334*** *L3144; U8 2a.* ***335*** *L180; U14 5.* ***336*** *L199; V14 2.* ***337*** *L200; V14 2.* ***338*** *L211; W1 5.* ***338a*** *L212b; W1 5c* ***339*** *L232ii; W4 III/IV 2a.* ***340*** *L243; W5 4=**D1**.* ***341*** *L248iii; W5ext 2a.* ***342*** *L257; W6ext 2 2.* ***343*** *L258iii; W6ext 2 2.* ***344*** *L305i; W15 IV 4.* ***345*** *L328; X7 6.* ***346*** *L333i; X7 7.* ***347*** *L335; X7 7.* ***348*** *L336i; X7 7.* ***349*** *L338i; X7 7.* ***350*** *L347; X8 2.* ***351*** *L348i; X8 2.* ***352*** *L352ii; X8 2.* ***353*** *L353ii; X8 2.* ***354*** *L396; X14 6.* ***355*** *L399; X15 5.* ***356*** *L420ii; X15 10a=**D2**.* ***357*** *L435; Y4 4.* ***358*** *L563; X15 10a=**D2**.* ***359*** *L454iii; Y7 4.* ***373*** *L388i; X14 5.*
Phase 6: ***360*** *L65ii; P/Q 15/16 4.* ***361*** *L67ii; P/Q 15/16 4.* ***362*** *L70; P/Q 15/16 4.* ***363*** *L71; P/Q 15/16 5.* ***364*** *L72iii; P/Q 15/16 5.* ***365*** *L73ii; P/Q 15/16 6.* ***366*** *L48; Q9/10 II/IV 2.* ***367*** *L58; Q14 III 2.* ***368*** *L142; T15 IV 2.* ***369*** *L143; T15 IV 2.* ***370*** *L260i; W8 2.* ***371*** *L324; X6 2.* ***372*** *L374i; X14 4.* ***374*** *L401ii; X15 5a.*
Phase 7: ***375*** *L44. Q9 I 1*
Phase 8: ***376*** *L194; V8 1a.* ***377*** *L293ii; W15 1.*
Phase uncertain: ***378*** *L102i; R14 I/II 2.* ***379*** *L151; U5 6.* ***380*** *L301; W15 8.*

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381 *L565ii; E6 I 4; BH Phase 4*

382–4

Lead fragments of indeterminate form, with attached glass.

Palace

****382*** *L554; T7 III 3=**G26**; Phase 4.* ****383*** *L561; W8 7=**G6/Great cellar**; Phase 4.*

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****384*** *SF513; BH. D6 IV 7 S.Baulk/E6 III; BH Phase 4*

385–88

Thick, unmilled cames (discarded waste material). **386** includes the end of the casting.

Palace

385 *L6iii; P/Q 15/16 9; Phase 3.* ****386*** *L214; W1 5d=**G2**; Phase 4.* ***387*** *L426iv; X15 10b=**D2**; Phase 5.* ****388*** *L186; V1 1; Phase 8.*

389–477

Ties for attaching leads to window bars. Ties were soldered on to some of the joins of leads between four quarries. Some ties were purpose-cast, D-section strips, while others appear to be flanges cut from unmilled cames. The inconvenience of producing the latter (for which few parallels are known elsewhere) might suggest they were a rough-and-ready expedient in the absence of the special strips. Elsewhere, posibly later than the construction of the palace, wire ties were more widely used than lead for this purpose.

389–421

Cast, D-section ties, approximately 4 x 2mm in section. Most that appear complete are *c* 45mm long (e.g. **391**), but **400** is 60mm long and may be unused. **419** retains the solder from the join of four leads. **418** has flanges along the sides, where the mould parts failed to meet.

Palace

Phase 3: ***389*** *L272iii; W10 3.* ***390*** *L280; W11 3.*
Phase 4: ***391*** *L25ii; P/Q 15/16 16=**G19**.* ***392*** *L119; S15 III 8.* ***393*** *L112ii; S1 14=**G31**.* ***394*** *L113ii; S1 14=**G31**.* ***395*** *L157; U8 2b=**Great cellar**.*
Phase 5: ***396*** *L81iii; P/Q 15/16 6.* ***397*** *L53; Q13 I 4.* ***398*** *L61ii; Q14 III 5=**SA G**.* ***399*** *L105ii; R15 4.* ****400*** *L106; R15 4.* ***401*** *L209iii; W1 3.* ***402*** *L258iv; W6ext 2 2.* ***403*** *L305ii; W15 IV 4.* ***404*** *L319ii; X5 III/IV 6.* ***405*** *L329ii; X7 7.* ***406*** *L336; X7 7.* ***407*** *L379iii; X14 4a=**D2**.* ***408*** *L413iv; X15 10=**D2**.* ***409*** *L418ii; X15 10=**D2**.* ***410*** *L422ii; X15 10a=**D2**.* ***411*** *L454iv; Y7 4.* ***412*** *L456ii; Y7 7.*
Phase 6: ***413*** *L8iv; P/Q 15/16 12.* ***414*** *L134; T15 IV 2.* ***415*** *L195ii; V8 2.* ***416*** *L264ii; W8 4.* ***417*** *L374ii; X14 4.* ****418*** *L279; W10 10.*
Phase 8: ****419*** *L223; W4 1*
Phase uncertain: ****420*** *L37; P/Q 15/16 19*

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421 *L539i; E6 IV 7; BH Phase 4*

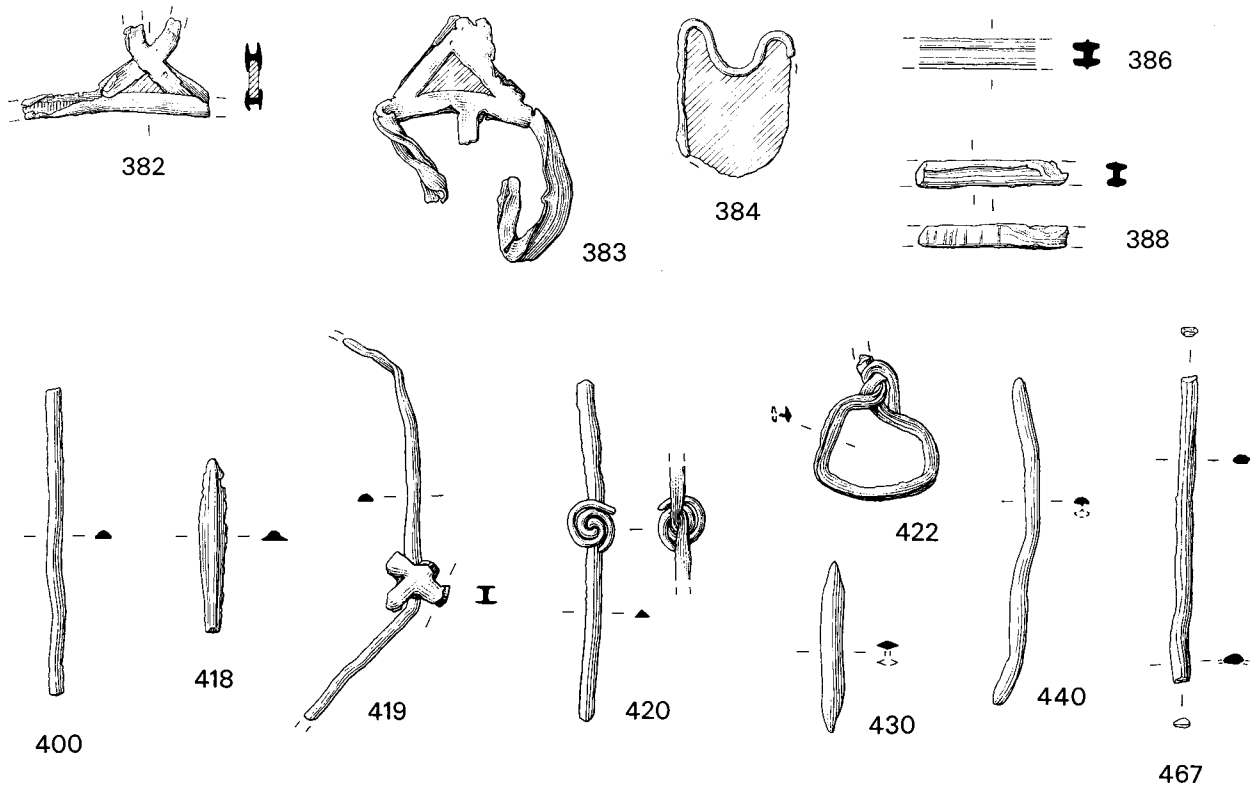

Fig. 167 Window Lead: ***382–4, 386, 388, 400, 418–20, 422, 430, 440, 467*** *(1:2).*

422–77

Lozenge-section ties, apparently cut from unmilled cames; a very labour-intensive method of production. **430** has faceted ends, and was possibly used as a plummet.

Palace

Phase 3: ****422*** *L465; CH XI 5.* ***423*** *L273; W10 3.*
Phase 4: ***425*** *L112; S1 I4=**G31**.* ***426*** *L113; S1 14=**G31**.* ***427*** *L118; S15 6.* ***428*** *L148; U1 6=**G1**.* ***429*** *L159iii; U8 2b=**Great cellar**.* ****430*** *L233; W4 II/IV 4=**G4**.* ***431*** *L234; W4 II/IV 4c=**G4**.* ***432*** *L235iii; W4 II/IV 7=**G4**.* ***433*** *L236ii; W4 II/IV 7=**G4**.* ***434*** *L237iii; W4 II/IV 7=**G4**.* ***435*** *L240iii; W4 II/IV 7=**G4**.* ***436*** *L241iii; W4 II/IV 7=**G4**.*
Phase 5: ***437*** *L470iii; CH XVIII 2.* ***424*** *L32; P/Q 15/16 18.* ***438*** *L61; Q14 III 5=**SA G**.* ***439*** *L92; R8 3.* ****440*** *L99; R8 7.* ***441*** *L176ii; X14 4.* ***442*** *L187; V1 5.* ***443*** *L222i; W3 4.* ***444*** *L228; W4 4.* ***445*** *L229iii; W4 II/IV 2.* ***446*** *L250; W5ext 2a.* ***447*** *L253; W6 2.* ***448*** *L255ii; W6 3.* ***449*** *L259ii; W6ext 2.* ***450*** *L274; W10 4a.* ***451*** *L348ii; X8 2.* ***452*** *L350; X8 2.* ***453*** *L353iii; X8 2.* ***454*** *L354ii; X8 2.* ***455*** *L355iii; X8 4.* ***456*** *L369iii; X14 4.* ***457*** *L370iii; X14 4.* ***458*** *L414iii; X15 10=**D2**.* ***459*** *L415iii; X15 10=**D2**.* ***460*** *L418iii; X15 10=**D2**.* ***461*** *L419iii; X15 10a=**D2**.* ***462*** *L426iii; X15 10b=**D2**.* ***463*** *L438i; Y4 29.* ***464*** *L45; Y7 8.* ***468*** *L388ii; X14 5.*
Phase 6: ***465*** *L65iii; P/Q 15/16 4.* ***466*** *L74; P/Q 15/16 5.* ****467*** *L103; R15 2.* ***469*** *L403iv; X15 5a.*
Phase 8: ***470*** *L341; X8 1*
Phase uncertain: ***471*** *L149ii; U5 5.* ***472*** *L360ii; X11 I/II 2.*

Banqueting House

473 *L473ii; BC6 4; BH Phase 2.* ***474*** *L529ii; E5 III 8; BH Phase 3.* ***475*** *L501; D6 II 4.* ***476*** *L515; D6 IV 11; BH Phase 5.* ***477*** *L539ii; E6 IV 7; BH Phase 4*

14

COPPER-ALLOY OBJECTS

by Alison Goodall

(Figs 168–80)

i. Introduction

The copper-alloy objects from Nonsuch do not reflect the high status of the site: no jewellery, such as simple brooches or finger rings, was found, and there are few kitchen wares. Despite the fact that much of the pewter was found in the kitchen well, the only copper-alloy finds from this context are a possible weight (**96**) and a lace end (SF300). A copper-alloy cup (**39**) and a fragment of a plate (**40**) were found in Garderobes 6 and 2 respectively, and the bowl of a spoon (**41**) was also found in a garderobe but cannot be directly associated with the kitchens.

Most of the copper-alloy finds, such as small dress fittings, lace ends, pins, pieces of wire, and incomplete objects, are items of little value which may have been discarded or lost and not thought worthy of retrieval. Others, such as the powder flask (**36**) and the thimble (**43**), and many of the buttons, were probably lost on the site after the demolition of the palace.

Twenty of the objects have been analysed by qualitative X-ray fluoresence analysis by Catherine Mortimer, whose report appears below. Her results are also incorporated in the descriptions of the relevant objects.

Finds of copper-alloy from the Banqueting House are few and of poor quality; none can definitely be related to the use of the building.

ii. Catalogue: The Palace

1–3 Double-looped buckles. The ends of their pin-bars extend above and below their frames. **1** is made from tin or tinned copper-alloy and is distinctive in having a pin-rest on both loops. L.35mm. A similar buckle was found in topsoil above a medieval ditch at Maxey, Northamptonshire,[1] a second on the Thames foreshore at Dockhead,[2] and a third, of similar shape but with scroll decoration on the frame, came from Exeter and is dated *c* 1670–1700;[3] this dating corresponds very closely with that of the Nonsuch buckle. **2** is made from tin or tinned copper-alloy and its frame is decorated with punched circles and transverse incisions. L.49mm. It resembles, in form and decoration, an example in the Museum of London.[4] An undecorated buckle of similar form, from America, is dated to the second half of the 17th century.[5] **3** is unprovenanced.

1. Addyman 1964, 63, Fig 17.7
2. Museum of London Acc. No 88.90/29
3. Goodall A.R., 1984, 339, Fig 190.85
4. Museum Acc. No A25374
5. Hume 1970, 85, Fig 20.1

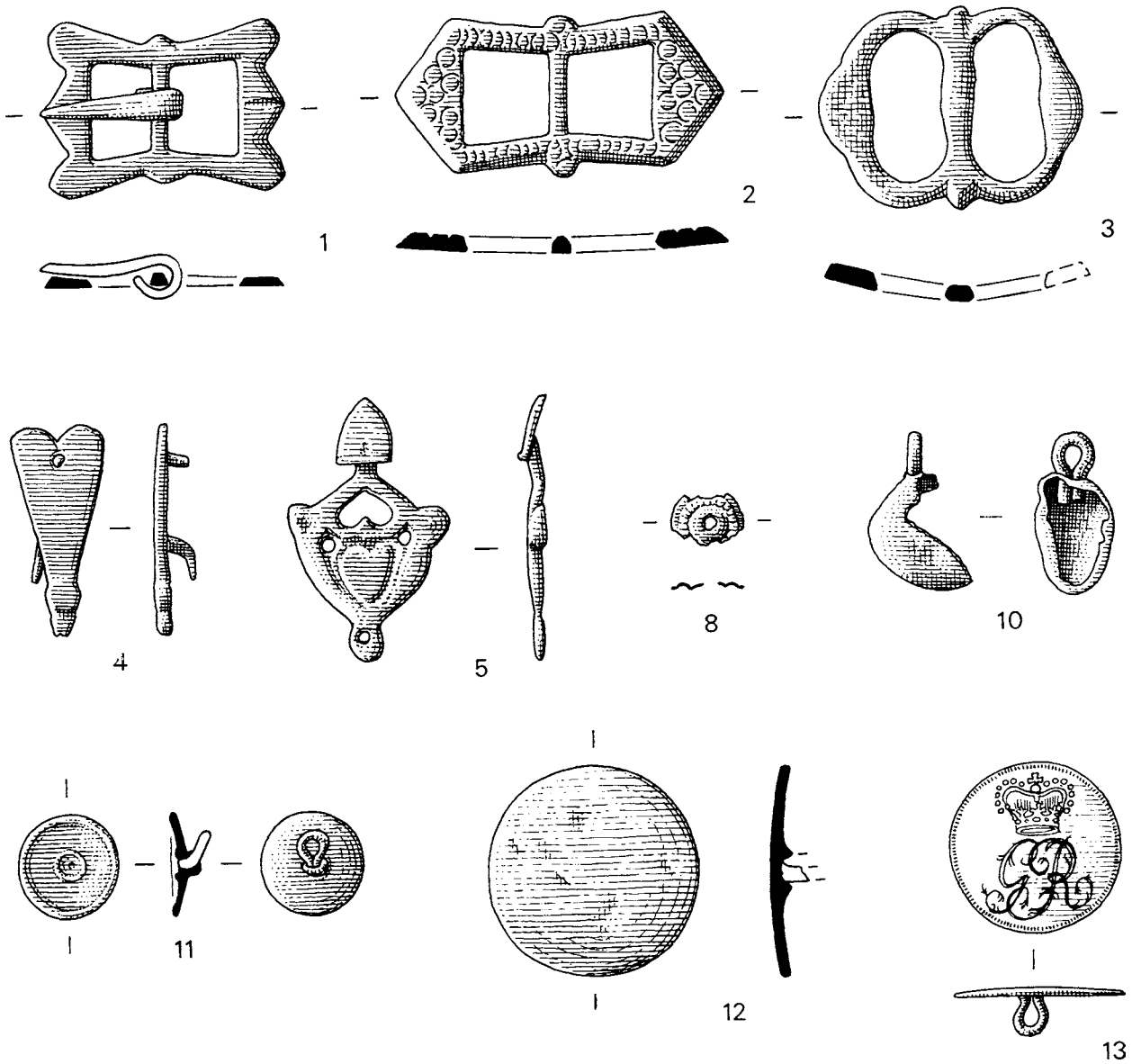

*Fig. 168 Copper alloy: buckles, **1–3**; strap-end, **4**; clasp, **5**; mount, **8**; buttons, **10–13** (1:1).*

L.40mm. It is made of bronze has cast rosettes on the loops and is similar to a damaged example from post-medieval demolition rubble at Waltham Abbey, Essex[6] and others from Gorefields, Buckinghamshire,[7] and Chelmsford, Essex;[8] the two buckles from Chelmsford are from contexts dated, respectively, to the late 16th century and the 18th century.
1 SF322; W8 7=G6 or Great cellar**; Phase 4. *2 SF108; Y4 6; Phase 7. *3 SF600; Unstratified*

4 Strap-end, bronze, shaped like an elongated heart, with an acorn shaped knop at the lower end. There are two shanks at the back; the lower, complete, one is clenched. L.32mm.
SF371; P/Q 15/16 16=G19**; Phase 4*

5 Clasp, zinc-rich quaternary copper-alloy with shield-shaped toggle which would have fitted into a loop or ring on the opposing part of the clasp. The ornamental plate has three holes for

6. Goodall A.R., 1978, 161, Fig 24.2
7. Goodall, A.R. 2002
8. Goodall A. *et al* 1985, 43, Fig 26, 11–12

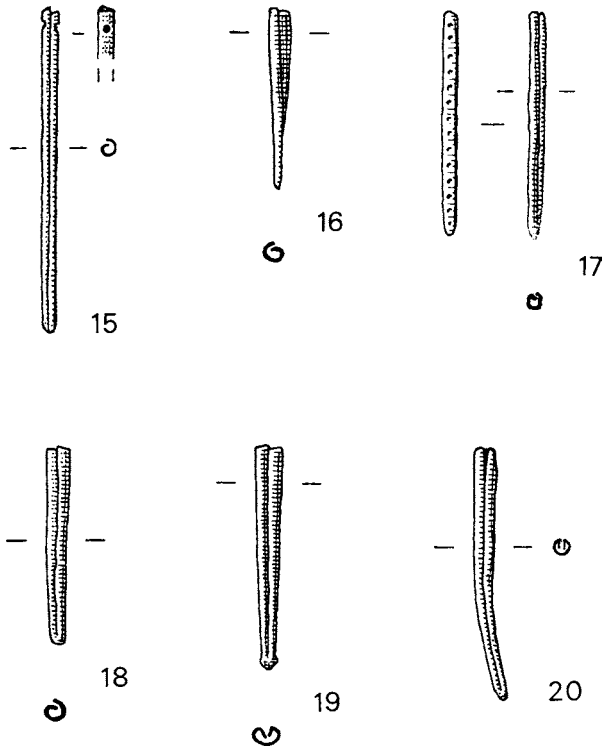

Fig. 169 Copper alloy: lace ends, ***15–20*** *(1:1).*

attachment, and is decorated with moulded and pierced hearts. L.39mm.
**SF115; X14 5; Phase 5*

6–7 Wire hook and eye from different contexts, probably not belonging together. Hook L.9mm; eye L.8.5mm.
6 *SF239 (hook) W10 2; Phase 6.* ***7*** *SF65 (eye) W4 II/IV 4=**G4**; Phase 4*

8–9 Ornamental mounts with repoussé decoration and central rivet holes. **8** Diam.10.5mm; **9** Diam. 19mm.
8 SF385; T7 III 3=G26**; Phase 4.* ***9*** *SF376; Q7 19; Phase 5*

10–14 Buttons. **10**, now damaged, was originally a hollow spherical button with an inserted wire loop, L.24mm. It is the earliest of the five examples, having been found in demolition levels. Similar buttons were in use in the late 16th and early 17th centuries, but continued into the 18th century.[9] **11** is a button back, Diam.15mm; the missing front may have been of copper-alloy or other material. The wire loop appears to have been brazed on. **12** and **13** are large buttons, similar in form to each other. **12**, a lightly-leaded bronze, is undecorated and 13mm. in Diam; **13** is a livery button bearing the letters 'GR' with a crown above, probably the cipher of King George III. The front has white metal plating; solder has been used to attach the loop at the back. Diam.25mm. **14** is a plain pewter button. Diam. 17mm.
10 SF181; X5 III/IV 19; Phase 5. *11 SF235; W13 3; Phase 6. *12 SF135; V7 3; Phase 6. *13 SF136; T14 II 1; Phase 8.* ***14* *SF334; R8 3; Phase 5*

15–20 Lace ends. Of a total of 105 examples, the forms of 92 can be determined with reasonable certainty. Sixty-nine are of the type formed by rolling a piece of sheet metal, as in the case of **15–18**. Many of these rolled lace ends were secured to the lace by a small pin or rivet, and two examples (SF91 and SF123, from Garderobes 4 and 2 respectively) have a pair of pins. The remainder of the lace ends are of the type made by folding the long edges of the sheet in to the middle and then folding again along the middle, so enclosing the lace securely. Examples here are **19** and **20**. This type has no need for pins or rivets. Both types include both straight and tapered examples, and some with the lower end closed. Lengths vary between 15mm. and 42mm, for SF382 and SF604 respectively, both folded lace ends, although most examples lie in the middle of the range.
Rolled and folded lace ends occur in all phases, with the greatest numbers of each coming from the Garderobes and demolition phases. However, the proportion of folded lace ends gradually increases from 14.3 per cent in the pre-palace and construction phases to approximately 66 per cent in the post-demolition and modern levels. Similar observations have been made at other sites such as Northampton.[10]
A few of the lace ends contain remnants of the lace, made from either textile or leather. Three are decorated: **17** has punched dots, while a fragment of folded lace end (SF307) has transverse marks on it, and one rolled lace end (SF70) has a black coating on its surface.
15 SF338; Q5 9; Phase 3. *16 SF129; X15 10a=D2**; Phase 5. *17 SF133; X14 5; Phase 5. *18 SF215; W8 2=**G7**; Phase 4. *19 SF169; Y7 2; Phase 5. *20 SF222; W4 3b; Phase 5*

Unnumbered lace-ends
Phase 3: SF237; U8floor. SF269; W10 5.
*Phase 4: SF56; W4 II/IV=**G4**. SF61; W4 II/IV=**G4**. SF75; W4 II/IV 4=**G4**. SF85; W4 II/IV 4c=**G4**. SF91; W4 II/IV=**G4**. SF97; W4 II/IV 4c=**G4**. SF102; U8 2b=**Great cellar**. SF112; W1 5a=**G2**. SF123; W1 5a=**G2**. SF164; W1 5d=**G2**. SF204; W8 3=**G6**. SF206;*

9. Hume 1970, 88

10. Oakley *et al* 1979, 262–3

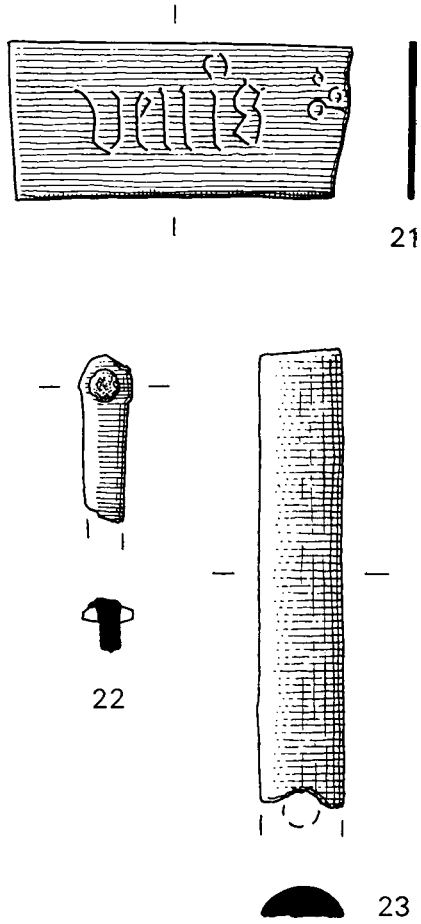

Fig. 170 Copper alloy: strips, ***21–3*** *(1:1).*

*W5ext 2d=**G5**. SF208; W8 5=**G7**. SF213; W5ext 2d=**G5**. SF214; W8 4=**G7**. SF218; W8 3=**G6**. SF224; W8 2=**G6**. SF229; W8 5=**G7**. SF243; W5ext 2d=**G5**. SF249; W5ext 2d=**G5**. SF300; Y4 32=**Well**. SF306; W8 7=**G6 or Great cellar**. SF307; W8 7=**G6 or Great cellar**. SF329; W8 7=**G6 or Great cellar**. SF348; S1 12=**G31**. SF361; S1 14=**G31**. SF364; S1 13=**G31**. SF367; T7 III 4=**G26**.SF387; T7 III 3=**G26**. SF404; T7 III 3=**G26**. SF405; T7 III 3=**G26**. SF410; P/Q 15/16 16=**G19**. SF604; W2 5a=**G3***
*Phase 5: SF92; U8 2a. SF130; X4 5. SF140; W1 5c. SF144; W1 5c. SF148; W5 4=**D1**. SF155; W5 2a. SF157; W5 4a=**D1**. SF173; V14 2. SF183; V14 2a. SF186; W5 4=**D1**. SF216; W5ext 2b. SF267; Y4 14. SF279; X7 7. SF281; X8 2. SF375; R6 I 2. SF382; Q14 III 5a=**SA G**. SF383; X8 2. SF390; SF393; CH.XVIII 2. SF438; X15 IV 3. SF601; W1 5b. SF602; W3 4. SF603; W8 7. SF605 W8 7.*
Phase 6: SF34; X5 III/IVext 20. SF70; Y4 3. SF304; R15 2. SF340; X9 2
Phase 8: SF418; P/Q 15/16 2. SF436; P/Q 15/16 1. SF606; Unprovenanced

21 Part of a decorative strip, inscribed 'venis'. There are no holes for fixing the strip to another object. One end may be complete, but it is not very regular. Although from a post-demolition layer, the style of the lettering suggests an earlier date. L.45mm.
SF276; W11 3; Phase 6

22 Binding strip terminal with an iron pin for fixing. The top surface is scratched. L.23mm.
**SF433; X6 4; Phase 3 (contamination)*

23 D-sectioned strip, made from a low-zinc brass, with significant nickel and silver traces; possibly silvered; with pits and other marks on the back. Possibly a binding strip. L.61mm.
**SF14; X5 I/II 2; Phase 5*

24 Incomplete object, brass, with an elongated eye at one end: possibly a hasp. L.200mm.
SF392; Q14 III 5=SA G**; Phase 5*

25–30 Studs. **25**, a low-zinc brass, is complete and has a head Diam.of 23.5mm. Only the heads of **26** and **27** are preserved, Diam.30mm and 22mm respectively: they retain solder-like material on their undersides from the attachment of the shanks. **27** also has some ferrous corrosion which may indicate that it had an iron shank. **28** is damaged and may be part of a stud or button, Diam.17.5mm. The bronze shank of **29** has been inserted through the head and shows as a yellow square in the top of the grey metal head. Head Diam.27mm. **30** is irregular, with a central hole, and may be from a stud or button, Diam.14mm.
****25** *SF38; U8 II/IV 3=**Great cellar**; Phase 4.* ***26*** *SF109; W1 5a=**G2**; Phase 4.* ***27*** *SF366; T7 III 4=**G26**; Phase 4.* ***28*** *SF386; T7 III 3=**G26**; Phase 4. ***29** *SF455; Y9 1; Phase 8.* ***30*** *SF305; W8 7=**G6 or Great cellar**; Phase 4*

31 Oval object, possibly a cap or decorative mount, made from sheet metal. It has one pierced lug but may originally have had four. L.20mm.
**SF302; Q7 6; Phase 5*

32–3 Possible handle fittings. **32**, a ternary or tinned brass?, is an oval boss with a raised centre and two large attachment holes; it may be a handle plate from furniture or a horse bridle boss. L.67mm. **33** is a fragment, possibly from a drop handle. W.40mm.
****32** *SF435; Y4 24; Phase 5. ***33** *SF24; U2 1; Phase 8.*

34 Rectangular copper plate, etched with a sailing boat with two figures on it. To the left of the boat a large figure appears to be rising out of the sea and to the right is an inscription, 'Thorn' or 'Thom', in reverse. Hazel Forsyth, Museum of London, suggests that these may be subsequent additions in a different hand.
62mm x 47mm.
**SF285; CH.XI 1; Phase 8*

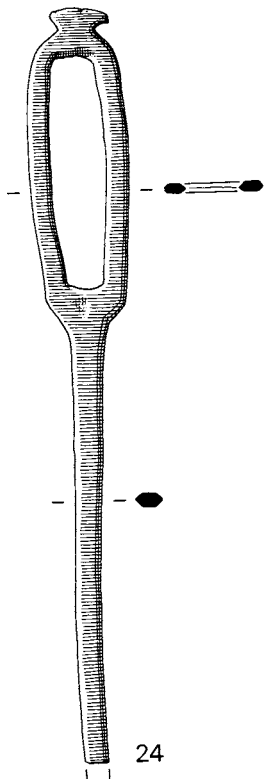

Fig. 171 Copper alloy: ?hasp, ***24*** *(1:2).*

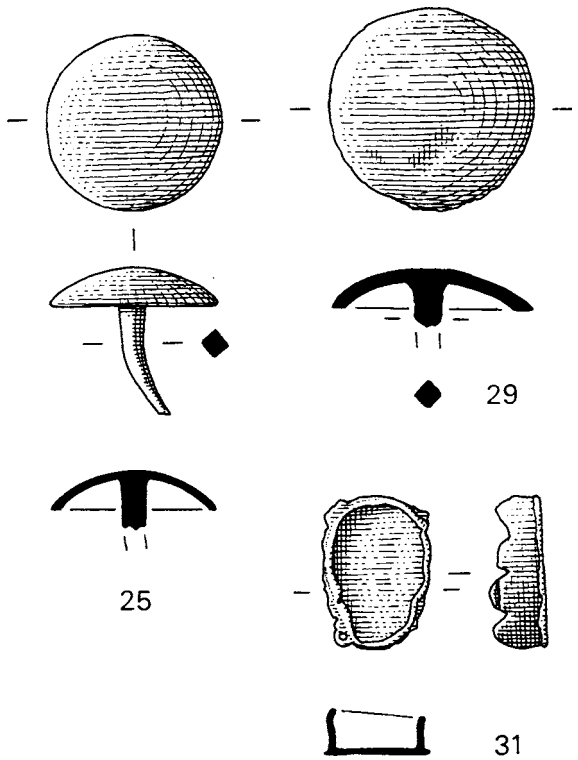

Fig. 172 Copper alloy: studs, ***25****,* ***29****; ?cap,* ***31*** *(1:1).*

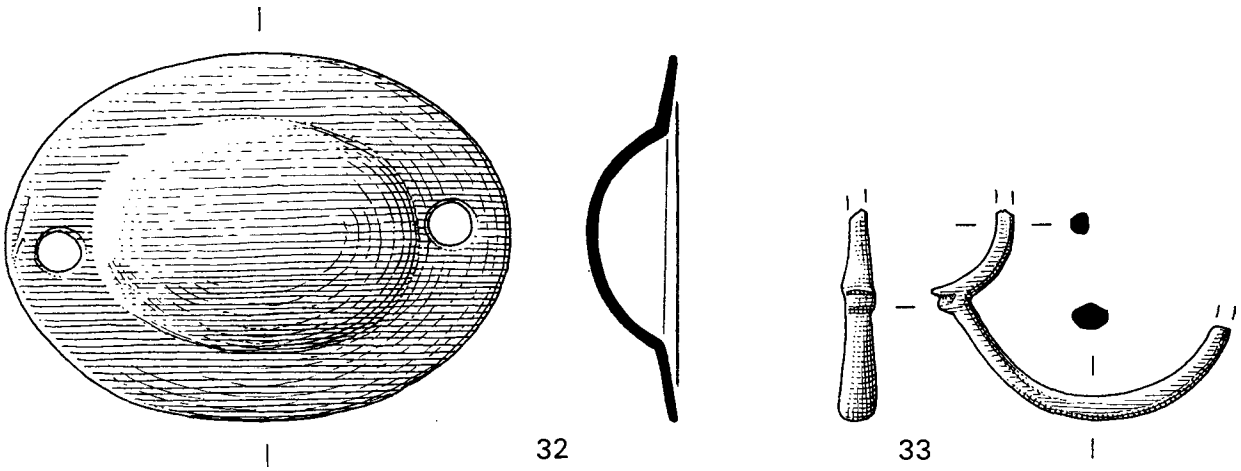

Fig. 173 Copper alloy: handle plate, ***32****; drop handle,* ***33*** *(1:1).*

Fig. 174 Copper alloy: engraver's copperplate, ***34*** *(1:1).*

The Print Room staff at the Ashmolean Museum, Oxford, comment: Clearly mid 18th century and probably an apprentice piece as the writing and figure suggest. The images are etched rather than engraved by someone with some skill at etching but less good at drawing. The plate will certainly not have been used in printing, and is not at all common.

35 Part of a latitude measuring scale consisting of a calibrated, curved strip, incomplete at both ends, possibly originally part of an armillary sphere, or a latitude scale from a terrestrial globe (pers. comm. F.R. Maddison). It is marked on the outside of the curve with the numbers '[0]...10...20...30 ...40...50...60...70...' and there are ten divisions between each number. The zero is not marked. The portion from the lower end to a line just below '10.2' is now lost, but is supplied here from a measured drawing made in 1959. L.152mm.
SF234; W8 5=G7**; Phase 4*

36 Powder flask, low-zinc brass, pear-shaped and made from two pieces of thin sheet joined by a fillet of solder. The nozzle and spring clip for measuring the powder are missing. Both halves are decorated with an identical hunting scene in repoussé. The broad upper end and the paired holes suggest that the top has been cut and the flask re-used.[11] L.143mm.
**SF263; CH.X1 1; Phase 8*

Christopher Bradbury writes: A powder flask is a container in which to carry 'charge' powder for muzzle-loading firearms. This is an early 19th-century flask depicting a sporting scene, thus indicating a domestic rather than a military object. Flasks of this type were manufactured from every kind of stamped metal, the majority after the turn of the 19th century made of copper with brass mounts, and brass or steel nozzles.

37 Small box-like object with a hinged lid, bronze or ternary alloy, possible silvered. Two rivet holes in the back for attachment.
L.59mm.
SF272; X15 10a=D2**; Phase 5*

38 Cylindrical fitting, circular in section at one end but squared internally at the other. Inside is a square-sectioned wooden peg. L.31mm.
SF440; R14 1; Phase 8

39 Cup with straight, slightly flaring, sides: there are two cordons just below the recessed rim and two incised grooves above the base. Leaded bronze, with traces or antimony, nickel, and possibly silver; possibly of German origin. The capacity is a little over 1/4 pint. Top Diam.69mm.
SF233; W8 3=G6**; Phase 4*

40 Rim fragment from a plate or shallow dish. Low-tin leaded bronze. L.76mm.
SF113a; W1 5a=G2**; Phase 4*

41–2 Spoons. **41** is made from ternary or possibly tinned brass and has an oval bowl with white metal plating, L.51mm. The inner face is marked with a thistle between two Ws or a V and a W within a beaded border.[12] **42** is made from ternary or perhaps tinned brass and is the handle from a plated spoon, but it does not appear to belong to No.41. Its form is simple, broadening slightly towards a devolved form of slip-top: it could date from the mid 17th century.[13] L.105mm.
**41 SF262; W8 3; Phase 5. *42 SF434; R14 I/II 2; Phase uncertain*

43 Thimble, low-zinc brass, with regular pits on the sides. The pits on the crown are stamped in a chequered pattern typical of the early 18th century.[14] The thimble was found in construction levels and must be intrusive.
**SF295; U7 4; Phase 3*

44–50 Pins. 180 complete or nearly complete pins were found.
44 and **45** are examples of pins with heads made from coiled wire and attached to the end of the shank possibly using some form of solder or adhesive.[15] The head of **44** consists of a single coil and the pin has been plated with white metal. Both **44** and **45** are 31mm long. In all there are 29 pins of this type; one came from construction

11. Information from Dr. P. Newman of the Castle Museum, York
12. Hilton Price 1908, 42
13. Snodin 1974, 25
14. Rath 1979, 34; Hume 1974, 256
15. Caple 1985, 47: his Type A pins

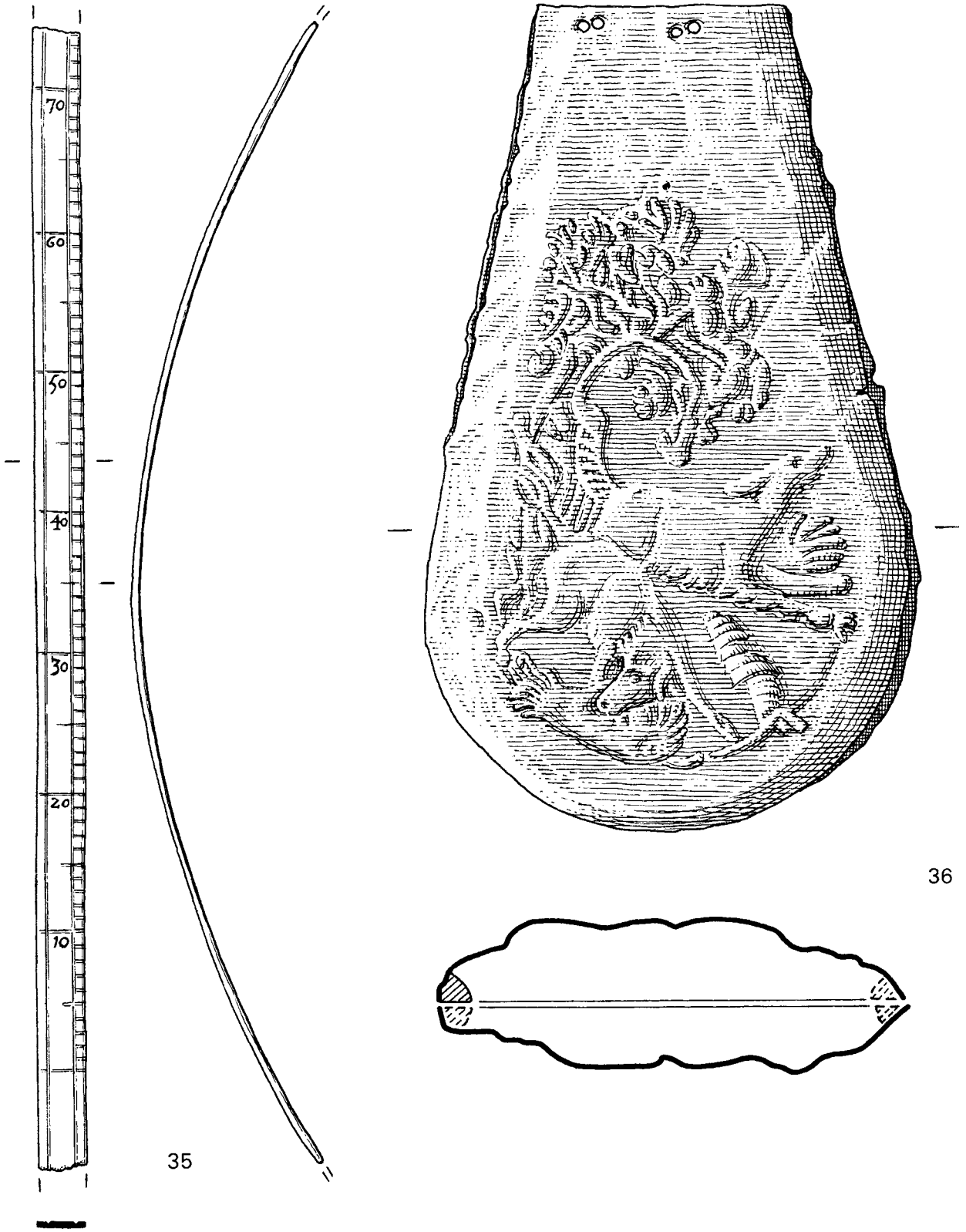

Fig. 175 Copper alloy: latitude measuring scale, ***35****; powder flask,* ***36*** *(1:1).*

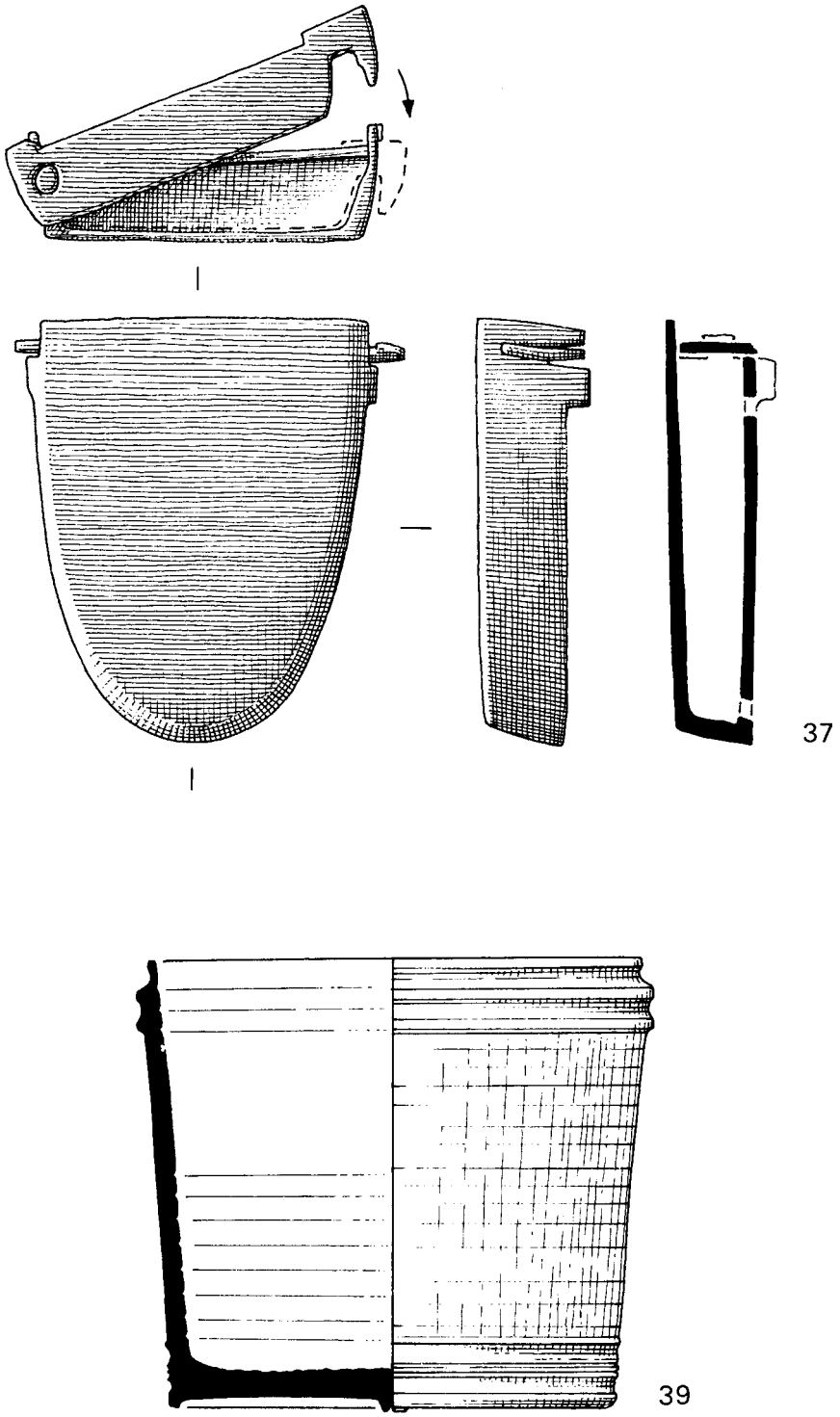

*Fig. 176 Copper alloy: 'box', **37**; 'cup', **39** (1:1).*

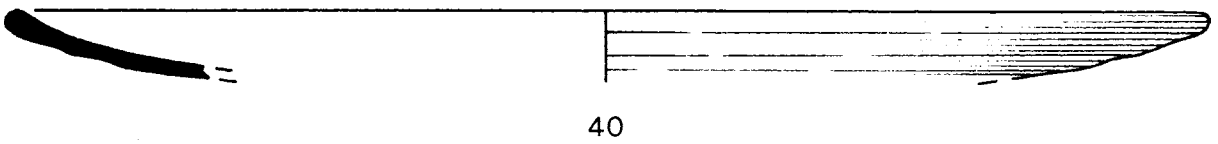

Fig. 177 Copper alloy: plate or dish, ***40*** *(1:1).*

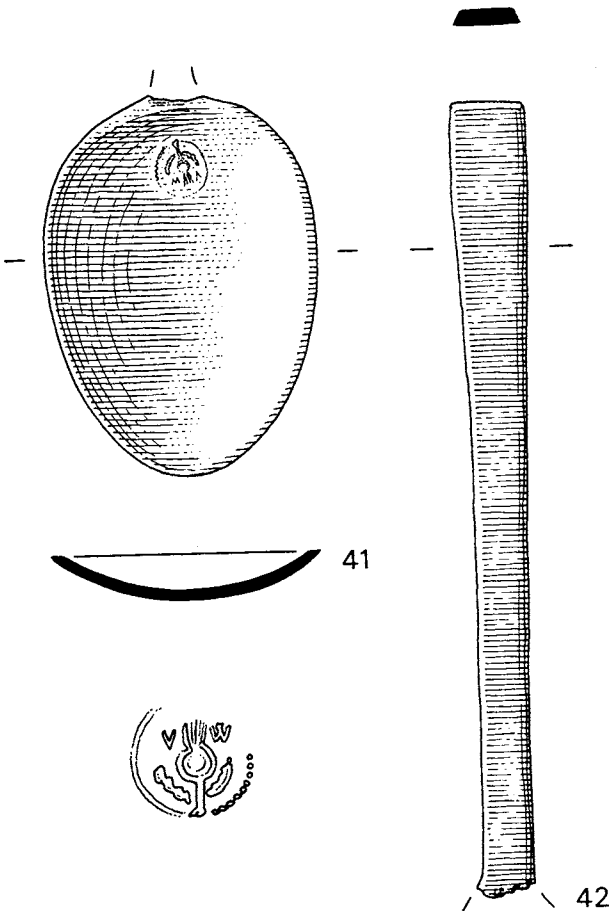

Fig. 178 Copper alloy: spoons, ***41–2*** *(1:1, except the mark on* ***41****, 2:1).*

levels, nineteen from garderobes, eight from demolition levels, and one is from a post-demolition level. Only five show evidence of white metal plating. The majority are between 24 and 31mm long, with an even spread between these extremes; two pins are 19mm long, four are 34–35mm and one is 37mm long.

46 appears to have a globular head and is the only example of this type. It is 37mm long.

47–50 have heads of coiled wire, but these have been attached to the shanks by stamping, without the use of adhesive. This results in a more regular, globular-shaped head on which the line of the coils can still be seen. There are 150 pins of this type, but only 140 are from phased contexts. Of these, 97 are from the garderobes, 27 from the demolition levels, 14 from post-demolition and modern layers, and only two from the construction phases. The proportion of pins with white metal plating is higher in this type than among those with unstamped heads. Their lengths mostly range between 19 and 35mm, with a few exceptionally large examples of 39, 43, 46, and 60mm: however, within this range there are distinct peaks at 23–25mm and 30–31mm.

At Whitehall Palace pins with unstamped coiled heads predominated in the Tudor pits, dated *c* 1530–33, while pins from the 17th century and later levels were almost exclusively of the stamped variety.[16] It was also noted at Whitehall, as at Nonsuch, that white metal plating was much more common on the stamped pins and that there was a greater degree of standardisation of pin lengths among this type, with large numbers of pins measuring 23–25mm and 29–31mm or approximately 1in and 1 1/4in. At Nonsuch there is a further small group of pins of 19mm or approximately 3/4ins.

*****44*** *SF403, T7 III 5=****G26****; Phase 4. ****45*** *SF362, S14 III 4; Phase 5. ****46*** *SF205, W5ext 2d=****G5****; Phase 4. ****47*** *SF111, Y4 4a; Phase 5. ****48*** *SF132, X15 10a=****D2****; Phase 5.* ***49*** *SF381, Q14 III 5a=****SA G****; Phase 5. ****50*** *SF163, W6 2; Phase 5.*

Unnumbered pins

Phase 3: SF152; X6 4. SF277; CH.XI 5. SF428; CH.XV 2.

*Phase 4: SF62; W4 II/IV 4=****G4****. SF63; W4 II/IV 4=****G4****. SF66; W4 II/IV 4=****G4****. SF76; W4 II/IV 4=****G4****. SF78; U7 8=****G9****. SF84; W4 II/IV 4c=****G4****. SF98; W4 II/IV 4c=****G4****. SF122; W1 5a=****G2****. SF128; X15 10a=****D2****. SF147; W5 4=****D2****. SF153; W2 5b=****G3****. SF154; W2 5d=****G3****. SF156; W5 4a=****DI****. SF158; W1 5a=****G2****. SF188; X15 10=****D2****. SF203; W8 3=****G6****. SF207; W8 4=****G7****. SF212; W5ext 2d=****G5****. SF219; W8 3=****G6****. SF223; W8 5=****G7****. SF225; W8 2=****G6****. SF230; W8 5=****G7****. SF242; W5ext 2d=****G5****. SF250; W5ext 2d=****G5****. SF278; X15 1Oa=****D2****. SF282; W8 7=****G6 or***

16. Goodall, A.R. (forthcoming, a). The Whitehall finds are in the London Archaeological Archive and Record Centre

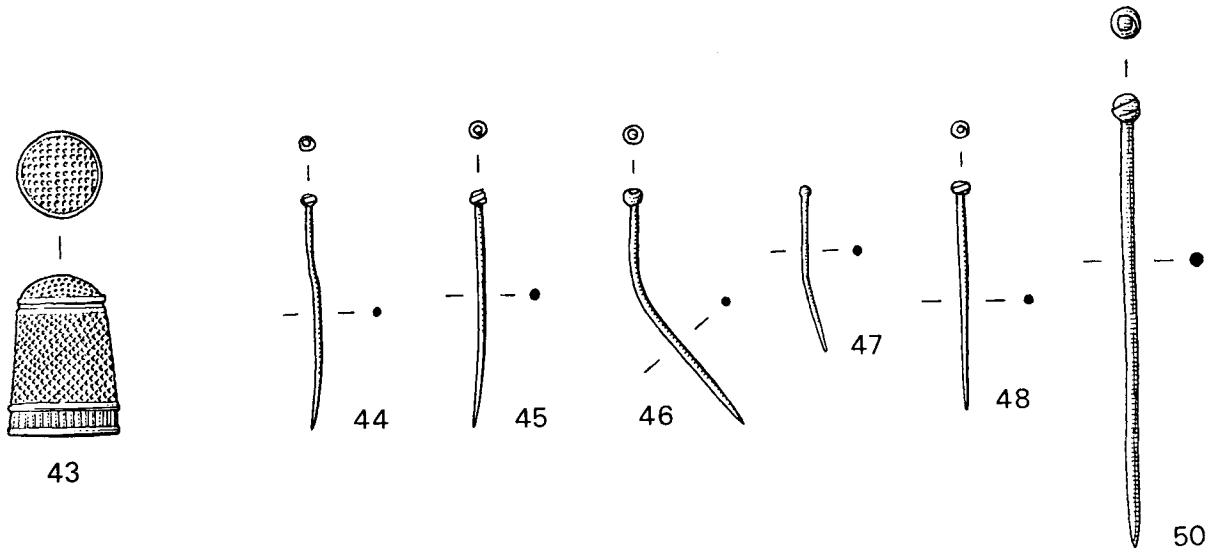

*Fig. 179 Copper alloy: thimble, **43**; sewing pins, **44–8**, **50** (1:1).*

***Great cellar**. SF306; W8 7=**G6 or Great cellar**. SF324; W8 7=**G6 or Great cellar**. SF342; W8 7=**G6 or Great cellar**. SF367; T7 III 4=**G26**. SF368; T7 III 4=**G26**. SF379; P/Q 15/16 16=**G19**. SF388; T7 III 3=**G26**. SF405, T7 III 3=**G26**.*
*Phase 5: SF93; U8 2a. SF101; W15 III 3. SF107; X4 11. SF121, W3 3. SF124; Y4 4a. SF139; W1 5c. SF145; V2 3. SF146, W1 5c. SF162; W1 5c. SF172; Y7 6. SF179; X7 6. SF180; Y7 6.SF 246, W8 3. SF248; X7 6. SF252; Y4 14. SF268; X8 2. SF280; X8 2. SF308; X8 2. SF365; CH.XVIII 2. SF391; X7 6. SF432; Q14 III 5=**SA G**.*
Phase 6: SF114; X14 3. SF125; W3 5b. SF138; V7 3. SF149; V7 3. SF168; W6 2c. SF200; X6 2. SF339; X9 2. SF607; W3 5
Phase 8: SF343; W8 1.
Phase uncertain: SF94; W1/V3 4.

51–77 Wire fragments of various thickness. Several are twisted or have been formed into loops. **66** is *c* 2.7mm thick and its ends appear to have been cut.
*Phase 4: **51** SF81; W4 II/IV 4=**G4**. **52** SF210; 5ext 2d=**G5**. **53** SF323; W1 5c=**G2**. **54** SF410; P/Q 15/16=**G19**. **55** SF389; T7 III 3=**G26**.*
*Phase 5: **56** SF615; X14 4a=**D2**. **73** SF192; X14 5. **75** SF609; X14 5. **76** SF614; X14 5. **57** SF454; X15 4. **58** SF189; X15 10=**D2**. **59** SF191; X14 4. **60** SF399; X15 10a=**D2**. **61** SF289; X15 10a=**D2**. **62** SF113; X14 4a=**D2**. **63** SF431; Q10 III 6; Phase 5. ***64** SF402; Q10 III 6. **65** SF185; X7 6. **66** SF393; CH.XVIII 2. **67** SF610; W1 3a. **68** SF611; T1 3. **69** SF612; U16 2. **70** SF613; X5 III/IVext 8*
*Phase 6: ***71** SF309, X8 2. **72** SF398; P/Q 15/16 7. **74** SF608; X15 5a. Phase 8: **77** SF195; W13 2*

78 Loop of very fine wire consisting of two thread-like strands twisted together. It may have had a decorative use.
*SF265; W12/13 8=**G11**; Phase 4*

79 Wire, bent into regular wave shapes.
SF309; X8 2; Phase 5

80–92 Rings. Poorly finished with irregular polygonal sections. Diameters range between 22mm and 31mm, with four examples of 25mm. Diam. Rings such as these could have served many uses.
*Phase 3: **80** SF337; U10 3*
*Phase 4: **81** SF226; W8 2=**G6**. **82** SF211; W5ext 2d=**G5**. **83** SF349; S1 12=**G31**. ***84** SF241; W5ext 2d=**G5***
*Phase 5: **85** SF419; U8 3. **86** SF257; X15 10a=**D2**. **87** SF227; W5ext 2d=**G5**. **88** SF16; U8 II/IV 2. **89** SF193; W5ext 2a. **90** SF20; U8 II/IV 2a*
*Phase 8: **91** SF274; Q5 1*
*Phase uncertain: ***92** SF424; X7 10*

93 Ring made from wire with the ends butted together. Diam.20.5mm.
SF303; Q7 3; Phase 6

94 Possibly a broken ring with irregular section, or an offcut. Max.Diam.32mm.
SF350; R14 I/II 2; Phase uncertain

95 Washer, bronze, with central perforation and three peripheral pin-holes. Diameter 32mm.
**SF354, CH XV 1; Phase 8*

96 Pierced doughnut-shaped object, possibly a weight. Diameter 25mm, thickness 9.5mm, weight *c* 1.3oz (36.8 g)
*SF437, Y4 35=**Well**; Phase 4*

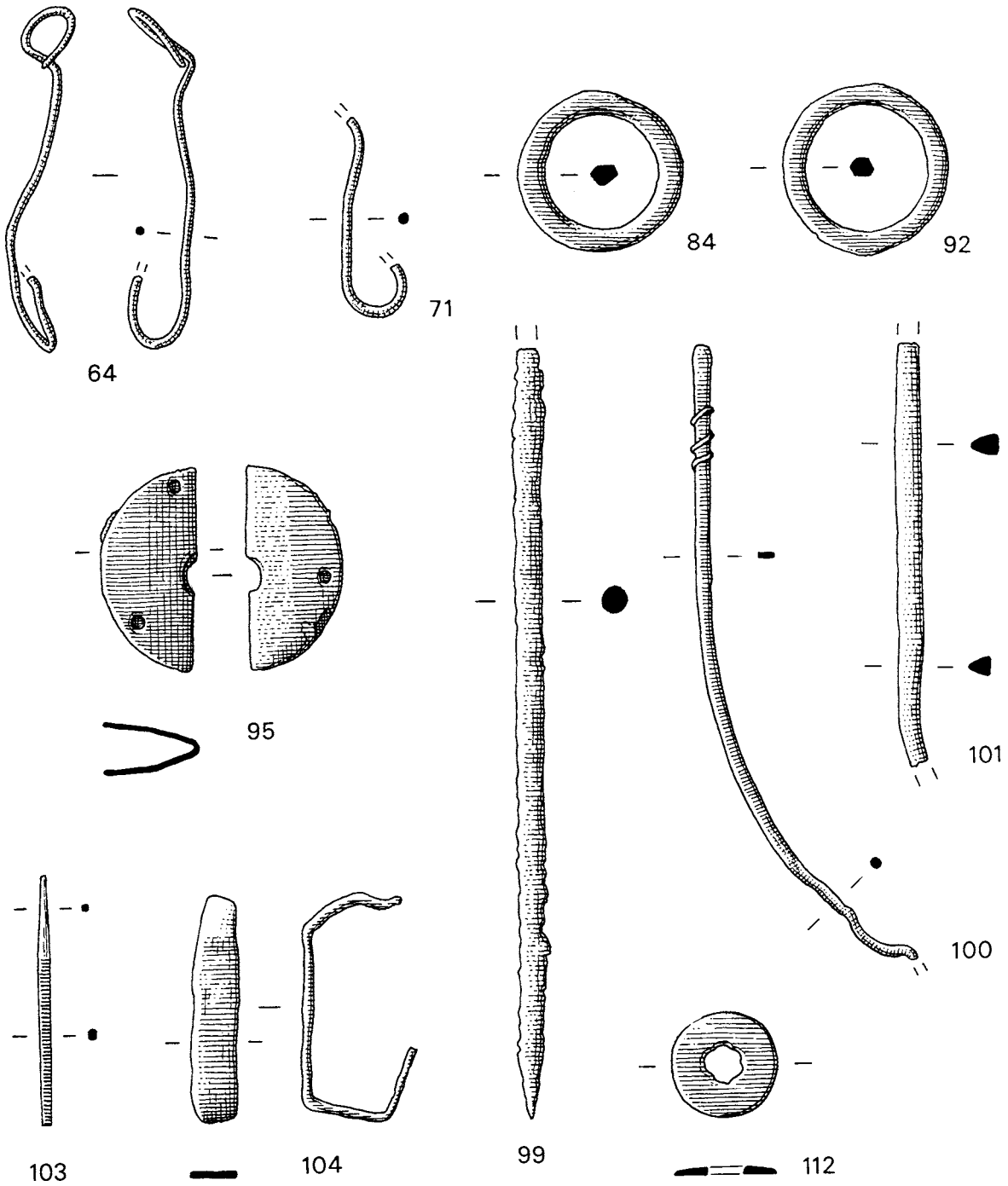

Fig. 180 Copper alloy: wire, ***64****,* ***71****; rings,* ***84****,* ***92****; washer,* ***95****; pin or stylus* ***99****; 'rods',* ***100–1****,* ***103****; staple or off-cut,* ***104****; washer from the Banqueting House,* ***112*** *(1:1).*

97 Plate cut to a point at one end. At the other end part of a small strip survives, attached by two ?iron rivets. W.39mm.
SF356; Q7 11; Phase 3

98 Incomplete object, cut from sheet. L.19mm.
*SF283; W8 7=**Cellar or G6**; Phase 4*

99 Two fragments from a large pin or stylus. L.63mm and 56mm.
SF64; U7 8=G9**; Phase 4*

100 Narrow strip, becoming narrower and rounded in section at one end. The broader end has a piece of fine wire wound round it. L.102mm.
SF68; W4 II/IV 4=G4**; Phase 4*

101 Fragment of irregular bar, almost triangular in section at one end, rectangular in section at the other. L.66mm.
**SF446; W8 3; Phase 5*

102 Bar of flattened octagonal section with incomplete, down-turned ends. Possibly part of a buckle or belt loop. L.58mm.
SF439; U8 2a; Phase 5

103 Rod with ?screw-threading at one end, narrowing towards the other. L.39mm.
**SF178; X7 6; Phase 5*

104 Staple, or perhaps an off-cut of sheet metal. L.35mm.
SF159; W5 4a=D1**; Phase 5*

105–110 Fragments, pieces of sheet, off-cuts, etc.
*Phase 4: **105** SF77; W4 II/IV 4=**G4***
*Phase 5: **106** SF273; X7 7. **107** SF166; W6 2a*
*Phase 8: **108** SF104; W1 1. **109** SF2; U8 II/IV 1. **110** SF441; V1 1*

THE BANQUETING HOUSE

111 Flat-topped button with inserted wire loop. Diam.17.5mm.
SF526; BH BV VIIext 2; BH not phasable

112 Washer with sexfoil-shaped opening in centre. Probably part of a button. Diam.16mm.
**SF510; BH DV IV 4; BH Phase 6*

113 Lace end made from folded sheet metal. L.37mm.
SF518; BH H5/H6 2; BH Phase 2

114 Pin with large globular head. L.40mm.
SF507; BH E6 III 6; BH Phase 5

115 Bar with moulding at one end and a peg for insertion into another object. Possibly from furniture. L133mm.
SF616; BH F6 I 3; BH Phase 2

116 Slightly tapering cylinder made from rolled sheet, with the edges butting. Length 93mm.
SF617; BH BV IVext I 2; BH not phasable

117 U-sectioned fragment, ?tin. Length 30mm.
SF618; BH D5 IV 4; BH Phase 6

118–119 Rings of irregular section. Diams. 25mm and 26mm.
***118** SF503; BH FG6 2; BH Phase 6. **119** SF506; BH D6 I 1; BH.Phase 7*

120 Rod of oval-section, bent. Overall length 109mm.
SF619; BH D5 IV 5; BH Phase 4

iii. QUALITATIVE X-RAY FLUORESCENCE ANALYSIS OF SELECTED COPPER ALLOY OBJECTS

by CATHERINE MORTIMER
(see Appendix 1)

Twenty copper-alloy objects were analysed qualitatively (ie on the surface, without surface preparation) to determine their alloy type. The X-ray tube in the LINK X-ray fluorescence analysis equipment was run at 35kV, 100mA, with a moderate-sized incident beam area (*c* 3mm x 5mm was sampled). A higher current (200mA or 300 mA) was selected when objects were so corroded or so thin that very low count rates were recorded at 100mA. The objects are almost all from contexts relating to the third quarter of the seventeenth century.

Results

The detailed conclusions of the analysis are recorded in Appendix 1. The technique worked reasonably well for most of the objects. The exceptions are those which were coated with tin (in these cases, it was often difficult to tell whether the peak came entirely from the coating or if the object itself was tin-rich) and those with heavy corrosion (in these cases, the type of alloy may not be clear).

The objects are made of various types of brasses and bronzes. These are 'normal' alloy types for the period. The cup (**39**) was shown to have nickel and antimony as significant traces (possibly more than 1% of each) which may be significant in the consideration of the object's origins; such high levels of trace elements may be an indicator of German ore sources.

APPENDIX 1
SURFACE ANALYSIS OF COPPER-ALLOY OBJECTS BY XRF

Objects are ordered by phase and catalogue number.

Phase 2 (pre-palace; Cuddington, see p 22)

4	Round object	**Cu Sn** Zn Pb Fe: Bronze

Phase 3 (Construction)

43	Thimble	**Cu** Zn Fe: Low-zinc brass

Phase 4 (Occupation)

1	Buckle	**Sn** Cu Pb: Tin or tinned copper-alloy
4	Strap end	**Cu Sn** Fe Zn Pb: Bronze
25	Stud	**Cu Zn** Fe: Low-zinc brass
39	Cup	**Cu Pb Sn** as Sb Ni ?Ag: Leaded bronze with traces of antimony, nickel and possibly silver
40	Rim of plate	**Cu Pb** Zn Sn Fe: Low-tin leaded bronze

Phase 5 (Demolition)

5	Clasp	**Cu Zn** Pb Sn Fe: Quarternary alloy, zinc-rich
23	Strip	**Cu Zn** Ni Pb Ag Fe: Low-zinc brass, with significant nickel and silver traces?
24	hasp?	**Cu Zn Fe** Sn ?Pb: Brass object
32	handle plate	**Cu Zn Sn** Pb Fe: Ternary or tinned brass?
37	Hinged box	**Cu Zn Sn Fe** Pb Ag?: Bronze or ternary alloy, ?silvered
41	Spoon bowl	**Cu Zn Sn** Pb Fe: Ternary or possibly tinned brass

Phase 6 (Post-demolition)

12	Button	**Cu Sn** Zn Pb Fe: Bronze, lightly-leaded

Phase 7 (Modern)

2	Buckle	**Sn** Cu (Zn) (Pb): tin or tinned object

Phase 8 (Topsoil)

29	Stud	**Cu Sn** Zn Pb Fe: Bronze
36	Powder flask	**Cu** Zn Pb Fe: Low-zinc brass
95	Washer	**Cu Sn** Fe Zn Pb: Bronze

Phase Uncertain

3	Buckle	**Cu Pb**: Bronze
42	Spoon handle	**Cu Zn Sn** Pb Fe: Ternary or tinned brass? (silver coloured)

Cu = copper; Zn = zinc; Sn = tin; Pb = lead; Fe = iron; Ag = silver; sb = antimony; As = arsenic; Ni = nickel.

Ternary alloys = copper-tin-zinc
Quarternary alloys = copper-tin-lead-zinc

Bold elements are major components, those in brackets at very low levels, otherwise realatively small amounts.

15

IRON OBJECTS

by Ian H. Goodall

(Plate 13; Figs 181–204; Table 29)

i. Introduction

Many of the items of building ironwork are likely to derive from the initial construction of Henry VIII's palace in 1538–46, a few perhaps introduced by subsequent adaptations to the structure and by necessary repairs. Much of the other material, however, in particular the lock furniture and knives, probably belongs to the later decades of the site's occupation, and some material likely to be derived from these phases, but found in post-demolition contexts, has also been included. Little comparative material of mid to late sixteenth-century date is available, and much of that of seventeenth-century date comes from contexts of the mid to late 1640s which are associated with the Civil War.

Some indication of the range of ironwork used during the construction of Nonsuch is given by entries in the building accounts, although unfortunately these survive in detail only for the period from 22nd April to 14th September 1538, during which the site was cleared and work began on the Inner Court.[1] Summary accounts alone survive for the period from 15th September 1538 to 14th November 1545 during which construction work and fitting out were completed, and thereafter there are only a few references to ironwork, and those of a very general nature, in the repairs accounts and in surveys.[2]

ii. Building Ironwork

A considerable quantity of iron was used in building work, and although it is most comprehensively recorded for the medieval period,[3] a similar range of objects was undoubtedly used in the post-medieval period. Relevant finds include various items of structural ironwork, among them a cramp, holdfasts, staples and wallhooks, as well as some timber nails and studs and a series of door, window and furniture fittings. Some of these items, namely a cramp, many nails, and some hinges and hinge pivots, are quoted in the building accounts.

1. PRO E101/477/12, selectively quoted in Dent 1981, 259–79
2. PRO E351/ 3227, 3229, 3279, 3283, August 1665 (Works 5/7 12–13); September and October 1667 (Works 5/10 3–4); November 1667 (Works 5/10 5–6)
3. Salzman 1967, especially 286–317

Structural Ironwork (Figs 181–3)

The items of structural ironwork **1–48** include a cramp, various angle ties and holdfasts, wallhooks, staples and tenter hooks, as well as a series of timber nails and studs. The masonry cramp **1**, which is incomplete, retains the lead caulking which secured it in place and offered some protection against corrosion. It is, however, insubstantial, and is unlikely to be the type of cramp purchased in 1538 with the intention of being set in a chimney.[4] Such a cramp probably resembled the more substantial examples from contexts of the 1640s at Sandal Castle (W. Yorkshire),[5] and Banbury Castle (Oxfordshire);[6] the cramp from Nonsuch was more probably used to secure blocks in flat courses of masonry.

Angle ties **2–4**, like one from Oxford Castle,[7] have tapering arms which were driven into adjoining timbers to bind them together. **5–11** are holdfasts which could have held timber door jambs or window frames against a wall, or the timbers to which panelling or wall hangings might have been was attached. Their shanks were driven into the wall and the broad, flattened head held the wood in place. The holdfasts from Nonsuch, like one from Aldgate in London,[8] have solid heads, although those of most later examples are perforated to enable nails to be driven through them to ensure greater security.[9] Wallhooks such as **12** and **13** could have served many functions, including supporting wall hangings (Fig 183); their particular form, with the hook rising from the end of the tang, is paralleled among the ironwork from Basing House (Hampshire).[10]

The staples from Nonsuch are either U-shaped or rectangular, the former, **14–22**, well-suited to securing the ends of hasps or chains, the latter, **23–29**, to binding or joining timbers. **21**, with its shaped end, may have served as a bolt-keeper in a door jamb; its distinctive shaping is similar to that of a rectangular staple from Basing House (Hampshire).[11]

Tenter hooks **30–45** are small, slender hooks with complete shanks between 24mm and 61mm long and hooks from 22mm to 31mm high, with an exceptional hook 39mm long. A number of shanks are distorted, and although most hooks are upright, a few incline slightly. The original use of tenter hooks, as their name implies, was to hold woollen cloth taught on tenters as it was dried and stretched after being scoured and fulled. Small hooks used for this purpose include a series from medieval contexts at Winchester (Hampshire),[12] as well as those driven into the wooden rails from a tenter which were reused in a building at Lavenham (Suffolk).[13] They were also used to support tapestries and wall hangings (Fig 183). Expenses for preparing York Palace for a visit by Charles I in November 1641 included expenditure on '100 tenter hooks for the King's chamber to hang up his clothes', clearly referring to wall hangings rather than garments.[14] The wooden plugs for such hooks were found in the first floor walls of the north wing of the Jacobean house at Audley End in Suffolk,[15] and they are depicted, in conjunction with cow-horn rings, on an early sixteenth-century oak door.[16] Tenter hooks may also have been used to hold roof tiles in place, as is reportedly the case at Hampton Court Palace.[17] The tenter hooks from Nonsuch are unlikely to relate to textile production. Their distribution, mainly in the Outer Court but with some emphasis on the Kitchen Court, might suggest their use with tiles, but

4. PRO E101/447/12, f.45
5. Goodall 1983, 246, Fig 6, No 93
6. Rodwell 1976, 136, Fig 18, No 7
7. Goodall 1976a, 300, Fig 28, No 76
8. Grew 1984, 92, Fig 28, No 76
9. Dunton 1972, 127–43
10. Moorhouse and Goodall 1971, 51, Fig 22, No 120
11. Ibid, 51, Fig 22, No 133
12. Goodall 1990a, 235, Fig 50
13. Betterton 1981–1984
14. Hill 1981, 24; Butler 1988, 31, 43 n.33
15. Information from Paul Drury; for details of the building see Drury 1980, 10,13
16. Chinnery 1979, 420, Fig 4, No 17. I should like to thank David Bostwick for this reference
17. Information from Historic Palaces Agency

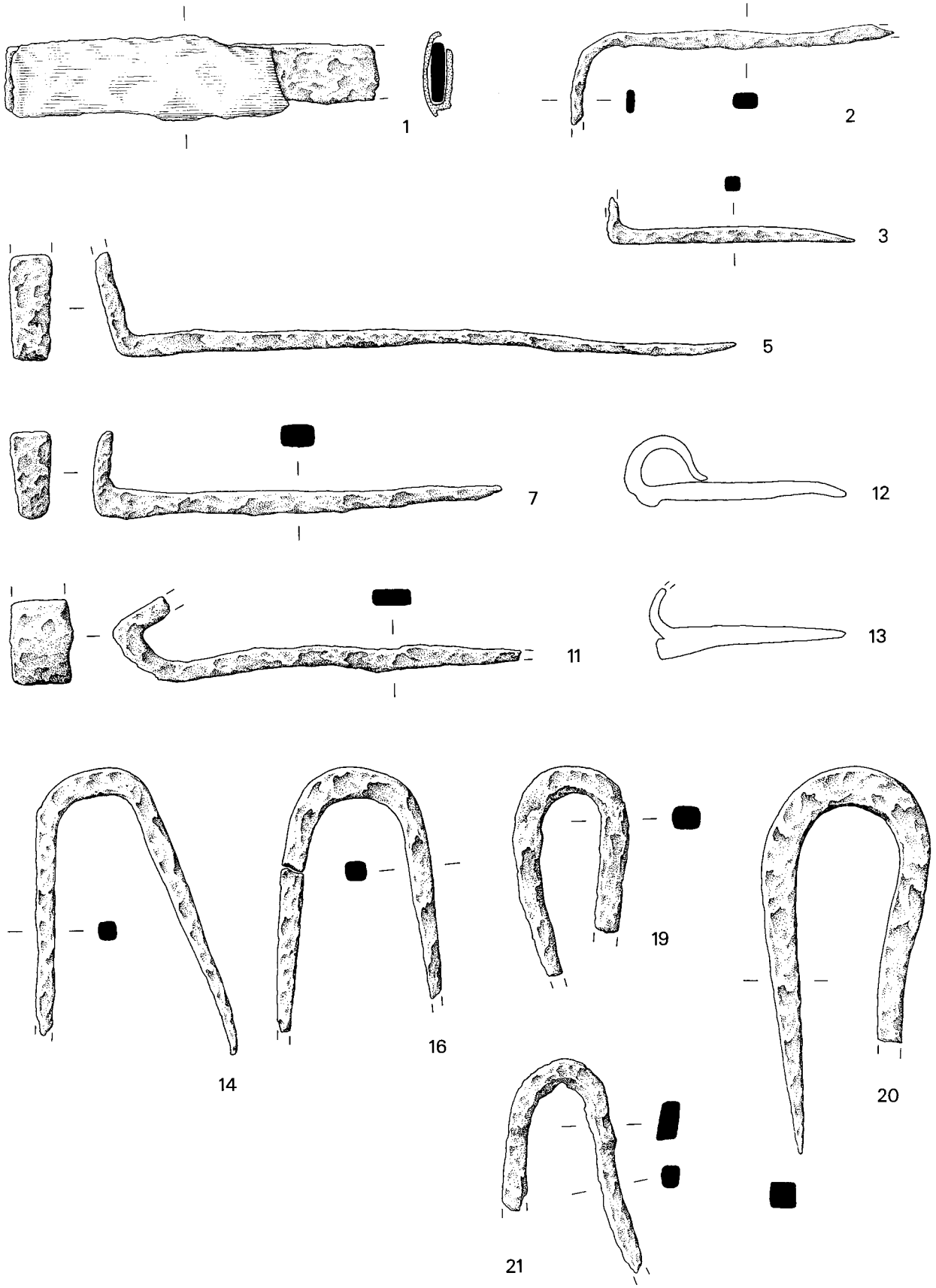

Fig. 181 Iron: structural ironwork, cramp, ***1****; angle ties,* ***2****,* ***3****; holdfasts,* ***5****,* ***7****,* ***11****; wallhooks,* ***12****,* ***13*** *(drawn from X-rays); U-shaped staples,* ***14****,* ***16****,* ***19–21*** *(1:2).*

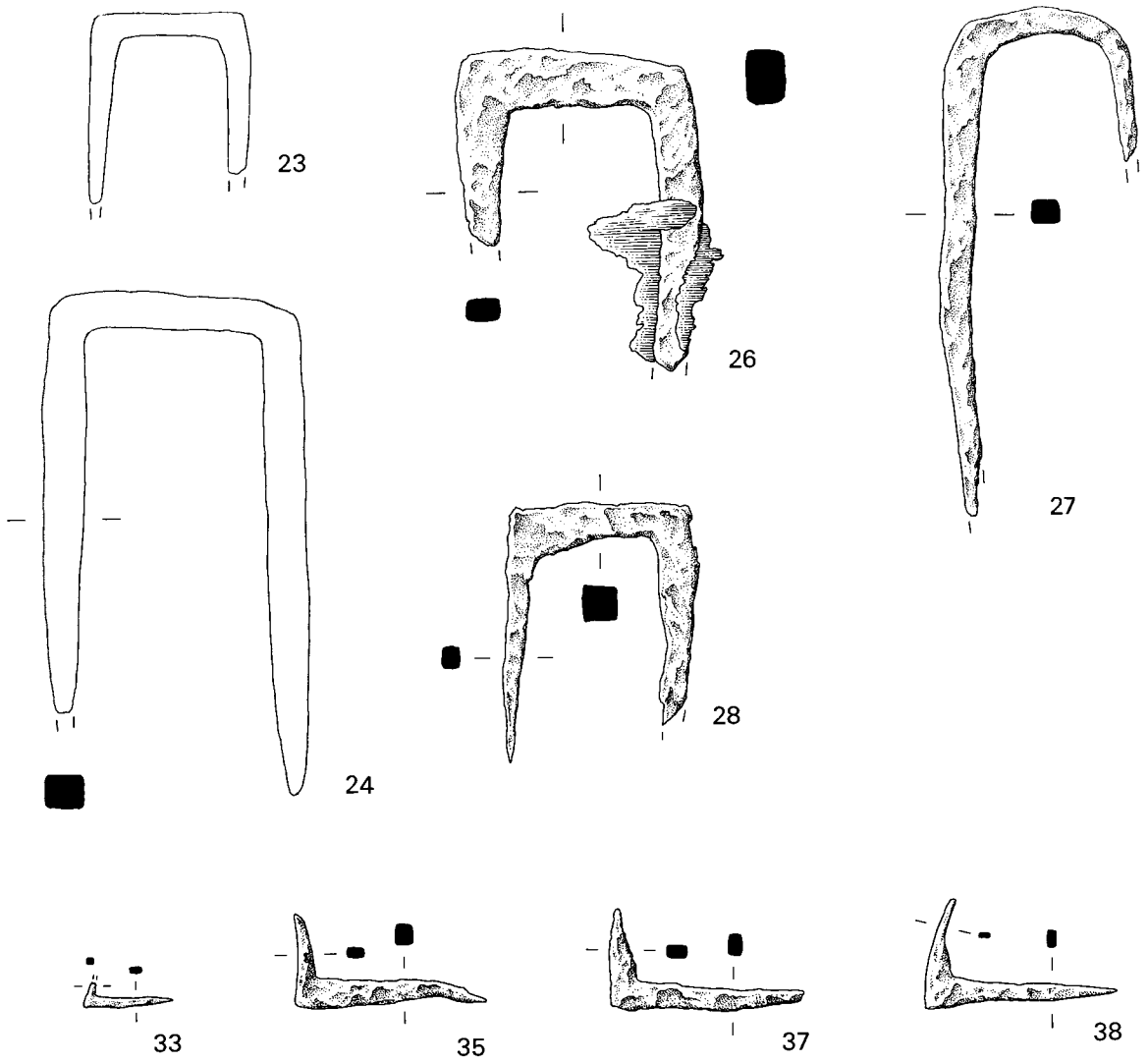

Fig. 182 Iron: structural ironwork, rectangular staples, ***23–4*** *(drawn from X-rays),* ***26–8****; tenter hooks,* ***33****,* ***35****,* ***37–8*** *(1:2).*

certainty is impossible. Similar tenter hooks are known in small numbers from post-medieval contexts at Basing House (Hampshire),[18] the Free Grammar School at Coventry[19] and Oxford Castle,[20] as well as from the Henrician palace at Oatlands,[21] but their use on these sites is no more certain.

CATALOGUE: STRUCTURAL IRONWORK

1 Cramp. Incomplete strap retaining the lead caulking run-in to secure it in place. L.130mm.
**R483; BH E5 II 1; BH Phase 7*

2–4 Angle ties, **2** and **4** complete, **3** with an incomplete short arm. **2** and **3** are 110mm 87mm long, respectively; **4** is 234mm by 20mm and 9mm thick.
****2** *SF??; X15 IV 3; Phase 5.* ***3** *R481; BH D5 III 2; BH Phase 5.* **4** *R253; V7–8 1; Phase 8*

5–11 Holdfasts, **5** with a broken short arm, the

18. Moorhouse and Goodall 1971, 51, Fig 22, Nos 116–17
19. Woodfield and Goodall 1981, 89, Fig 3, No 25
20. Goodall 1976a, 300, Fig 28, No 62
21. Cook and Poulton forthcoming

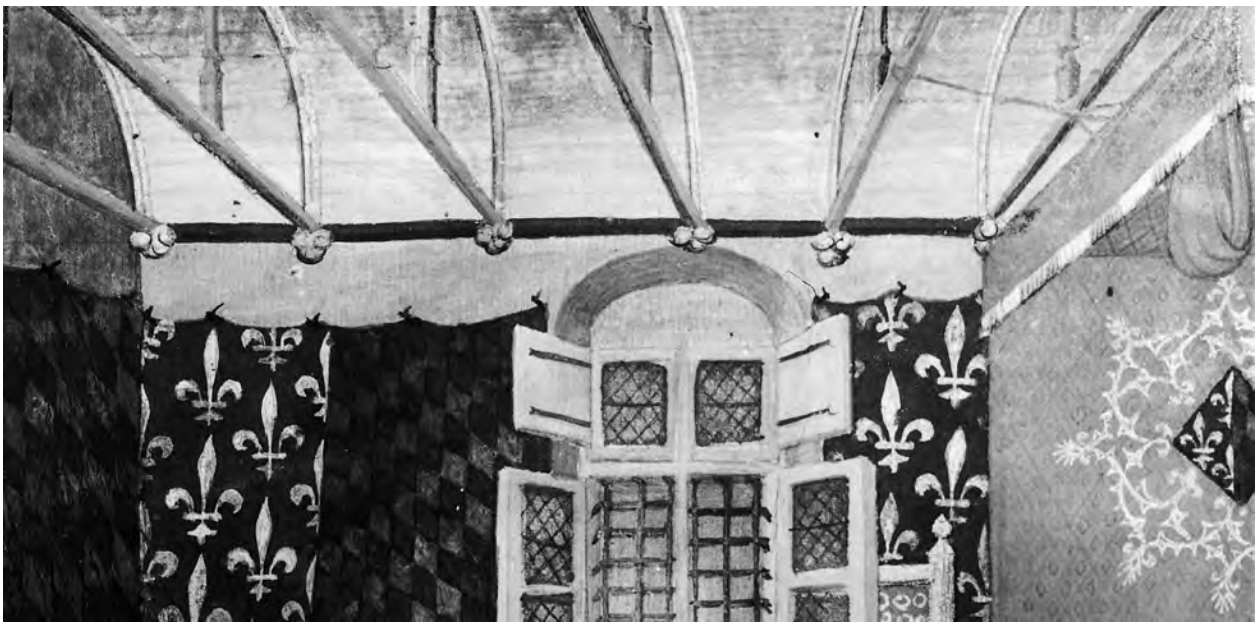

Fig. 183 Iron 'tenter-hooks' used to support wall hangings: detail from an illustration to the Poems of Christine de Pisan (London, BL, Harl MS 4431, f.3), c. *1412 (see p 374).*

remainder complete. **6** and **11** are distorted. **5–7** are 219mm, 127mm and 145mm long; **8** is 72mm by 27mm long and 5mm wide; **9** is 118mm by 30mm long and 7mm maximum width; **10** is 120mm by 28mm long, and 16mm maximum width; **11** is 140mm long.
5 R??; U8 II/IV 3=Great cellar**; Phase 4. **6** R177; Q10 III 6; Phase 5. *7 R460; W8 4; Phase 6. **8** R78; P/Q 15/16 12; Phase 6. **9** R211; W10 9; Phase 6. **10** R209; P/Q 15/16 4; Phase 6. *11 R252; X14 5; Phase 6*

12–13 Wallhooks. The hook of **12** is broken, that of **13** distorted, and its tang tip lost. L.78mm and 69mm respectively.
**12 R469; CUD II 3; Phase 5. *13 W8 3; Phase 5*

14–22 U-shaped staples, all with broken arms. **19** and **20** are distorted, and **21** has an enlarged head. **14**, **16**, **19**, **20** and **21** are 105mm, 93mm, 73mm, 137mm and 76mm long; the unillustrated staples **15**, **17**, **18** and **22** are 51mm by 28mm, 105mm by 60mm, 38mm by 38mm, and 89mm by 47mm.
14 R284; P/Q 15/16 18=SA F**; Phase 5. **15** R238; W2 5c=**G3**; Phase 4. *16 R185a; P/Q 15/16 16=**G19**; Phase 4. **17** R248; W8 3=**G6**; Phase 4. **18** R52; W4 3; Phase 5. *19 R282; W5ext 2a; Phase 5. *20 R463; W8 3; Phase 5. *21 R283; Y4 19; Phase 5. **22.** R483; BH E5 III 1: BH Phase 7*

23–9 Rectangular staples, most with both arms broken. **25** has inturned arm tips, while **26**, which is distorted, has iron-impregnated wood on the lower parts of each arm and mortar on the head. **23–28** are 52mm, 135mm, 58mm, 87mm, 136mm and 70mm long; **29** is 62mm long, 57mm wide.
23 R281; X5 I/II 8; Phase 4. *24 R22; Y4 34=Well**; Phase 4. **25** R5; Q9 i 4; Phase 5. *26 SF449; V8 3; Phase 5. *27 R177; Q10 III 6; Phase 5. *28 R489; BH E6Baulk I/IV 3; BH Phase 4. **29** R480; BH H5-H6 2; BH Phase 2*

30–45 Tenter hooks. **30–32**, **34**, **37**, **41** and **44** have upright hooks, those of **33**, **36**, **38** and **42–3** are inward-pointing, and of **35**, **39** and **45**, outward-pointing. **40** retains only the stub of its hook. Most of the tenter hooks are complete, but the hooks of **31**, **33** and **40** are broken, as is the tang of **39** and are the hooks and tangs of **36** and **44**. The dimensions of unillustrated tenter hooks are: **30**, L.52mm, H.25mm; **32**, L.52mm, H.22mm; **39**, L.47mm, H.28mm; **40**, L.26mm, H.7mm; **41**, L.37mm, H.22mm; **43**, L.61mm, H.26mm; **44**, L.44mm, H.21mm. The tang tip of **41** is clenched round.
*30 R509; CH V 3; Phase 3. **31** U1 3; Phase 3. **32** W13 8=**SA B**; Phase 5. *33 X7 2; Phase 5. **34** R103; V2 3; Phase 5. *35 R88a; W5 4a=**D1**; Phase 5. **36** Q4 I 2; Phase 5. *37 R8 3; Phase 5. *38 R205; X4 11; Phase 5. **39** R219; Y4 4a; Phase 5. **40** R271; Y5 2; Phase 6. **41** R108; X5 III/IV 20; Phase 6.**42** V1 2; Phase 6. **43** W2 3; Phase 7. **44** Z3 I 3; Phase 7. **45** BH E6 I 4; BH Phase 4*

Timber Nails and Studs (Figs 184–5)

The building and repair accounts for Nonsuch record the purchase of vast quantities of nails: a quarter of a million nails were supplied by James Ketell of London, ironmonger, and Rainolde Warde of Dudley, nailman, during the period 22nd April to 14th September 1538 alone.[22] The scale of these purchases, and the variety of types bought, must indicate the amassing of stocks at the start of a major building programme, although undoubtedly further nails were purchased before construction was complete, as they certainly were during its subsequent occupation. The repair accounts include many references to work which would have involved the use of nails, including the setting up of 'sundry partitions' and repairs in 1593–4,[23] and the extensive roof repairs carried out in late 1667, which required the nailing of many boards and planks prior to retiling or slating roofs, as well as the nailing of gutter supports. Purchases recorded in November 1667 included over 122,000 nails.[24]

Medieval nails were customarily referred to in building accounts either by the name of the specific job for which they were required, such as dorenail, rofnail, and lathnail, or by their shape, for example dicehead and spyknayl. During the fifteenth century it became increasingly common for nails to be classified according to their price per hundred, for example as 'fourepenynayll' and 'xpeny nayle'.[25] Entries in the Nonsuch building accounts of 1538 confirm this trend, for although a few purchases were of sprigs, rough nails, lath nails, or garnishing nails, most were indicated in pence, such as 'iiij^{d}. naile' or 'x^{d}. naile'.[26] In some cases the nails were further qualified as single or double nails, or as being English or Flemish. The price of nails whose size and type were identified in pence per hundred were not sold at that price, since that was by then traditional, having been standardised at an earlier date in the medieval period.[27] In no case was the price of any of the Nonsuch nails arithmetically correct: as with x^{d}. nails which cost 5*s*., not 8*s*. 4*d*., per thousand, the actual cost was below the arithmetically correct one.

One hundred and sixty two timber nails with ten different shapes of head (**46A-J**) were excavated in palace and post-palace contexts (Table 29). The commonest of these, **A**, has a plain, utilitarian head, as have **B**, **C, E** and **F**, and all these are likely to have been used for such routine purposes as nailing laths and forming partitions. Type **E** nails may be equivalent to the spyknayls of medieval accounts.[28] Several Type **A** nails were found with lead sheet under their heads, clearly indicating one of their uses in roofing. The remaining nails of Types **D** and **G-J** have decoratively-shaped heads which were clearly meant to be seen. Some are likely to be the garnishing nails purchased in 1538;[29] and the Type **J** nails could be the equivalent of the dicehead nails of medieval building accounts.[30] The range of nail types from Nonsuch may be compared with the broadly similar collections from such post-medieval sites as Basing House (Hampshire)[31] and Chingley Forge and Furnace in Kent.[32]

The two studs, **47–8**, which have substantial raised, square heads, closely resemble others from Basing House (Hampshire)[33] and Bolingbroke Castle (Lincolnshire).[34]

22. Dent 1981, 43, 270; PRO E701/477/12
23. PRO E351/3228
24. Dent 1981, 207; PRO Works 5/10, 3–6: Nonsuch Book, Sept, Oct, Nov 1667
25. Salzman 1967, 303–17
26. Dent 1981, 270; PRO E701/477/12
27. Salzman 1967, 315
28. Salzman 1967, 304–6
29. PRO E101/477/12 f.42v
30. Salzman 1967, 314–5
31. Moorhouse and Goodall 1971, 49-51, Fig 22, Nos 90–109
32. Goodall 1975, 85–8, Fig 45, Nos 1–12
33. Moorhouse and Goodall 1971, 49–51, Fig 22, No 110
34. Goodall 1976b, 29, Fig 14, No 43

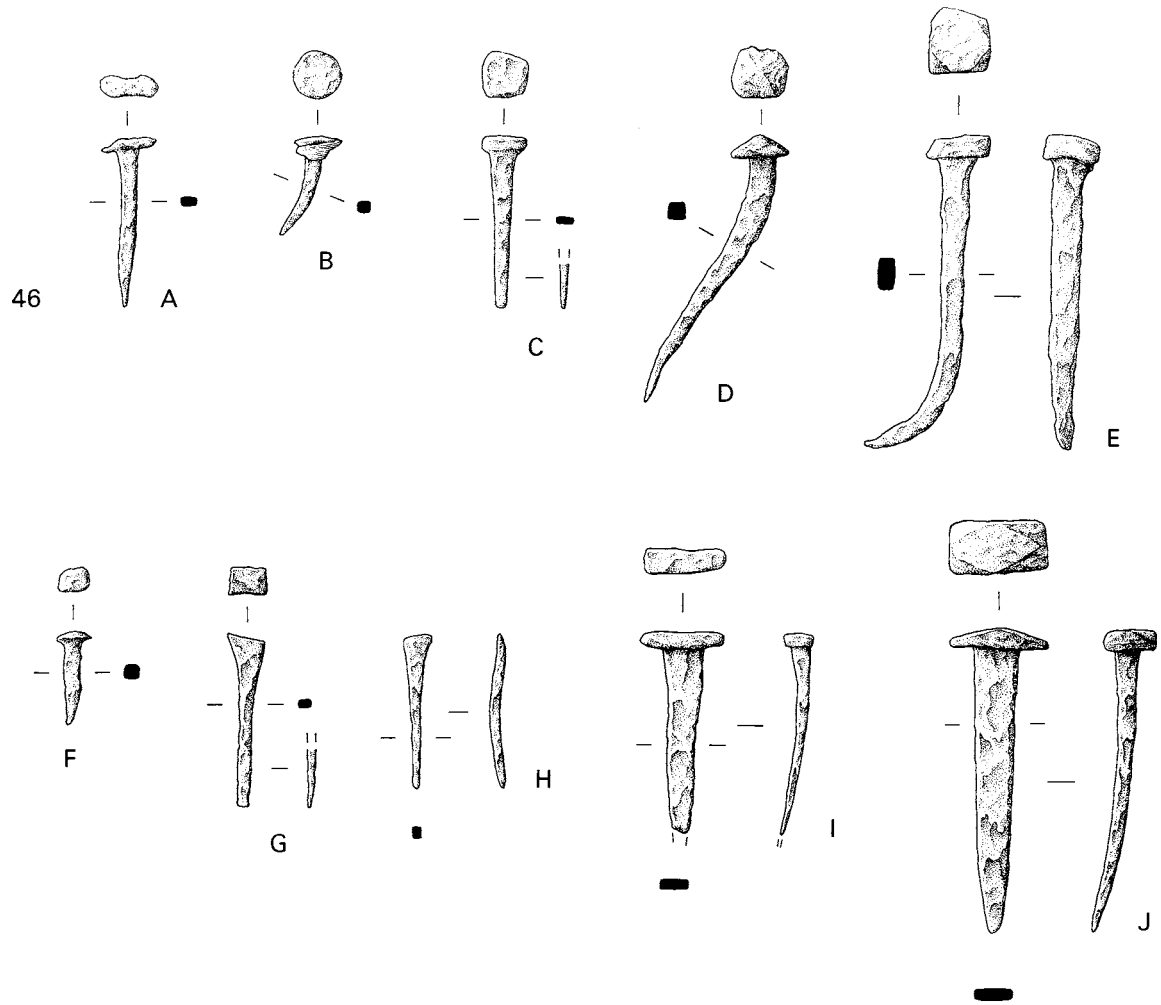

*Fig. 184 Iron: structural ironwork, nails, **46**, Types A-J (1:2).*

Table 29. Timber nails: occurrence of Types A-J by phase.

	Palace Phase				Banqueting house Phase			
	3	4	5	6	6	7	8	9
TYPE A	8	12	41	39	1	1	–	4
B	1	1	1	1	1	–	–	–
C	–	2	2	–	–	–	–	–
D	2	–	–	–	–	–	–	–
E	–	–	2	3	–	–	–	–
F	–	–	–	1	–	–	–	–
G	–	–	1	1	–	–	1	–
H	–	1	5	1	–	–	–	–
I	1	2	8	3	–	–	–	–
J	–	–	11	2	–	2	–	–

46 Timber nail typology and occurrence (Table 29):
*Type A: Flat, square head, corners often rounded.
*Type B: Flat, circular head.
*Type C: Flat, long rectangular head.
*Type D: Flat, figure-eight head.
*Type E: Flat, flaring head.
*Type F: Headless.
*Type G: Raised, square head, corners often rounded.
*Type H: Raised, long rectangular head.
*Type I: Raised, faceted, rectangular head.
*Type J: Flat, rectangular head with faceted corners.

47–8 Studs with rectangular heads and broken shanks. The head of **47** is flat, and that of **48** domed. L.30mm and 122mm respectively.
47 **R217; X4 11a; Phase 5.* ***48*** *R??; V14 2; Phase 5.*

iii. DOOR, WINDOW AND FURNITURE FITTINGS

The detailed building accounts cover only the beginning of the construction of the Inner Court when walls were in places taken up to window level, staircases begun and some of the cellar walls completed.[35] The accounts include the purchase of twenty-three pairs of stone hooks (hinge pivots) for the doors of the Inner Court, as well as iron stay-bars and standards for various windows.[36] There are no references to hinges for any doors or shutters in the palace, since these were no doubt provided later when the shell of the building was complete and it was being fitted out. Some hinges were renewed over a century later when the palace was prepared for the officers of the Exchequer, when various hinges, including six pairs of crossgarnets, were purchased.[37]

The excavated door and window ironwork exhibits some curious characteristics. The hinges, **49–68**, survive in only a very fragmentary state and ill-represent what must once have existed at Nonsuch. There are also only two hinge pivots, **69–70**, neither probably from the stone-built part of the palace, and although the iron casement frame **71** is a remarkable find, there are none of the stay-bars or standards noted in the accounts. This situation reflects the ultimate fate of the buildings, which were deliberately dismantled and their materials sold for profit.[38] The substantial items of iron which could have been reused or reworked, namely the hinges, window bars and casements, must have been salvaged, and almost all the hinge pivots removed with the jambs and frames in which they were set.

Hinges and hinge pivots (Figs 185–6)

The hinge and strap fragments, **49–68**, may come from doors or shutters or from such furnishings as cupboards and chests.[39] **49–54** are hinges which retain their means of attachment or support, **49** and **50** having hanging eyes which were usually supported on hinge pivots, whereas **51–54** have integral pins and were therefore self-supporting. The nailed U-shaped eye of **49** was not common among post-medieval hinges, when the looped eye was the more popular of the two.[40] **51** and **52** may be from butterfly hinges with pairs of identical leaves, like that from Chapel Garth, Bolton,[41] although in their incomplete form they are more like the two single leaves from Basing House[42] and Ardingly (Sussex).[43] The irregular form of the two leaves of **53** recalls a complete hinge from Basing House,[44] and those from other buildings,[45] which together indicate that such hinges could support long straps. Pinned hinges such as these, but with an overall T-shape, were known as cross-garnet hinges, a type purchased for Nonsuch in 1665.[46] The slender and simply-shaped hinge **54** may be from a small item of furniture such as a box. The strap fragments **55–68** are mostly parallel-sided, mid-length fragments, although **66** retains a lozenge-shaped terminal. **69** and **70** are hinge pivots with tapering shanks which were usually driven into timber. Hinge pivots set in masonry, and usually run-in with lead, had broader shanks [47] which often had split or down-turned ends.

35. Dent 1981, 45
36. Ibid, 273-4
37. PRO Works 5/7, 12–13: August 1665
38. Dent 1981, 206, 210
39. Edwards 1964, 61–4, 277–99, 343–6
40. Goodall 1983, 246, Fig 7, Nos 112–14; Goodall 1976b, 26, Fig 13, No 24; Moorhouse and Goodall 1971, 42, Fig 19, No 43. The last hinge was used in conjunction with an end-looped plate, not a hinge pivot
41. Goodall 1978, 140, Fig 30, No 5
42. Moorhouse and Goodall 1971, 43, Fig 19, No 48
43. Goodall 1976c, 60, Fig 9a, No 16
44. Moorhouse and Goodall 1971, 41, Fig 19, No 44
45. Lindsay 1964, 56–7, Figs 162, 164–6
46. See above, and n. 37
47. Goodall 1983, 246, Fig 7, Nos 104–110

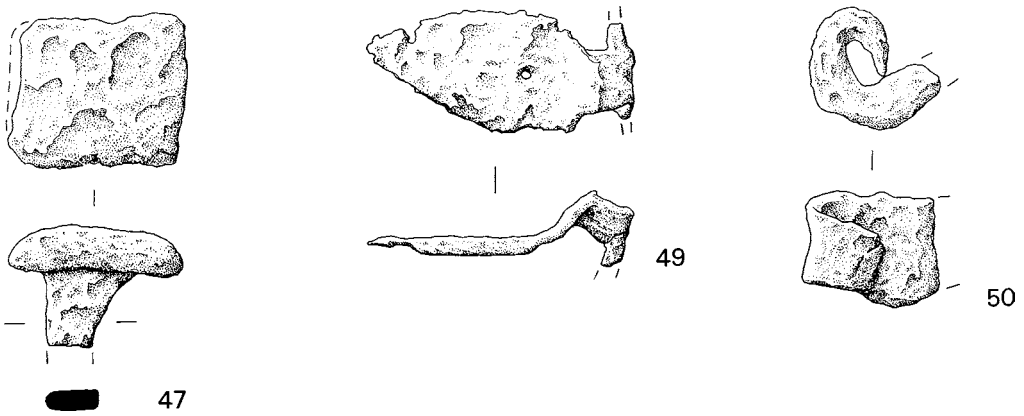

Fig. 185 Iron: structural ironwork, stud, ***47****; door, window and furniture fittings, hinges,* ***49–50*** *(1:2).*

49 Shaped, perforated rear terminal from nailed U-shaped eye of hinge. L.70mm.
**R40; QI 3; Phase 5*

50 Looped eye from hinge, broken across start of strap. L.35mm.
**R85; X7 6; Phase 5*

51 Shaped, perforated leaf from pinned hinge. L.28mm.
*R221; W4 II/IV 4c=**G4**; Phase 4*

52 Pinned hinge, one leaf shaped and near complete, the other fragmentary. L.88mm.
**R60; W8 3; Phase 5*

53 Pinned hinge, both leaves shaped but incomplete. L.120mm.
**R134; X4 11a; Phase 5*

54 Strap with shaped, nailed terminal and single loop from pinned hinge. L.115mm.
**R70; W5 over G5; Phase unknown*

55–65 Strap fragments, with dimensions ranging from L.60mm to 124mm and from W.27mm to 44mm.
55 *R39; Q3 8; Phase 3.* ***56*** *R67; CH.III 3a; Phase 3.* ***57*** *R35; X5 III/IVext 8; Phase 3.* ***58*** *R35; X5 III/IVext 8; Phase 5.* ***59*** **R248; W8 3=**G6**; Phase 4.* ***60*** *R236; X8 3; Phase 5.* ***61*** *R140; Y4 4a; Phase 5.* ***62*** *R25; X7 6; Phase 5.* ***63*** *R84; T14 II 3a; Phase 5.* ***64*** *R97; Y4 31; Phase 5.* ***65*** *R133; V14 7; Phase 5.*

66 Strap fragment with shaped, perforated terminal. L.175mm.
R??**; X7 7; Phase 5*

67 Strap fragment, distorted. L.450mm, W.50mm.
R106; Q I 3; Phase 5

68 Strap fragment. L.103mm, W.17mm.
*R **??**; W8 3; Phase 5*

69 Hinge pivot, guide arm complete, tip of shank broken. L.97mm.
R **??; U7 8=**G9**; Phase 4*

70 Hinge pivot, complete. Shank tip curved. L.40mm.
R **??; V14 4; Phase 5*

Casement window frame (Fig 187)

The building accounts of 1538 record the purchase of iron stay bars and standards for the windows,[48] the stay bars being horizontal members which ran from jamb to jamb through the mullions, and the standards the upright members,[49] but none of these was found during the excavation. An exceptional find, however, from a context associated with the occupation of the palace between 1538 and 1682/8, is the wrought-iron frame from a casement window, **71**.

Until the introduction of the hung sash to England early in the second half of the seventeenth century,[50] the casement window, hinged on one side to open either inwards or outwards, was the most usual type of glazed, opening window. Windows with the glazing set in an iron frame,

48. Dent 1981, 43, 45, 273–4
49. Salzman 1967, 292
50. Louw 1983, 57–69; Louw and Crayford 1998 and 1999

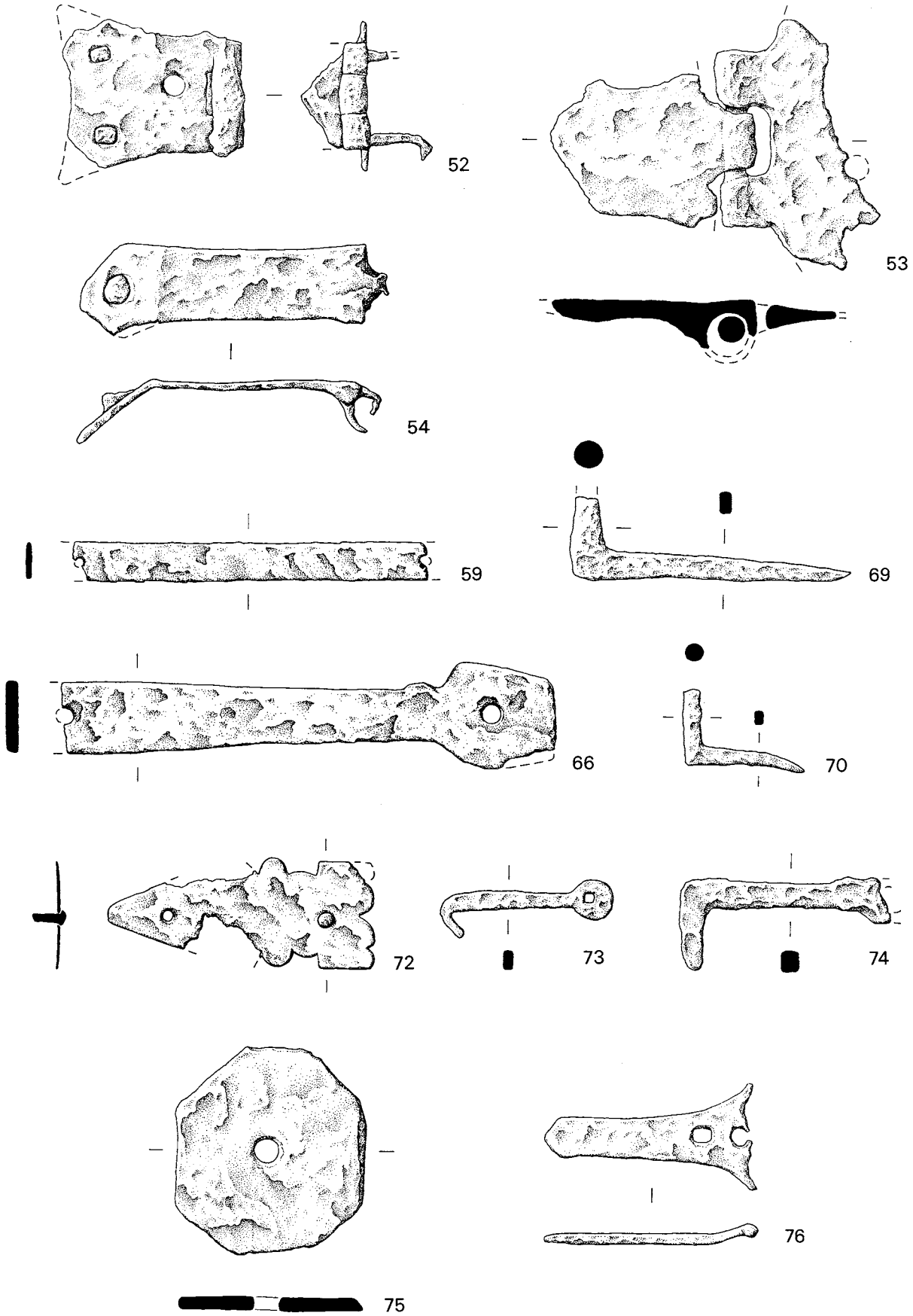

Fig. 186 Iron: door, window, and furniture fittings, hinges continued, ***52–4***, ***59***, ***66***, ***69***, ***70***; *miscellaneous fittings,* ***72–6*** *(1:2).*

or casement, are recorded in documents from at least the mid fourteenth century, and were sometimes described as 'double', evidently indicating that the glazed frame hinged on an outer iron frame.[51] The Nonsuch casement is just such an outer frame, which would originally have been mortared into a brick or stone window opening. The projecting rib along the top, which is on what was the outer face of the iron frame, acted as a weather mould, preventing water penetrating downwards through the frame when it was closed. The two integral pivots on one side of the frame supported an outward-opening casement; the rectangular notch cut out of the opposing side of the frame must relate to a catch.[52] The missing glazed casement window, with sockets to fit the pivots of the frame, is likely to have resembled known seventeenth and early-eighteenth century examples, although the form of its catch must remain in doubt.[53] The Nonsuch casement frame may be an original fitting dating from the period of construction from 1538 to 1547, although there were subsequent repairs, and the works carried out in 1665 included the purchase of 'casements'.[54]

71 Wrought-iron casement window frame. H. 640mm, W.397mm.
R452; W12/13 8=G11**; Phase 4*

Miscellaneous fittings (Fig 186)

72–76 are a series of minor fittings of which **72**, the intricately-shaped sheet-iron back plate from a latch, is the most distinctive. Some of the latches which secured sixteenth and seventeenth-century casement windows had similarly shaped, although stouter, back plates which supported either a latch bar or a turn catch,[55] but the smaller and slighter back plate from Nonsuch is more likely to be from a cupboard or internal shutter latch.[56] The mechanism of the Nonsuch latch is missing, but the disposition of holes suggests that it had a spring latch like those on a contemporary example from Basing House (Hampshire)[57] and on two other later latches.[58] There is, however, no indication that the Nonsuch latch had a handle, or was capable or being operated from more than one side, and in that respect it resembles the later latches rather than that from Basing House. The small hooks, **73** and **74**, might be from furniture, as probably is **75**, the octagonal back plate from a handle. **76** is similar in shape to a book clasp, although not identical, and it may be some type of hasp.

72 Shaped back-plate from plate latch. Edges damaged, mechanism lost. L.92mm.
**R188; X8 4; Phase 5*

73 Looped hook. Non-ferrous coating. L.59mm.
R??**; W8 3; Phase 5*

74 Looped hook. Loop broken. L.75mm.
**R293; U8 2a; Phase 5*

75 Octagonal handle plate with central hole. W. 68mm.
**R235; X5 III/IV 6; Phase 5*

76 Book clasp with shaped terminals, rear spring lost. Non-ferrous coating. L.75mm.
**R121a; W2 5a; Phase 5*

51. Salzman 1967, 293–4
52. I am grateful to David Michelmore for his comments on this casement frame
53. Davies 1973, 89-95, Figs 2–4; Lindsay 1964, 53–4, Figs 138–42
54. PRO Works 5/7, p.13: August 1665
55. Lindsay 1964, 53–4, Figs 139–41; Davies 1973, 89, Fig 3
56. Lindsay 1964, 56, Figs 148–9, 159–60 show the form of related but later latches
57. Moorhouse and Goodall 1971, 41, Fig 18, No 36
58. Lindsay 1964, 56, Figs 159–60

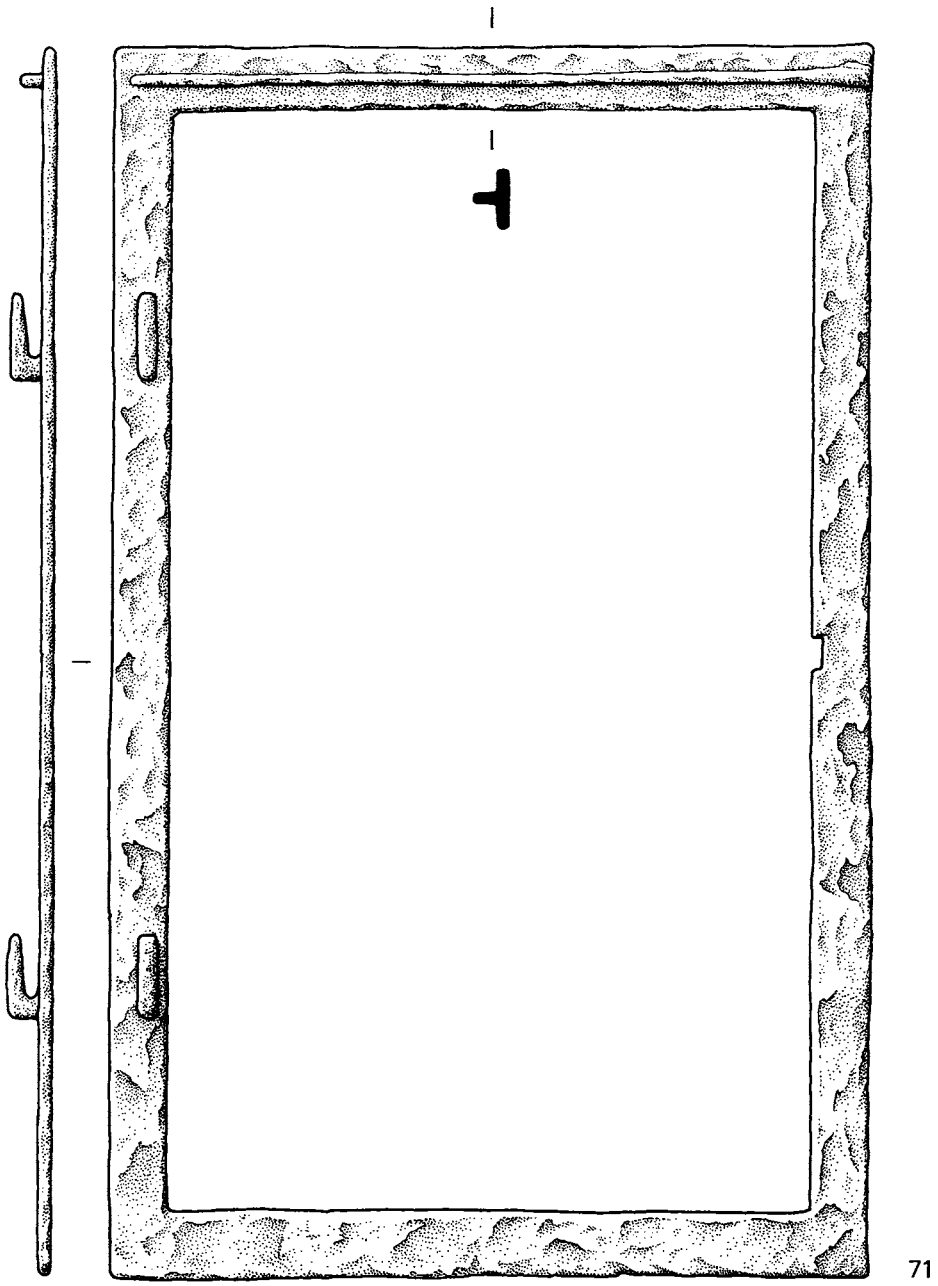

Fig. 187 Iron: casement window frame, ***71*** *(1:4).*

iv. LOCKS AND KEYS

The building accounts of 1538 record only a few relevant items, in particular a stock-lock, stock-lock keys, and a padlock for a chest,[59] but a much wider range of lock furniture was excavated.

Padlocks (Fig 188)

A number of different types of padlock were in use during the post-medieval period, and most are represented among the finds from Nonsuch. Barrel padlocks, in a variety of different forms, had been the commonest type of padlock in medieval Britain,[60] and although they were largely superseded in popularity in the late medieval period by other types of padlock, one type, the barrel padlock with shackle, remained in use throughout the post-medieval period. **77** and **78** are the distinctive T-shaped bolts from such padlocks, each with a pair of leaf springs which passed through the perforated tip of the hinged shackle, as an example from Sandal Castle (Yorkshire) indicates.[61] Other post-medieval padlocks of this type include those from Chelmsford (Essex) and Chingley Forge (Kent),[62] while evidence of its longevity is provided by examples from eighteenth-century contexts in North America.[63]

Medieval barrel padlocks all had separate bolts with leaf springs, but most of the new types of padlock introduced during the late medieval period had different types of mechanism. **79** is part of an embossed padlock, a type with a flat, rectangular backplate and a dished case housing the lock mechanism. The type was probably introduced during the late thirteenth or early fourteenth century, and initially had a mechanism with a sliding bolt derived from contemporary locks, as an almost complete example from Goltho (Lincolnshire) indicates.[64] During the fifteenth or sixteenth century, however, an alternative mechanism with a pivoting bolt, of which **79** is an example, was introduced. This type, of which a better preserved example is known from North Elmham Park (Norfolk),[65] continued in use into the eighteenth century,[66] and the Nonsuch fragment could therefore be derived from any period of the palace's occupation.

Padlocks with sliding L-shaped bolts which engaged in pivoting shackles, and which were operated by revolving keys, were another late medieval introduction. These new padlock types were initially produced in Europe, principally in Germany, in the fifteenth and sixteenth centuries,[67] and in Britain they were at first either box-shaped or globular. Box-shaped padlocks of this date include those from Norwich and Winchester,[68] but the globular type, of which **80** is an example, does not seem to have been introduced until the late sixteenth century. Examples of this date are known from Chelmsford and Hull;[69] seventeenth-century examples come from Chingley Forge and St. Ebbes (Oxford)[70], eighteenth century ones from North America[71].

Bag-shaped padlocks with flat cases first appeared in North America in the late seventeenth century,[72] and that from Nonsuch, **81**, is therefore likely to be an early British example. Its mechanism, with its toothed sliding bolt, is derived from medieval locks and embossed padlocks, and its simple D-shaped case evolved during the eighteenth century into a distinctive lugged D-shape.[73]

59. Dent 1981, 273–4
60. Goodall 1981, 60, Fig 57, Nos 2–6
61. Goodall 1983, 246, Fig 7, No 121
62. Goodall 1985a, 54, Fig 33, No 52; Goodall 1975, 70, 73, Fig 35, Nos 97–101
63. Dunton 1972, 167, Fig 77, No 17; Hume 1970, 249–50, Fig 78
64. Goodall 1975, 84, Fig 39, No 65
65. Goodall 1980, 509, Fig 265, No 10
66. See Dunton 1972, 166, Fig 77, No 13, for one from Louisbourg, Canada
67. Hume 1970, 250
68. Goodall 1985b, 62, Fig 44, No 70; Goodall 1990b, 1003, 1015, Fig 316, Nos 3684–5
69. Goodall 1985a, 54, Fig 33, No 53; Goodall 1977, 65, Fig 27, No 90
70. Goodall 1975, 73, Fig 35, Nos 102–3; Goodall 1984, 229, Fig 37, Nos 37–8, and fiche
71. Hume 1970, 250, Fig 79
72. Hume 1970, 250
73. Hume 1970, 250–1, Fig 80; Goodall 1985c, 126, Fig 12 upper, 2a-b

77 T-shaped barrel padlock bolt with hollow, circular head and single spine with double-leaf spring riveted through its base. L.86mm.
**R19; U8 3; Phase 5*

78 T-shaped barrel padlock bolt with circular closing plate at head of single spine with double leaf spring riveted through its base. Top of spine is riveted through a looped finger hold. L.77mm.
**R213; Y7 8; Phase 5*

79 Embossed padlock. Incomplete, flat, sheet-iron lockplate retaining lock mechanism, namely a circular collar for the solid tip of a key, outer collars which the key bit had to pass, and a pivoting L-shaped bolt held in tension by a spring tumbler.
**R65; W4 II/IV 2; Phase 5*

80 Globular padlock with hinged shackle in open position. Lock mechanism includes L-shaped bolt and support for key tip. Diam.48mm.
SF411; P/Q 15/16 16=G19**; Phase 4*

81 Bag-shaped padlock with hinged, U-shaped shackle. The case has a keyhole and an opposed internal support for the key, and its mechanism includes a toothed lock bolt held by a pair of staples. The U-shaped shackle is in an open position; when locked within the case, the bolt passed through the indentation in the side of its broadened tip, so securing it within the case. W.72mm.
**R5; Q9 i 4; Phase 5*

Locks (Fig 188)

Post-medieval locks were of two main types, plate-locks and stock-locks. The mechanisms of the two differed significantly, plate-locks having bolts which engaged stapled hasps, and stock-locks having bolts which passed out of the case and engaged in a keeper, the 'staple' in the building account which records the purchase in 1538 of a 'stock lock and staple'.[74] Nonsuch produced no plate-locks,[75] but **82-4** are some of the components of stock-locks, being a ward plate with collars, a tumbler, and a bolt. The cut in the top of the bolt acted as a rest for a tumbler. Stock-locks were of two types, namely plain stock-locks with their components set in a wooden case, and plate stock-locks in which they were attached to an iron lockplate. **82–4** could be from either.[76] Similar components are known from other sites, among them Sandal Castle.[77]

85 is evidently a type of draw bolt, and may be compared with some from Basing House.[78] The stapled hasp, **86**, perhaps from a chest, is simpler in form than one from Basing House.[79] In use the staple of the hasp passed through the lockplate of a plate-lock, and was engaged and secured by the sliding bolt.

82 Ward plate with keyhole flanked by collars. L95mm.
**R254; W6ext2 2; Phase 5*

83 Tumbler from lock. Fixed to the lockplate through the perforated, lozenge-shaped terminal, its longer arm held the lock bolt in place. L.82mm.
**R150; Y9 4; Phase 6*

84 Lock bolt. Decorative shaping to underside and slot into which tumbler settled on upper side. Non-ferrous coating. L.105mm.
R255; W8 7=G6 or Cellar**; Phase 4*

85 Draw bolt. Backplate damaged. L.124mm.
**SF32; W4 I/II 4; Phase 5*

86 Stapled hasp. Trapezoidal fixing plate with nail holes attached by pinned hinge to shaped arm with U-shaped staple and incomplete, hooked finger hold. L.86mm.
**R75; W13 3; Phase 6*

74. Dent 1981, 274
75. For some good post-medieval plate-locks see Goodall 1993, Nos 1241–5
76. Hume 1970, 243–5, Figs 77a, 77b
77. Goodall 1983, 246, Fig 7, Nos 123–5
78. Moorhouse and Goodall 1971, 41, Fig 18, Nos 37–9
79. Ibid. 43, Fig 19, No 45

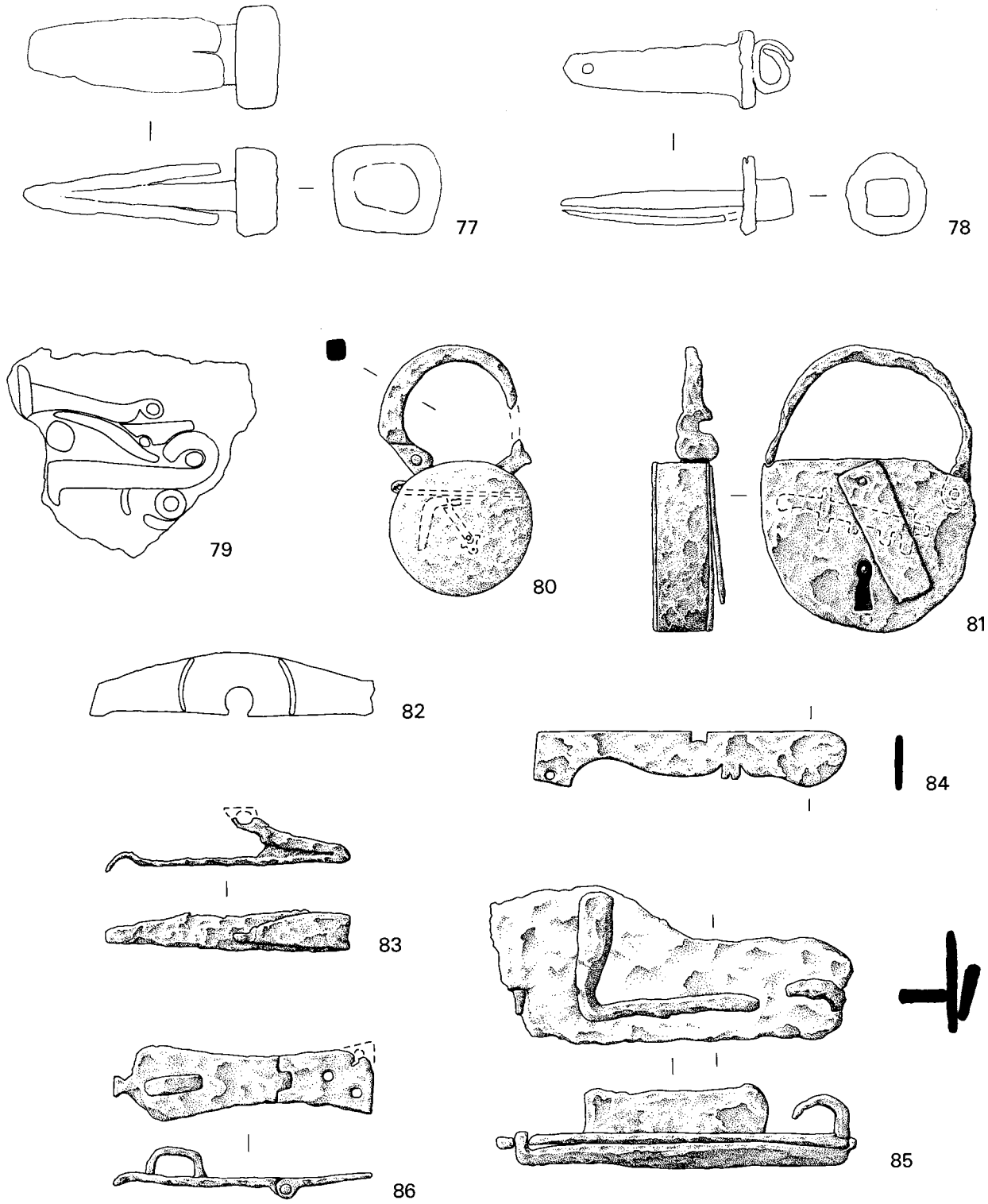

Fig. 188 Iron: padlocks, ***77–81****; locks,* ***82–6*** *(****77–9****,* ***82*** *drawn from X-rays) (1:2).*

Padlock key and keys (Fig 189)

The padlock key, **87**, with its broad stem, simply-formed hooked terminal, and laterally-set bit, is typically post-medieval in form,[80] and is of a type used with barrel padlocks with shackles, noted above (p 00) as the main type of barrel padlock in use in the post-medieval period.

Keys **88–96** are all sufficiently large to have been used with locks rather than with some of the contemporary types of padlock. All have solid stems, as was usual for most post-medieval keys, those of **87–91** ending on line with the bit, those of **92–5** projecting beyond it and sometimes ending in a knobbed tip. The difference is significant since the first type could only be used from one side of a lock, whereas the other was more versatile, and was particularly suitable for locks which could be operated from two sides. This difference is also reflected in the ward cuts of the bits. **87–91** have asymmetrical arrangements, whereas **92–5** have the symmetry required for operation from two sides. Most of the key stems are plain, although a few (**89**, **92**, and **96**) are moulded. The bows are generally kidney-shaped, the commonest form at the time; **90** is unusual in having an externally pointed bow, a shape also found at Chelmsford.[81] The range of keys may be compared with other contemporary collections from Basing House, Bolingbroke Castle and Sandal Castle.[82]

87 Padlock key with broad stem, hooked terminal and asymmetrical, laterally set bit. L.145mm.
**R32; X5 III/IV 6; Phase 5*

88 Key with kidney-shaped bow, solid stem and incomplete bit. L.93mm.
R135; W15 5=SA C**; Phase 5*

89 Key with broken, shaped bow, moulded and solid stem, and bit. L.71mm.
**R286; Q7 19; Phase 5*

90 Key with externally heart-shaped and internally kidney-shaped bow, solid stem and channelled bit. L.89mm.
**R101; Q6 4a; Phase 5*

91 Key with kidney-shaped bow, solid stem and broken bit. L.84mm.
R187; Unstratified

92 Key with broken, shaped bow, moulded and solid stem, and bit. L.52mm.
**SF522; BH BV VI 2; BH Phase 4*

93 Key with broken, kidney-shaped bow, solid stem and broken bit. L.131mm.
SF175; W1 5i=G2**; Phase 4*

94 Key with kidney-shaped bow, solid stem with knobbed tip and symmetrical bit. L.135mm.
SF353; Y4 35=Well**; Phase 4*

95 Key with internally kidney-shaped bow, solid stem with knobbed tip and symmetrical bit. L.121mm.
R451; W4 II/IV 4c=G4**; Phase 4*

96 Key with kidney-shaped bow, solid and moulded stem, and broken symmetrical bit. L.107mm.
**SF310; Y4 1; Phase 8*

v. DOMESTIC IRONWORK

Lighting (Fig 190)

The iron candlesticks from Nonsuch are of two principal types, having either a pricket or a socket. The pricket candlestick, **97**, is both simple and elegant, the iron pricket on which the candle was impaled being set in a chamfered stone base. Pricket candlesticks were not always as simply formed, and were often combined with side scrolls and sockets.[83] The socketed

80. See padlock keys from Bolingbroke Castle: (Goodall 1976b, 26, Fig 13, No 10) and the Brenig Valley (Goodall 1979, 39, Fig 12, No 14)
81. Goodall 1985a, 54, Fig 33, No 56
82. Moorhouse and Goodall 1971, 39–41, Fig 18, Nos 22–35; Goodall 1976, 26, Fig 13, Nos 11–23; Goodall 1983, 246–8, Fig 7, Nos 126–38
83. See Goodall 1981, 60, Fig 58, Nos 8–10; Goodall 1987, 199–201, Fig 114, Nos 133–4; Lindsay 1964, 43–4, Figs 221–2, 225–7

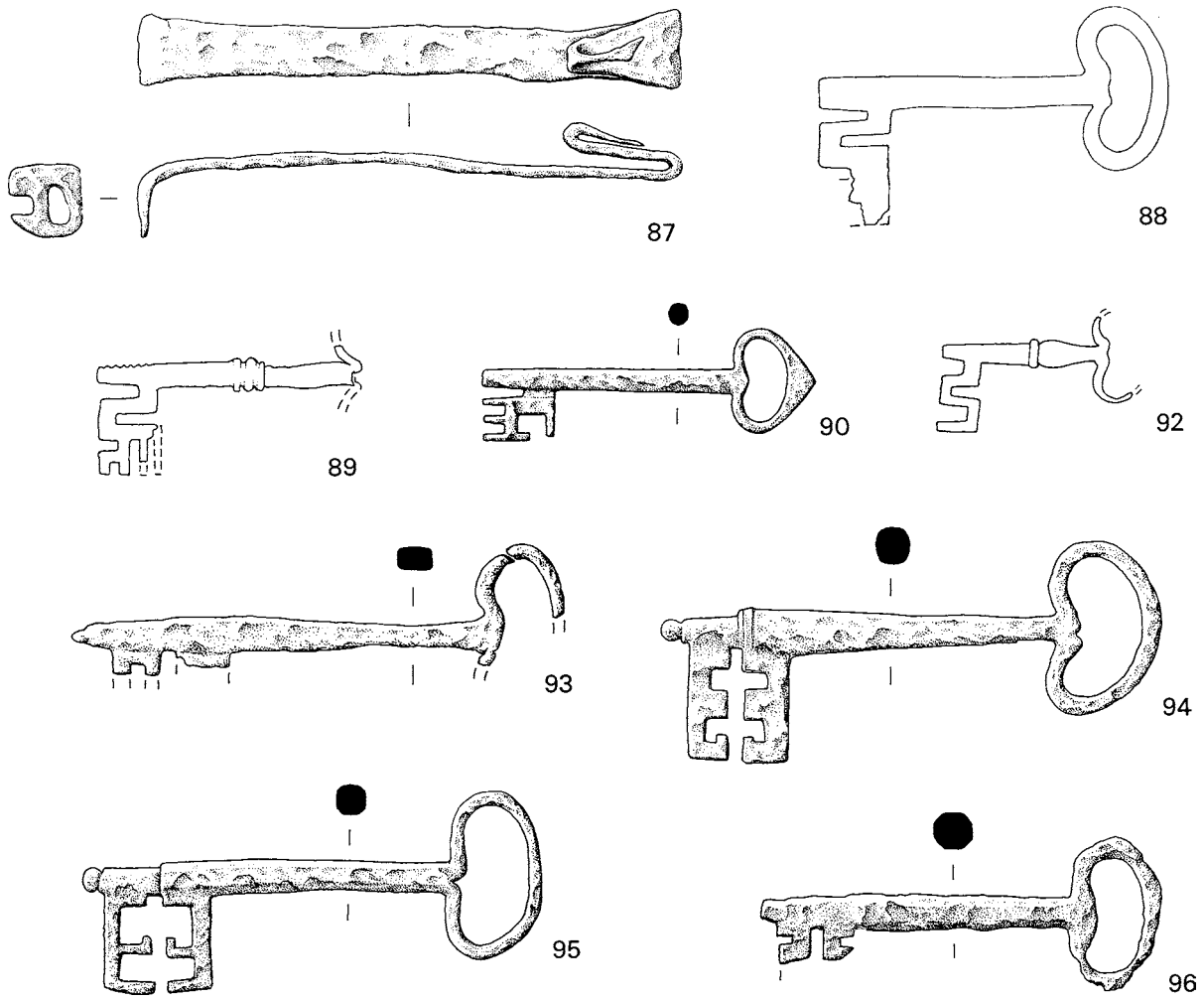

*Fig. 189 Iron: padlock key, **87**; keys, **88–90**, **92–6** (**88–9**, **92** drawn from X-rays) (1:2).*

candleholders, **98-101**, include none of the type found at Basing House and Sandal Castle,[84] with sockets set on the end of straight or angled stems. Instead **98**, one of the most complete, has a candle socket set in the centre of a rectangular wax pan. It is not certain that it ever had a projecting arm for carrying and fixing, in the manner of some late medieval candleholders from Oxford and Grenstein (Norfolk).[85] **99** is the corner of a wax pan, and **100** a socket set on a square base. **101** is a rare example of a standard candleholder which would have been a freestanding item of furniture in a public place. The conical iron mount, with its flat top set with three candle sockets, would have been mounted on top of a tall timber stand. Manuscript illuminations include related examples entirely made from iron.[86]

The fire steels or strike-a-lights, **102–103**, are of two distinct types. **102** is similar in form to

84. Moorhouse and Goodall 1971, 38, Fig 17, Nos 17–19; Goodall 1983, 248, Fig 8, Nos 139–40
85. Goodall 1980a, Fig 30, No 58, fiche CO8; Goodall 1980b, 131, Fig 81, No 73
86. Lindsay 1964, 43, Fig 224

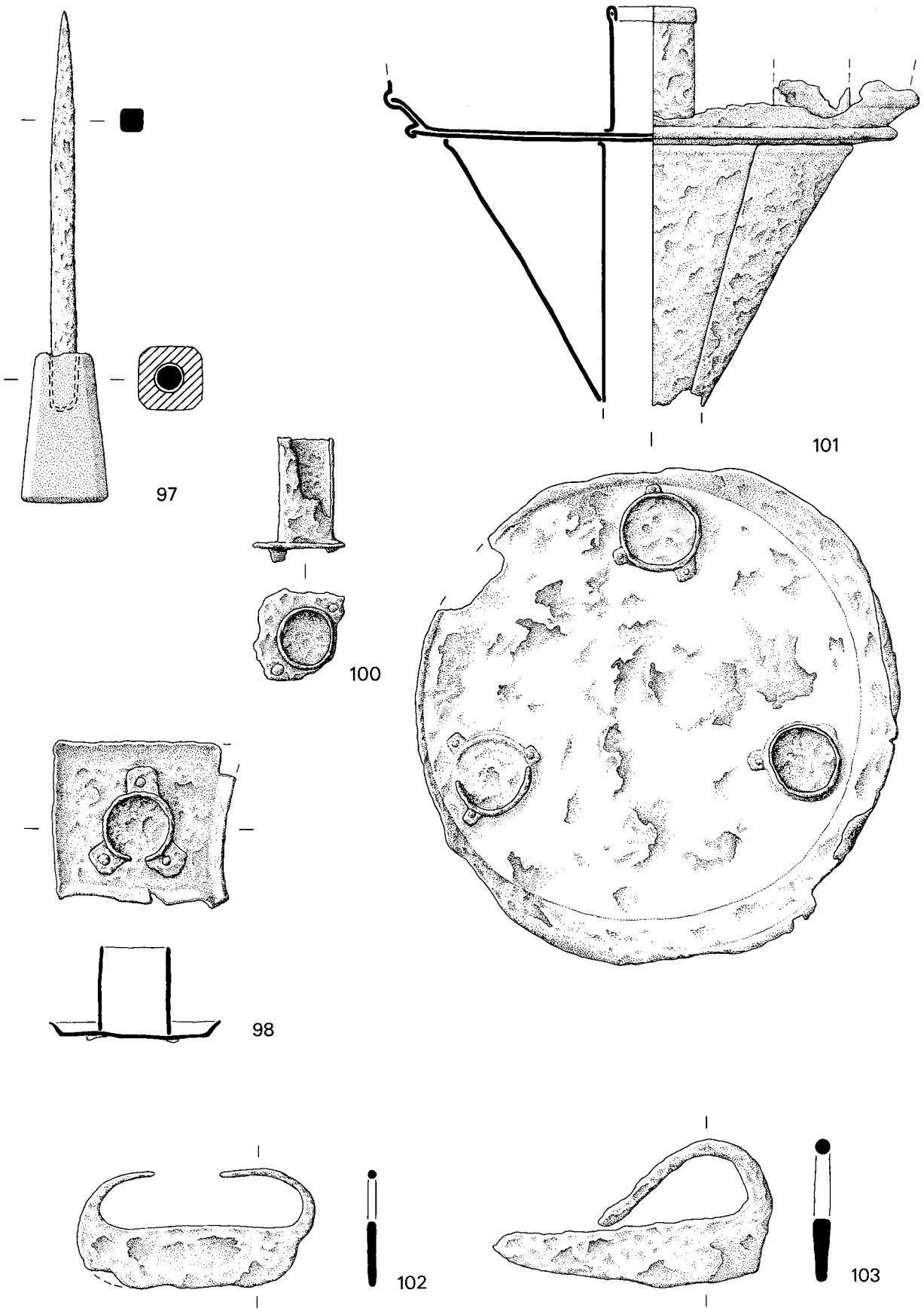

Fig. 190 Iron: lighting, pricket candlestick, ***97****; candleholders,* ***98****,* ***100–1****; fire steels,* ***102–3*** *(1:2).*

some medieval examples, as well as to a less complete steel from a mid to late seventeenth-century context at St. Ebbes (Oxford).[87] **103** is like a post-medieval steel from Montgomery Castle.[88]

97 Pricket candlestick. Circular-sectioned iron pricket set in shaped and chamfered stone base. Pricket: L.136mm, overall L.173mm.
**SF199; W5ext 2b; Phase 5*

98 Candleholder with dished, rectangular wax pan with corner spouts. Central candle socket secured by three riveted terminals. W.65mm.
SF150; W1 5c=G2**; Phase 4*

99 Candleholder. Corner spout and fragment of dished, rectangular wax pan. W.45mm.
*R28; W1 5c=**G2**; Phase 4*

100 Candleholder with incomplete flat, square plate to which candle socket is attached. W.32mm.
R71; W1 5c=G2**; Phase 4*

101 Standard candleholder. Inverted and truncated sheet-iron cone with moulded rim, flat top plate supporting three individual candle sockets, and central, cylindrical socket, open at lower end, for timber standard. Max. Diam.188mm.
**R155; Q5 i 2; Phase 8*

102 Fire steel with two handles and a rectangular blade for striking the flint. L.85mm.
**R243; U14 4; Phase 5*

103 Fire steel with tapering blade and single handle. L.98mm.
**R126; X4 I/II 2/W4 I/II 2; Phase 6*

Vessels (Figs 191–4)

Vessels are represented by a series of rim, body and other fragments, **104–12**, and by a range principally of bucket handle supports, **113–21**. The body fragments are all of sheet iron, many of them tinned, and include (**104–8**) a series of curved rim and body fragments from dishes, some plain, others moulded. The dishes were probably circular in shape, although some of the pieces are sufficiently small that they may be from a sub-rectangular dish similar to that from Basing House.[89] All the rim fragments, like that of the Basing House dish, have rolled-over edges, a number of them rolled around wire for extra strength. The handle fragments which form part of **107** and **112** also have rolled round edges, and in addition **112** includes a tubular spout. The mug, **109**, is almost complete, in contrast to **110**, a distorted and incomplete watering can which retains the base of the pouring spout and its filter plate. **111**, from the same context as **110**, is an even more fragmentary watering can.

113–21 are vessel handle supports of various shapes and sizes, **113–15** found in former wells are the largest and most substantial of the supports, their inverted Y-shape, a form also represented at Basing House,[90] serving to spread the load across several wooden staves. **116–20** are all shapes with medieval antecedents, **116-17** being identical to those on a bucket from Castell-y-Bere,[91] **120** to those on one from Duffield Castle.[92] The end-looped forms of **116–19** also have post-medieval parallels.[93] **119** is of note because part of the attached handle also survives. **121** is of thicker iron than the other supports, and might be from a cart or other object, and not a vessel.

104 Rim and part of body of tinned sheet-iron vessel. Rim rolled round. Dim. 206mm.
**R3; U1 6; Phase 5*

105 Rim and part of body of tinned sheet-iron vessel. Rim rolled round a length of wire. Diam. 228mm
**R3; U1 6; Phase 5*

87. Goodall 1984, fiche IV D9–10, Fig 129, No 69
88. Lewis 1968, 151, Fig 8, No 20
89. Moorhouse 1971, 54, Fig 24, No 138
90. Moorhouse and Goodall 1971, 56, Fig 24, No 145
91. Butler 1974, 100–1, Fig 10, plate XXIV
92. Dunning 1974, 104–5, Fig 13
93. Goodall 1984, fiche IV E3–4, Fig 133, No 119; Moorhouse and Goodall 1971, 44, Fig 20, No 64; Goodall 1985a, 54, Fig 33, No 61

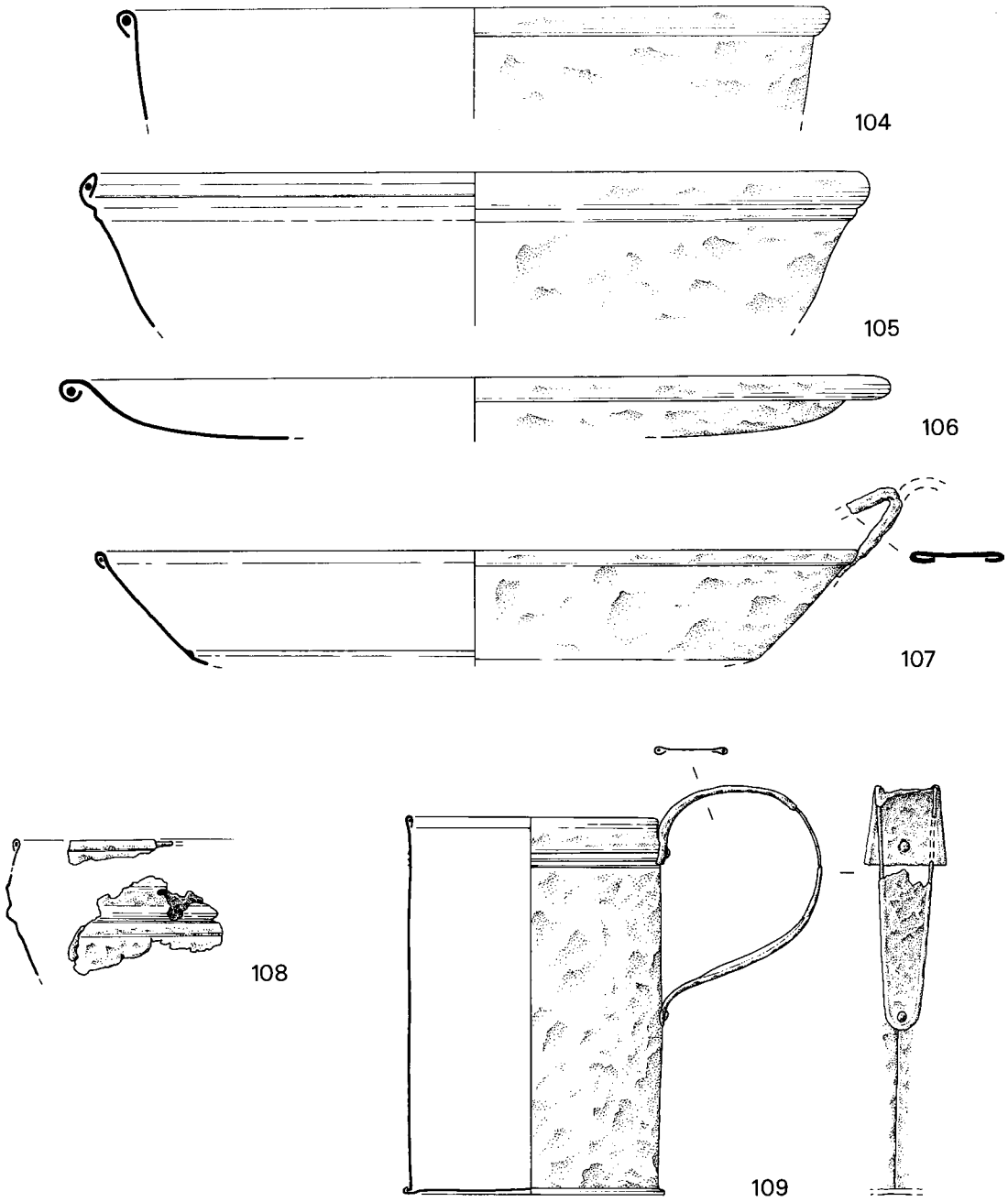

Fig. 191 Iron: vessels, ***104–9*** *(1:2).*

106 Moulded rim and part of body of tinned sheet-iron vessel. Diam. 240mm.
**R3; U1 6; Phase 5*

107 Rim and part of curved handle with rolled edges, both of tinned sheet-iron. Rim: W.31mm, H.14mm; handle: L.29mm, W.27mm.
**R2; U1 6; Phase 5*

108 Moulded and ridged fragment of tinned sheet-iron. L.41mm, W.27mm.
R **??; U1 6; Phase 5*

109 Sheet-iron mug with rolled rim, and handle with rolled sides strengthened by lengths of wire. H.107mm.
**R5; U1 6; Phase 5*

110 Sheet-iron watering can, now badly distorted and incomplete. The fragments include part of the spout and associated filter plate. W.186mm.
**R2; U1 6; Phase 5*

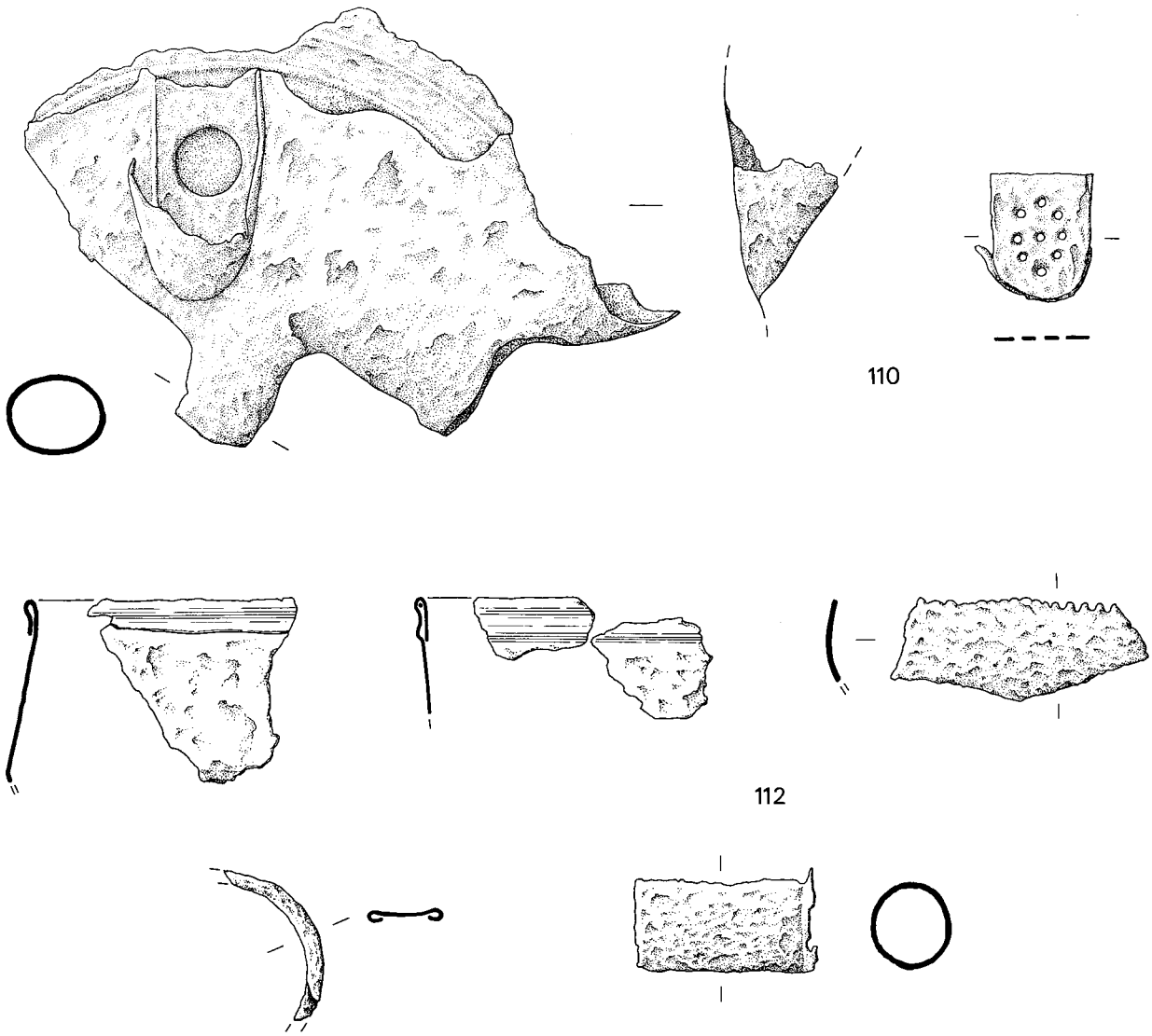

Fig. 192 Iron: vessels, ***110****,* ***112*** *(1:2).*

111 Sheet-iron vessel, evidently a watering can, represented by a fragment of a filter plate (L.24mm, W.19mm) similar to **110**, a length of a straight handle with rolled edges (L.95mm, W.33mm, and a body fragment with a rolled rim (L.52mm, Diam.40mm).
*R**??**; U1 6; Phase 5*

112 Sheet-iron vessel fragments comprising a plain tubular spout, a handle fragment with rolled edges and body fragment with a turned-over rim. Spout L.50mm., Diam. 25mm.
**R122 and R164; W2 5a; Phase 5*

113–115 Three looped, inverted Y-shaped handle supports, curved in side view, all with nailholes in their arms. **113–114** are crudely forged. **113**:L.277mm; **114**:L.340mm; **115**:L.295mm.
113 **R149; Y4 33=**Well**; Phase 4.* ***114*** **R149; Y4 33=**Well**; Phase 4.* ***115*** **Y4 35=**Well**; Phase 4.*

116–117 End-looped handle supports with plain, perforated straps.
***116**:L.152mm, **117**:L.222mm.
116 *Y4 35=**Well**; Phase 4;* ****117*** *R151; Y4 35=**Well**; Phase 4*

118 End-looped handle support with shaped, perforated but broken strap. L.79mm.
R??**; BH BV Tr I 5; BH Phase 5*

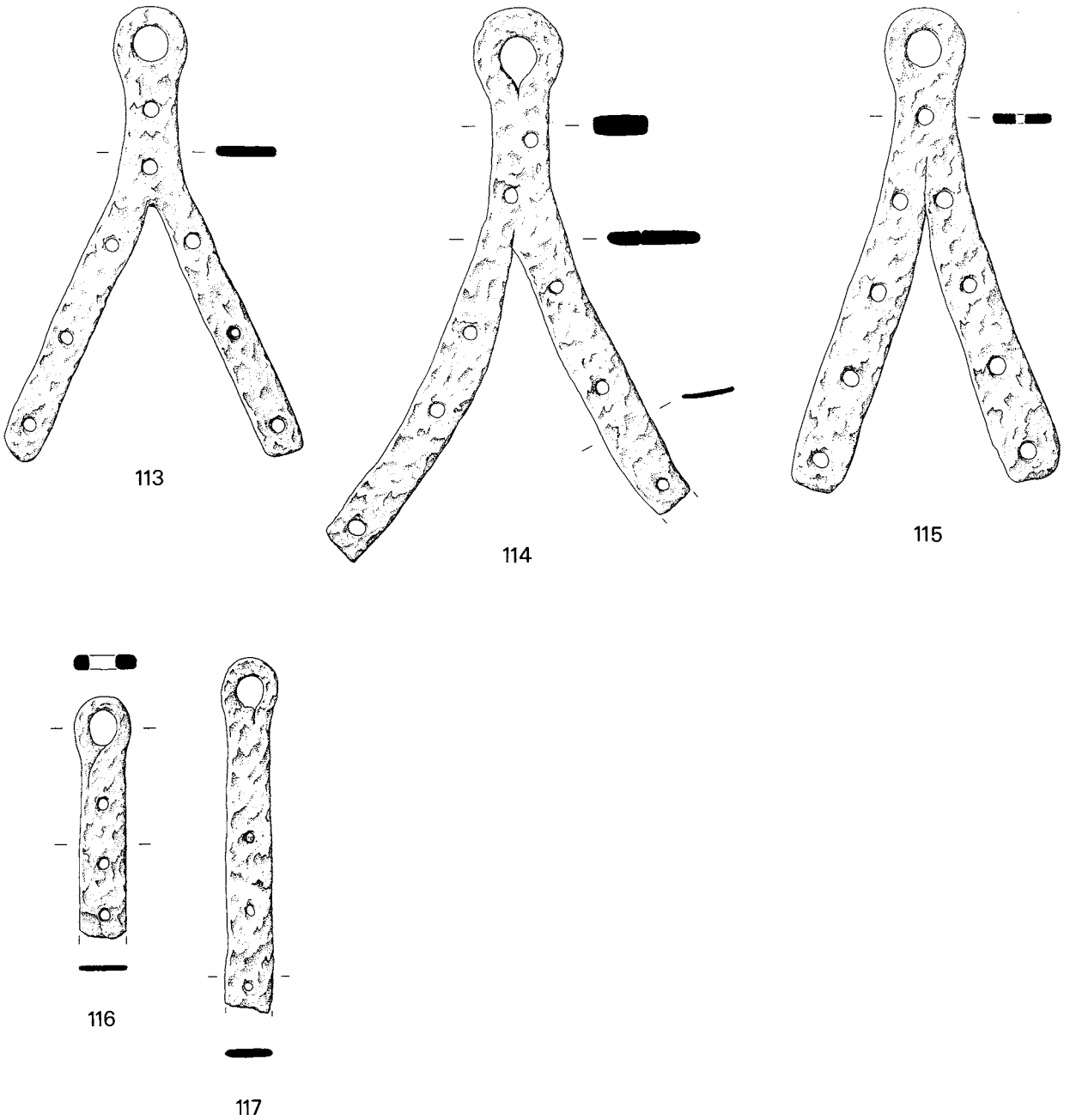

Fig. 193 Iron: handle supports for wooden vessels, ***113–17*** *(1:4).*

119 Curved vessel handle, broken across shaped hand grip, its hooked terminal set through the end-loop of a simply-shaped, perforated strap. Overall L.260mm.
**R97; Y4 31; Phase 5*

120 U-shaped handle support, both terminals broken. W.52mm.
**R252; X15 5; Phase 6*

121 Shaped, perforated plate with inner hole, perhaps a handle support. L.110mm.
**R81; P/Q 2/3 2; Phase 5*

Chains, collars and washers (Fig 194)

The chains, collars, and washers, **122–8**, could have been used for a variety of purposes. There is a similar series from Sandal Castle.[94]

122 Oval chain link, broken. L.104mm.
R94; Y4 33=Well**; Phase 4*

123 Chain with alternating figure-eight shaped and S-shaped links. Overall L.75mm.
R13; W5 7; Phase 5

124 Oval collar. L.58mm.
**SF512; BH B5 III 4; BH Phase 2*

125–6 Circular collars. Diam.38mm and 46mm respectively.
125 **SF59; U7 2; Phase 5.* ***126*** **R245; V8 3; Phase 5*

127–8 Circular washers. **127** has diam.46mm. **128** has external diam.45mm, W.12mm.
127 *R**??**; Y4 27; Phase 5.* ***128*** **R193; Y4 29; Phase 5*

Tools (Figs 195–7)

Tools **129–34** all come from demolition contexts, **129** of the Cuddington buildings, **130–34** of the Palace. The mattock, **129**, is ideally formed for use in demolition, whether for breaking up soil or levering apart timber, brick or stone. Medieval documents refer to mattocks, although less frequently than to picks;[95] stratified examples are rare. **130** and **131**, a chisel blade and mason's punch, and **132**, a trowel, are like near-contemporary tools from Sandal Castle.[96] Leatherworkers' tools are usually represented by knives, awls and creasers; the leatherworker's punch, **133**, is a rare find. It is shaped to produce a circular hole some 8mm in diameter, and may have been used to maintain harness or other leather fittings.[97] The rake tooth, **134**, is like others of similar date from St. Neots and Oxford,[98] and was mounted with other teeth in the wooden rake back.

135–6 are from occupation deposits, and the bell clapper, **135**, may have come from a bell similar to that from Aldgate in London.[99] The ferrule, **136**, though not unlike contemporary chapes in shape,[100] is too crude to be one; it must, however, have served a similar purpose on the tip of a shaft.

129 Mattock. Tip of iron blade missing; other arm ends in broad cutting edge. Socket retains remains of iron-impregnated wooden handle; remainder of handle survived as soil mark on excavation (Fig 196). L. of iron blade 692mm; L. of wooden handle 760+mm.
**R291; CUD I 15; Phase 3*

130 Woodworker's chisel blade, broken. L.168mm.
**R105; W5 2b; Phase 5*

131 Mason's punch, circular in section becoming square at tip. L.243mm.
**SF13; X5 I/II 2; Phase 5*

132 Trowel with cranked tang and triangular-shaped blade, both broken. L.138mm.
**SF396; S14 III 4; Phase 5*

133 Leatherworker's punch with head burred by hammering and stem expanding into wide, hollow blade with 10mm. diameter tip. L.100mm.
R??**; Q5 i 2; Phase 5*

134 Rake tooth with clenched tip to secure it in the frame of the wooden rake. L.202mm.
**R254; W6ext 2; Phase 5*

135 Bell clapper with suspension loop. L.152mm.
R433; W5ext 3=G5**; Phase 4*

136 Ferrule, oval in section, tapering to rounded tip. L.138mm.
**R191; U1 6; Phase 5*

94. Goodall 1983, 248, Fig 8, Nos 150–9
95. Salzman 1967, 331–33
96. Goodall 1983, 240, Fig 4, Nos 31, 43; Fig 5, Nos 44–6
97. Salaman 1986, 165, 228, 266–9
98. Addyman and Marjoram 1972, 90, Fig 42, No 16; Goodall 1984, fiche IV E1–2, Fig 132, Nos 100–1
99. Grew 1984, 114–16, Fig 57, No 92
100. Goodall 1983, 248–50, Fig 9, Nos 201–4

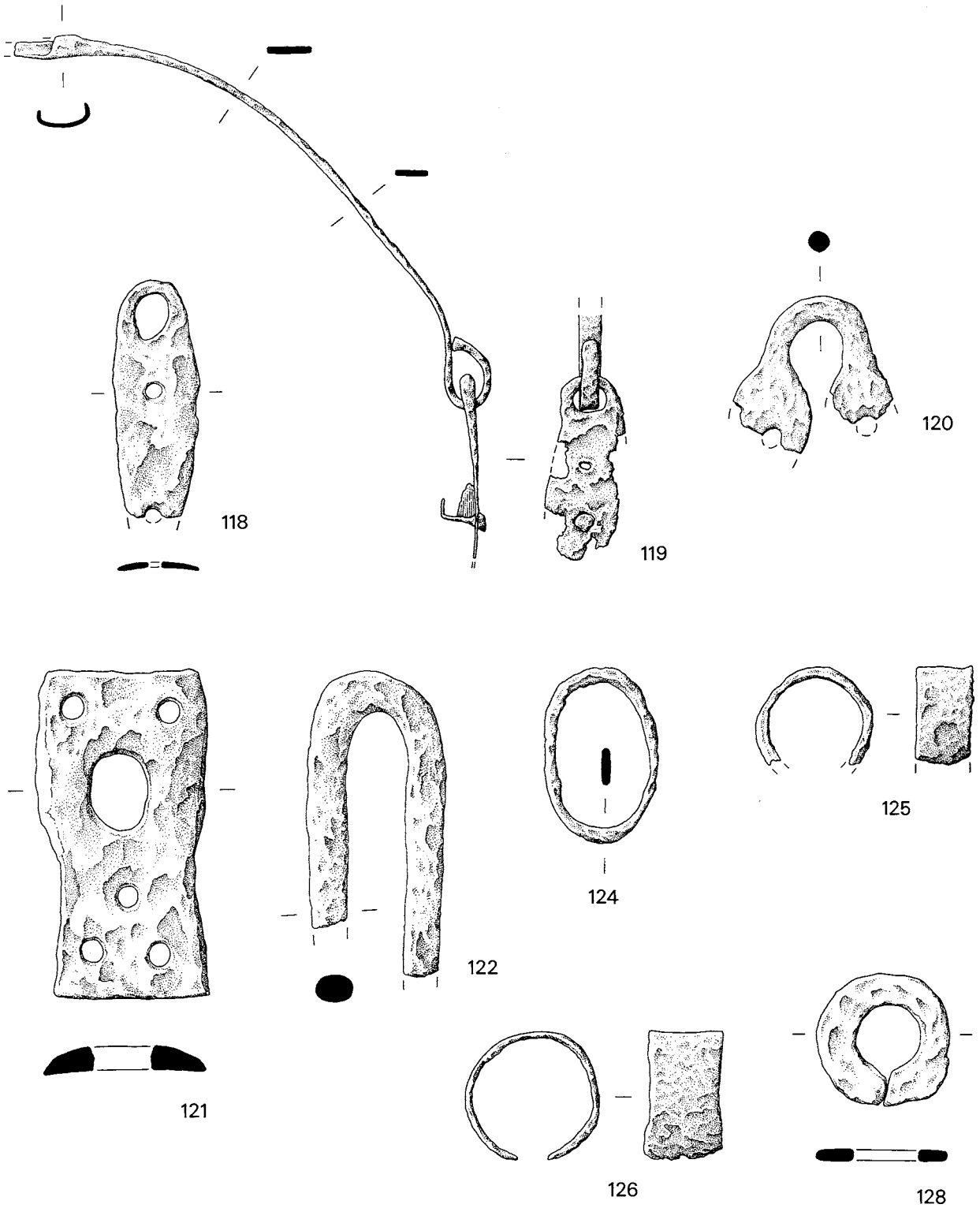

Fig. 194 Iron: handle supports for wooden vessels, ***118–21****; chains, collars, and washers,* ***122***, ***124–6***, ***128*** *(1:2).*

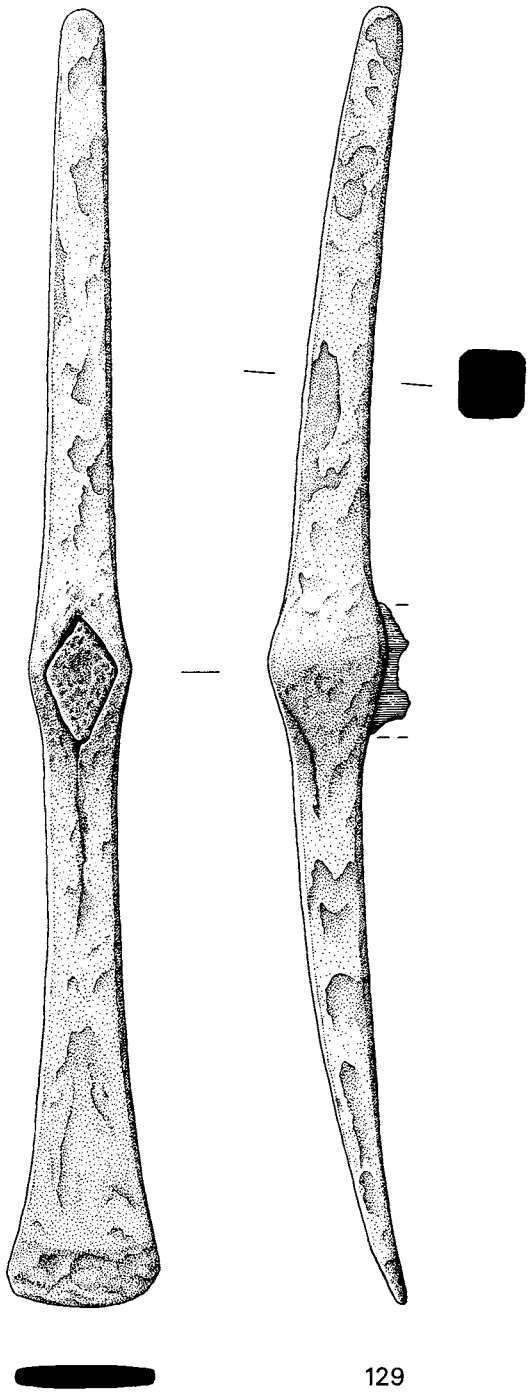

Fig. 195 Iron: mattock, ***129****; cf. Plate 13 (1:4).*

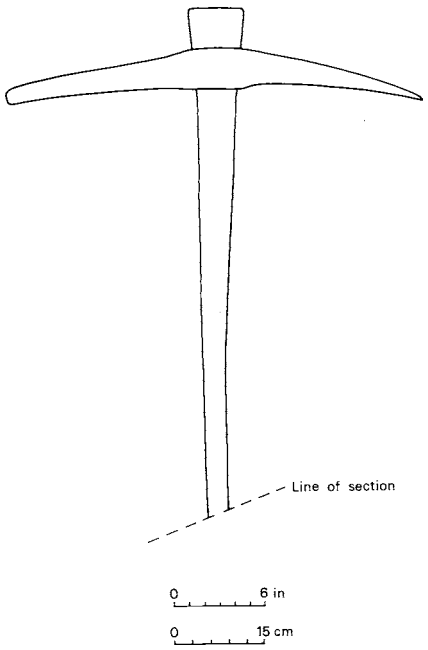

Fig. 196 The iron mattock head and its wooden haft as recorded in excavation (1:10).

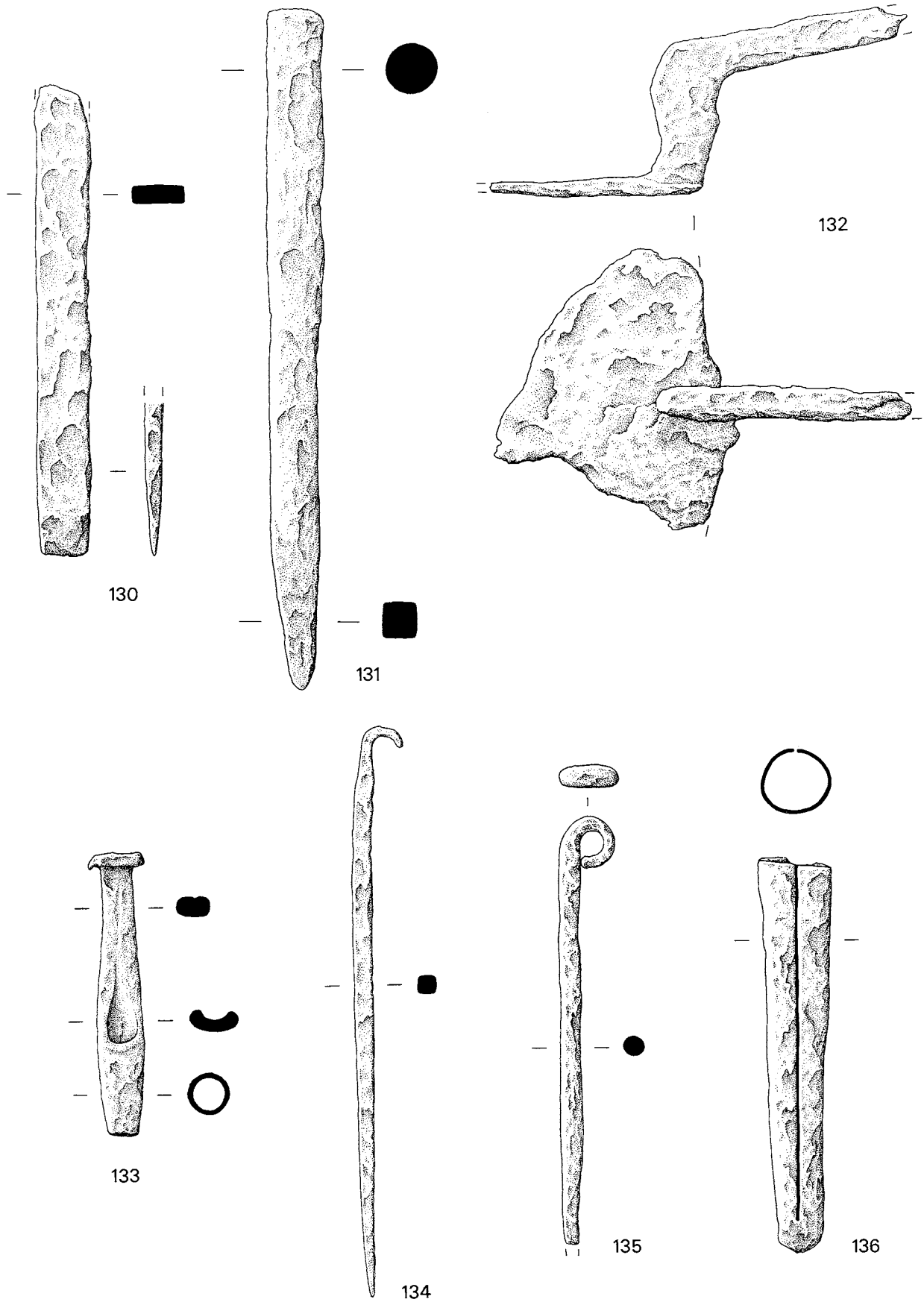

Fig. 197 Iron: tools, woodworker's chisel blade, ***130****; mason's punch,* ***131****; trowel,* ***132****; leatherworker's punch,* ***133****; rake tooth,* ***134****; bell clapper,* ***135****; ferrule,* ***136*** *(1:2).*

vi. KNIVES

None of the knives from Nonsuch need necessarily have been a weapon or a specialist craft knife; their form suggests that they are a mixture of everyday and table knives.

Knives **137–78** are of a number of types: the majority have whittle tangs or scale tangs, many with bolsters, but others have solid iron handles or folding blades. **137–46**, which have either whittle tangs or scale tangs, represent a continuation of established medieval types. **137**, with its rising angled back, is indeed medieval and hence residual in its context since its blade shape was not favoured after the thirteenth century. The more slender shapes of **140–44**, however, are similar to those of knives **146–69** which, since they either incorporate bolsters or have solid iron handles, are typologically post-medieval in date.

The introduction of the bolster, a shaped and thickened expansion placed between and usually forged in one with the blade and tang, dates from the middle of the sixteenth century[101] and was one of the most important developments in the evolution of knives in the post-medieval period. Knives with bolsters took longer to forge, and so were more expensive to produce, but they seem quite quickly to have become widespread in use. In fact the majority of knives from the occupation and demolition phases of Nonsuch either have bolsters or the solid iron handles which developed from them. The shape of the bolsters on these knives is varied, including disc shapes as well as others circular in section but of varying length. Two, on **149** and **150**, are not forged in one with the rest of the knife but are riveted in place, an indication of the newness of the form and of experimentation in its production. The transverse setting of the scale tang on knife **161** is also unusual, but not unparalleled.[102] Most of the bolsters are plain, although **156** is inlaid with silver decoration, an early seventeenth-century fashion also found on spurs and weapons.[103] Some knife handles are also decorated: **162** and **164** have incised lattice decoration, the former inlaid with silver wire, and **165** has rows of alternating iron rivets and copper-alloy pins. These same knives also have shaped handle ends, a feature of some of the knives with solid iron handles (**167–8**). Knife **159**, with its scimitar-shaped blade, is from topsoil and is of eighteenth century date.[104]

The medieval folding knife was simple in form and had a blade which pivoted at one end.[105] This type of knife continued in use into the post-medieval period, as an example from Coventry indicates,[106] but was soon supplanted by more complex forms typified by knives from Ardingly (Sussex) and elsewhere.[107] A more utilitarian type also developed, of which **171–2** are examples, but how early it was introduced is uncertain. **171** may therefore be intrusive.

Whittle-tang knives (Fig 198)

137 Knife with broken whittle tang and damaged blade with rising, angled back. L.72mm.
**R223; W1 3a; Phase 5*

138 Knife with whittle tang retaining traces of wooden handle. Blade broken. L.74mm.
R265; X5 III/IV 19; Phase 5

139 Antler knife handle with fragment of whittle tang at one end. L.95mm.
**SF255; W8 3; Phase 5*

Scale-tang knives (Fig 198)

140 Scale-tang knife, complete. Remains of wooden scales survive, held by three rivets, fronted by soldered shoulder plates and with an oval, non-ferrous end cap. L.166mm.
SF453; W4 II/IV 4=G4**; Phase 4*

141 Scale-tang knife. Tang broken but retains traces of wooden handle. L.192mm.
*W12/13 8=**G11**; Phase 4*

101. Hayward 1957, 4
102. See, for example, Goodall 1977, 65, Fig 27, No 80, and Goodall 1985a, 54, Fig 32, No 34
103. Ellis 1974, 34, plate 1
104. Hayward 1957, 9, plates XIII, XVI, XVIII–XXII
105. Cowgill, de Neergaard and Griffiths 1987, 106, Fig 69
106. Woodfield and Goodall 1981, 87, Fig 4, No 19
107. Goodall 1976c, 60, Fig 9a, No 7; Blair and Somers Cocks 1979, 44, illus. 25

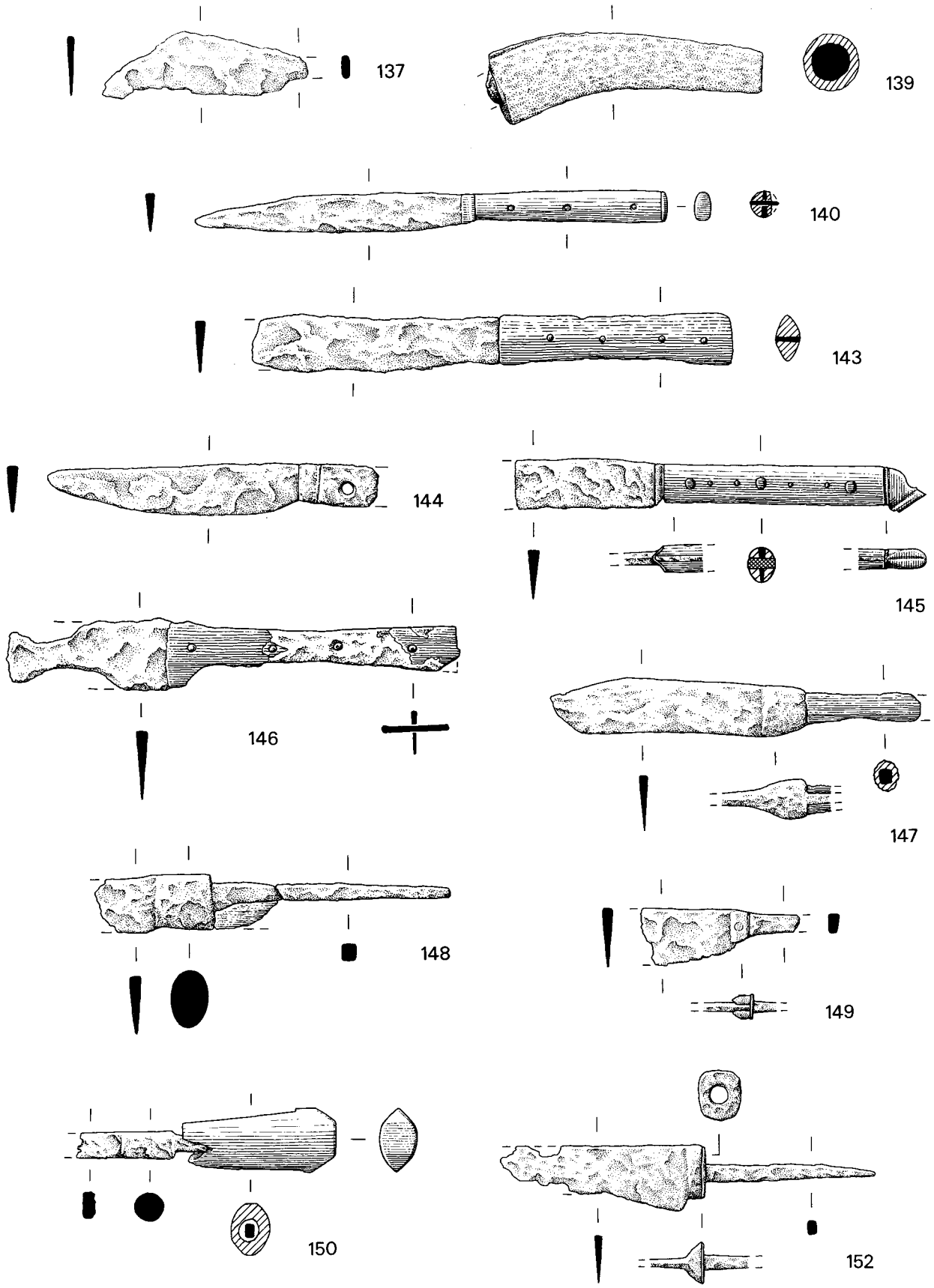

Fig. 198 Iron: whittle-tang knives, ***137***, ***139*** *(with antler handle); scale-tang knives,* ***140***, ***143–6*** *(****140***, ***143***, ***145–6*** *with traces of wooden handles); whittle-tang knives with bolsters,* ***147–50***, ***152*** *(****147*** *with wooden handle;* ***150*** *with bone handle) (1:2).*

142 Scale-tang knife, blade and tang broken. Tang retains four rivets. L.110mm.
*W12/13 8=**G11**; Phase 4*

143 Scale-tang knife, blade broken. Tang has four rivets and retains remains of wooden handle. L.169mm.
SF448; W1 5d=G2**; Phase 4*

144 Scale-tang knife with solder from lost shoulder plates at base of broken tang. L.126mm.
R34; Y4 34=Well**; Phase 4*

145 Scale-tang knife, blade broken. Tang retains wooden handle with three copper alloy rivets with washers around their heads, separated by two pairs of iron pins. Riveted non-ferrous shoulder plates and solid copper alloy end-cap in shape of horse's hoof. L.144mm.
**SF170; V14 11; Phase 5*

146 Scale-tang knife, blade broken. Tang, with remains of wooden scales and four iron rivets, expanding gently towards tip. Back of tang and blade in line. L.159mm, blade diam. at base of handle, 25mm.
**R128; Q6 4a; Phase 5*

Whittle-tang knives with bolsters (Figs 198–9)

147 Whittle-tang knife with bolster, complete. Traces of wood graining on tang from former handle. L.127mm.
R258; U8 3=Great cellar**; Phase 4*

148 Whittle-tang knife with bolster, blade and tang broken. L.124mm.
R268; U7 8=G9**; Phase 4*

149 Whittle-tang knife with bolster, blade and tang broken. Bolster has rivet passing through centre from side. L.56mm.
R292; Y4 35=Well**; Phase 4*

150 Whittle-tang knife with bolster, bone handle and broken blade. L.90mm.
SF253; X15 10a=D2**; Phase 5*

151 Whittle-tang knife with bolster, blade broken. Bolster 7mm long. L.105mm.
R77; Y4 31; Phase 5

152 Whittle-tang knife with bolster, blade broken. L.132mm.
**R7 2; Phase 5*

153 Whittle-tang knife with bolster, blade and tang broken. Bolster 4mm long. L.108mm.
R262; X4 3; Phase 8

154 Whittle-tang knife with bolster, blade broken. Bone handle. L.109mm.
**SF177; X7 6; Phase 5*

155 Whittle-tang knife with bolster, blade and tang broken. L.107mm.
**R129; X8 4; Phase 5*

156 Whittle-tang knife with bolster, blade and tang broken. Bolster enriched with silver decoration in the form of scrolls and lines. L.97mm.
**R266; X7 6; Phase 5*

157 Whittle-tang knife with bolster, blade and tang broken. Bolster has rivet passing through centre from side. L.68mm
**R261; T14 II 3a; Phase 5*

158 Whittle-tang knife with bolster, blade and tang broken. L.70mm.
**R259; W11 2; Phase 6*

159 Whittle-tang knife with bolster, tang and incomplete scimitar-shaped blade. Moulded bolster. L.184mm.
**SF430; CH XVI 1; Phase 8*

Scale-tang knives with bolsters (Fig 199)

160 Scale tang knife with bolster, complete. Tang has shaped but flat end cap and two rivets. Traces of wooden handle. L.170mm.
SF297; Y4 33=Well**; Phase 4*

161 Scale-tang knife with bolster, complete. Tang, set at right angles to blade, has four rivets set in wooden handle. L.208mm.
SF299; Y4 33=Well**; Phase 4*

162 Scale-tang knife with bolster, blade broken. Flat end cap with shaped and knobbed tip. Scales of bone have incised lattice pattern inlaid with silver wire, and two rivets. L.100mm.
R??**; Y4 34=**Well**; Phase 4*

163 Scale-tang knife with bolster, tang broken. L.113mm.
**R143; V14 2; Phase 5*

164 Scale-tang knife with bolster, blade broken. Tang has shaped, flat end cap and bone scales with incised lattice decoration and three rivets. L.107mm.
**SF345; P/Q 2/3 2; Phase 5*

165 Scale-tang knife with bolster, blade broken. Shaped bone handle with five iron rivets alternating with five copper alloy pins. L.152mm.
SF256; X15 10a=D2**; Phase 5*

Knife with bolster

166 Knife with incomplete blade, broken across end of bolster. Tang form uncertain. Bolster L23mm. L.100mm.
*R137; W5ext 2c=**G5**; Phase 4*

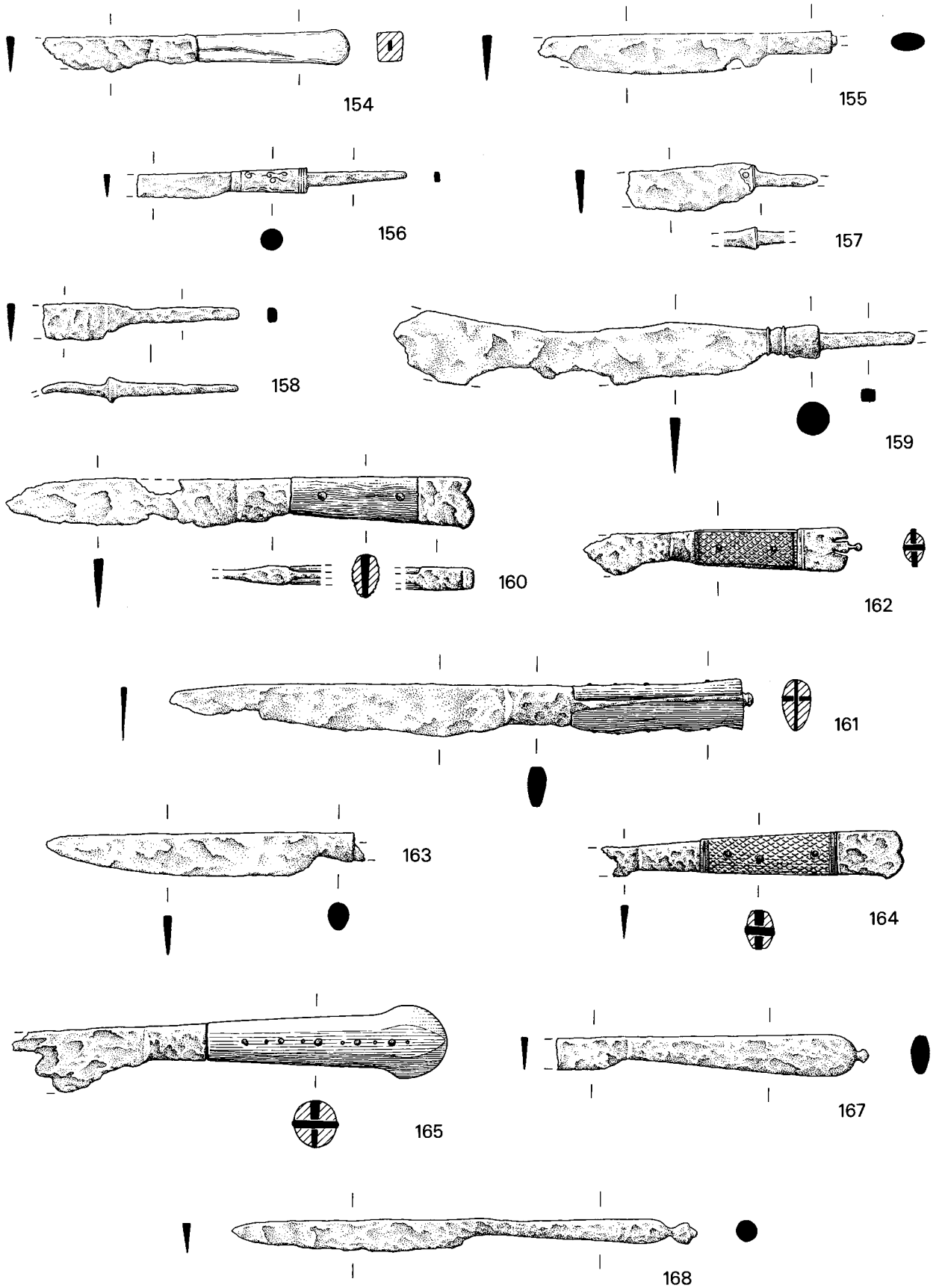

Fig. 199 Iron: whittle-tang knives with bolsters continued, ***154–9*** *(****154*** *with bone handle); scale-tang knives with bolsters,* ***160–5*** *(****160–1*** *with wooden handles;* ***162****,* ***164–5*** *with bone handles); knives with solid iron handles,* ***167–8*** *(1:2).*

Knives with solid iron handles (Fig 199)

167 Knife with slim, solid iron handle expanding towards knobbed tip. Blade broken. L.111mm.
**R267; Y7 3; Phase 5*

168 Knife with solid iron handle expanding towards knobbed tip. L.165mm.
**R129; X8 4; Phase 5*

169 Knife with broken, damaged blade and solid iron handle expanding towards tip which retains stub of otherwise lost knobbed tip. L.203mm
SF355; R8 3; Phase 5

170 Knife, broken across start of blade, with solid handle expanding towards tip. L.91mm.
R145; X9 2; Phase 6

Folding knives (Fig 200)

171 Folding knife with iron back rib, shaped side plates and hinged mount for broken blade. L.85mm.
**R11; Y4 2; Phase 5*

172 Folding knife, similar to **171**, but retaining bone scales, held by iron rivets, with incised geometric decoration. L.90mm.
**SF171; W11 1; Phase 8*

Knife tang and knife blades (Fig 200)

173 Scale-tang from knife with substantial end cap. Tang retains two iron rivets, three decorative pins, and remains of wooden handle. L.54mm.
**R264; W1 5c; Phase 5*

174 Knife blade tip. L.56mm, max.D.15mm.
*SF176; W1 5j=**G2**; Phase 4*

175–7 Knife blades, back and cutting edges both taper. **174** L.93mm, max.D.15mm. **175** L.50mm, max. D.14mm. **176** L.104mm, max.D.20mm.
***175** R113; W2 5d=**G3**; Phase 4. **176** R256; W4 II/IV 4b=**G4**; Phase 4. **177** R55; Y4 4a; Phase 5.*

178 Knife blade with tip. Back and cutting edge parallel before both taper to tip. L.96mm, Depth 17mm
**R117; W10 10; Phase 6*

Three ivory cutlery handles (lacking blades) are catalogued under worked bone and ivory (**21–3**: see p 00).

vii. SHEARS AND SCISSORS (Fig 200)

Shears are represented by the incomplete arm and blade fragments, **179–80**, the former with a cutler's mark. The scissors, **181–88**, in common with contemporary examples from Sandal Castle and Oyster Street (Portsmouth)[108] have long and narrow blades. Their arms are all plain, in contrast to the moulded arms of a late seventeenth-century pair of scissors from Aldgate in London.[109]

179 Shears. Arm and blade broken. Cutler's mark, not inlaid, on blade. L.85mm.
R257; W5 4=D1**; Phase 5*

180 Shears. Arm and blade broken. L.58mm.
**R263; Y4 2; Phase 5*

181 Scissor arm with broken blade and asymmetrically-set finger loop. L.100mm.
**R80; U10ext 3; Phase 3*

182 Scissors, one blade tip lost, one asymmetrically-set finger loop broken. L.96mm.
**SF264; W8 3; Phase 5*

183 Scissors, one oval finger loop broken. L.124mm.
**SF344; CH.IX 6; Phase 5*

184 Scissors with offset finger loops. L.**??**mm.
SF351; W8 3; Phase 5

185 Scissors. Blade tips missing. Arms broken, one across offset finger loop. L.100mm.
**R280; W5ext 2a; Phase 5*

186 Scissors, one blade tip broken, one offset finger loop distorted. L.117mm.
**SF326; Q I 3; Phase 5*

187 Scissors with asymmetrically-set finger loops. L.129mm.
**R279; W1 3; Phase 5*

188 Scissor arm, blade broken. L.90mm.
**R136; Y4 6; Phase 6*

108. Goodall 1983, 246, Fig 6, Nos 87–92; Fox and Barton 1986, 231, Fig 145, Nos 7, 12

109. Grew 1984, 98, Fig 50, No 29

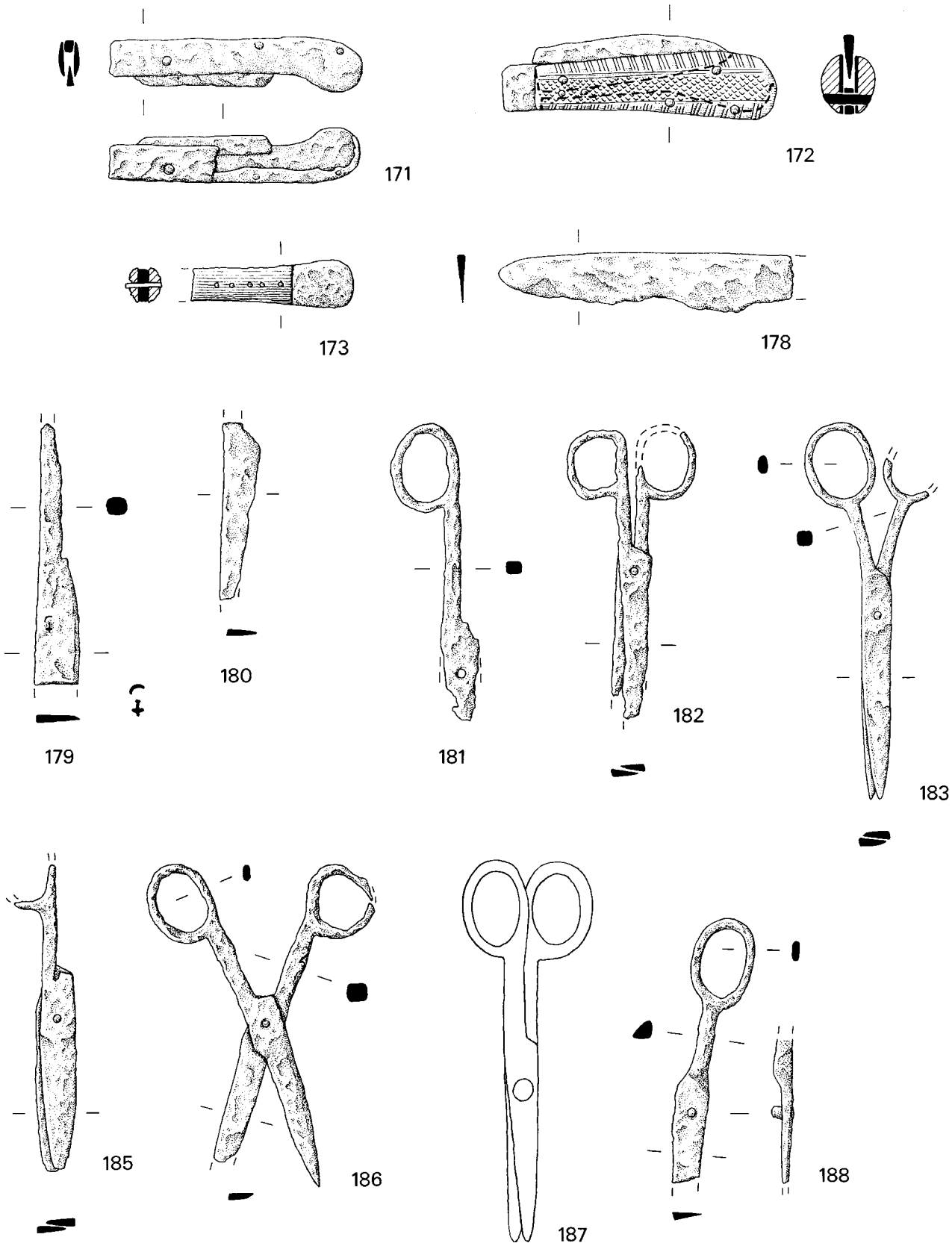

Fig. 200 Iron: folding knives, ***171–2*** *(****172*** *with bone handle); scale-tang with wooden handle,* ***173****; knife blade,* ***178****; shears and scissors,* ***179–83****,* ***185–8*** *(****187*** *drawn from X-ray) (1:2, except mark on* ***179****, 1:1).*

viii. BUCKLES AND PERSONAL FITTINGS

Buckles and strap-end (Fig 201)

Buckles **189–207** have a range of shapes, D-shaped, rectangular, trapezoidal, and double-looped, which is much like that of buckles from contemporary contexts on sites quoted elsewhere in this report. The majority are plain and utilitarian, in contrast to some of the fine copper-alloy examples of the period, although **204** is moulded, and the double-looped frames are a little more slender. **206** is a spur buckle; **207** a buckle pin. Several buckles retain traces of a non-ferrous coating which served both to protect them from rusting and enhanced their appearance. **208** is an elegantly-shaped strap end which evidently engaged in a like fitting when worn.

189 D-shaped buckle frame, broken. W.47mm.
**R275; Y4 12; Phase 5*

190 D-shaped buckle frame, broken, retaining part of pin loop. W.38mm.
R278; U10 1; Phase 8

191 D-shaped buckle frame. W.39mm.
**SF511; BH E4 III 3; BH Phase 2*

192 Rectangular buckle frame with pin. W.25mm.
*S1 12=**G31**; Phase 4*

193 Rectangular buckle frame with pin, both broken. W.35mm, L.35mm
*R**??**; Y4 35=**Well**; Phase 4*

194 Rectangular buckle frame with pin. W.44mm. L. of pin, 52mm.
R240; U7 8=G9**; Phase 4*

195 Rectangular buckle frame with pin. W.55mm.
**SF106; X15 I 5; Phase 5*

196 Rectangular buckle frame with pin. W.64mm, L.45mm.
**SF357; Q4 III 1; Phase 7*

197 Rectangular buckle frame with pin resting against incomplete, sheet-iron cylinder. W.48mm, L.38mm.
SF103; U16 I/II 1; Phase 8

198 Distorted and incomplete rectangular buckle frame. W.52mm.
**SF523; BH BV VI 2; BH not phasable*

199 Corner of rectangular buckle frame. W.38mm, L.42mm.
R492; BH E5 IV 4; BH Phase 5

200 Sub-rectangular buckle with concave long side, convex short sides. W.79mm, L.48mm.
**R527; BH BV IVext3 1; BH Phase 7*

201 Trapezoidal buckle frame with pin. W.34mm.
**R276; X5 III/IV 2; Phase 6*

202 Trapezoidal buckle frame with sheet-iron cylinder. W.46mm.
**R57; Y3 2; Phase uncertain*

203 Double-looped buckle frame with fragment of pin. W.21mm.
SF112; W1 5a=G2**; Phase 4*

204 Double-looped buckle frame, incomplete. W.23mm.
R116; S1 12=G31**; Phase 4*

205 Double-looped buckle frame, curved in side view. W.18mm.
**SF87; Z5 I/II 2; Phase 6*

206 Spur buckle with incomplete, double-looped frame and suspension loop for attachment to terminal of spur. W.30mm including loop.
**R274; X4 II 2; Phase 8*

207 Buckle pin with moulded bar. L.40mm.
**R277; Y7 1; Phase 8*

208 Strap end with shaped, double-riveted plate and hooked tip. L.48mm.
R240; U7 8=G9**; Phase 4*

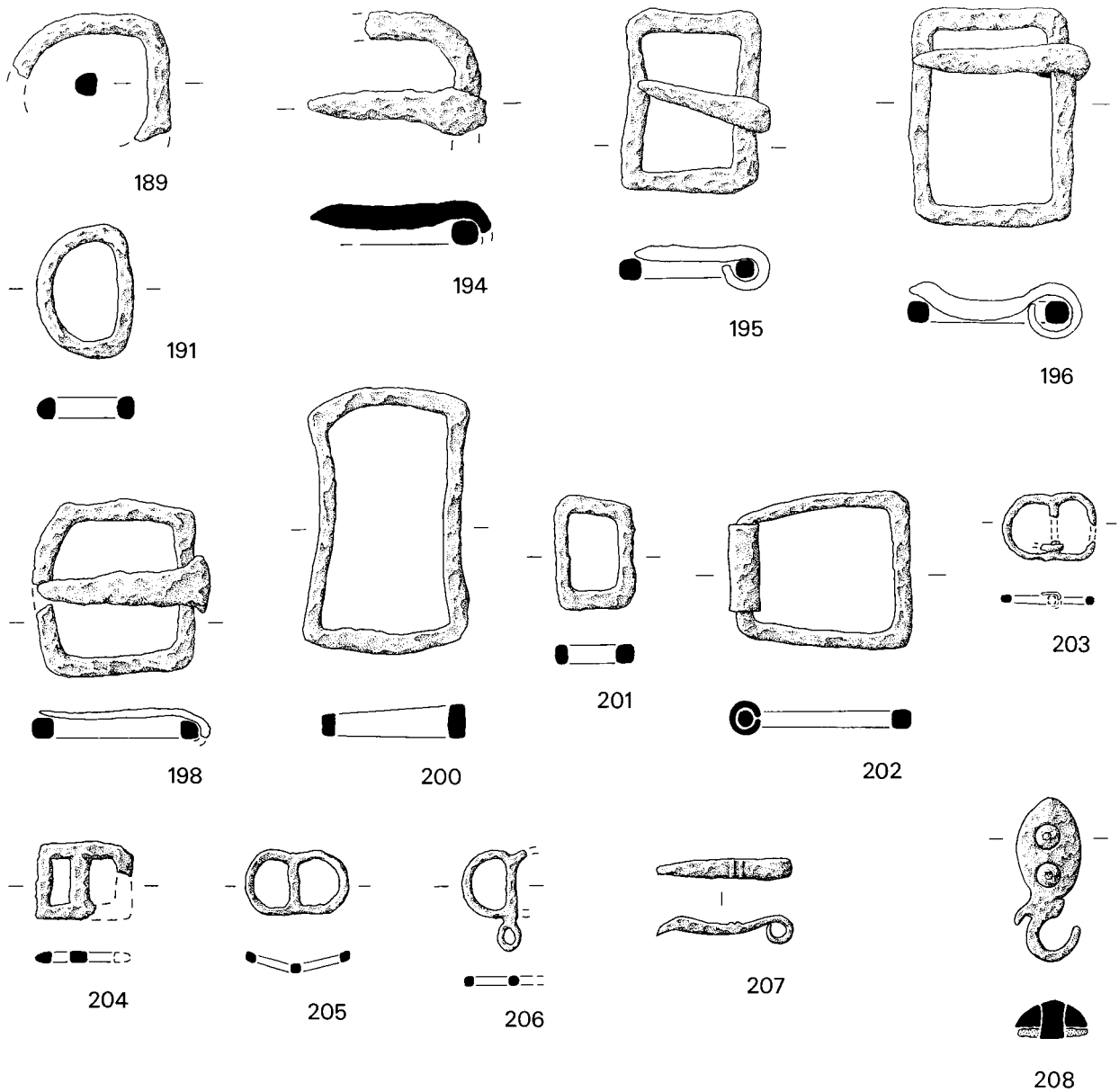

Fig. 201 Iron: buckles, ***189****,* ***191****,* ***194–6****,* ***198****,* ***200–6****; buckle pin,* ***207****; strap end,* ***208*** *(1:2).*

Patten rings and heel iron (Fig 202)

Pattens, a type of overshoe worn by women and introduced in the seventeenth century, were described in 1688 as 'a thing of wood like a shoe sole, with straps above it to tie over the shoe, having an iron at the bottom to raise the wearer thereof from the dirt, by means whereof clean shoes may be preserved though they go in foul streets.'[110] **209–15** are the irons, or iron rings, on which the wooden soles or clogs were raised, and they changed in shape with time. **209–12** have the crinkled rings which were fashionable in the seventeenth and early eighteenth centuries, on the evidence both of historical sources[111] and of excavated examples from Aldgate (London),

110. Randle Holme, quoted in Swan 1982, 21

111. Swan 1982, 21

Ardingly (Sussex), Oyster Street (Portsmouth), and Norwich.[112] **213–43** have oval hoops, the shape which supplanted the crinkled ring in the early eighteenth century and which continued in use until the nineteenth century.[113] Patten rings were riveted to wooden clogs through raised terminals in the manner shown by the near complete patten from Portsmouth and by others from London.[114] The terminals have distinctive shapes, almost invariably, as on **213**, with single and double rivets. Terminals with single rivets usually developed into an extended strap which ran along the underside of the toe of the clog.

Heel irons and toe irons were other post-medieval devices which reinforced and protected wooden clogs from wear. The heel iron **216** is probably intrusive in its context since there is no reliable evidence for other examples at such an early date.

209 Fragment of crinkled ring from patten. L.135mm.
R??; U1 6; Phase 5

210 Iron ring from patten with fragment of crinkled hoop and one double-riveted terminal. L.120mm.
**R55; Y4 4a; Phase 5*

211 Iron ring from patten with fragment of crinkled hoop and stub of one terminal. L.131mm.
**R147; X4 8; Phase 5*

212 Fragment of crinkled ring from patten. L.93mm.
R214; X7 7; Phase 5

213 Iron ring from patten with oval hoop, now distorted, and two terminals each of a different form. L.193mm.
**R191; U1 6; Phase 5*

214–15 Two fragments, perhaps from same iron ring from patten.
214 (L.49mm) is a double-riveted terminal with a cross bar and the stubs of the hoop, whereas **215** is a single-riveted terminal with an extended tip and a length of oval hoop, from iron ring from patten. L.100mm.
214 **R499; BH D5 IV 5; BH Phase 4.* ***215*** **R497; BH D5 IV 5; BH Phase 4*

216 Heel iron fragment with fullered groove. L.77mm.
R??; U1 6; Phase 5

ix. HORSESHOES (Fig 203)

Horseshoes and horseshoe fragments, **217–27**, are the only items of horse furniture from Nonsuch: no bridle bits or other fittings were found. The horseshoes all have rectangular nailholes, some of them in arms of considerable width between 35mm and 39mm wide. In form these horseshoes represent the continuation of certain late medieval types, and bear comparison with examples from Portsmouth and Sandal Castle.[115] Several of the Sandal Castle horseshoes have the distinctively-shaped tips of **221** which created the inner keyhole shape which continued to be popular into the eighteenth century.[116] **225** is the only horseshoe to have its nails set in a fullered groove, a feature probably not introduced until the second quarter of the seventeenth century.

217 Horseshoe arm with two nailholes and upturned calkin. L.90mm, arm W.30mm.
R165; Q5 6; Phase 3

218 Horseshoe arm fragment with three nailholes. L.89mm, arm W.22mm.
SF240; Q8 13; Phase 2 (Cuddington; see p 23)

219 Horseshoe arm tip, broken across nailhole. L.57mm, arm W.28mm.
R196; Q5 6; Phase 3

220 Horseshoe arm fragment with two nailholes and thickened calkin. L.95mm, arm W.39mm.
**R96; V8 4; Phase 4*

112. Grew 1984, 106, Fig 53, Nos 57–8; Goodall 1976c, 63, Fig 9b, No 45; Fox and Barton 1986, 240, Fig 155, No 1; Goodall (1993 Nos 392–3
113. Lindsay 1964, 75
114. Fox and Barton 1986, 240, Fig 155, No 1; Lindsay 1964, 75, Figs 423–4
115. Fox and Barton 1986, 231, 233, Fig 147, No 5, Fig 148,No 3; Goodall 1983, 251, Fig 9, Nos 207–20, Fig 8, Nos 221–23
116. Chappell 1973, 102–4, Figs 1, 4

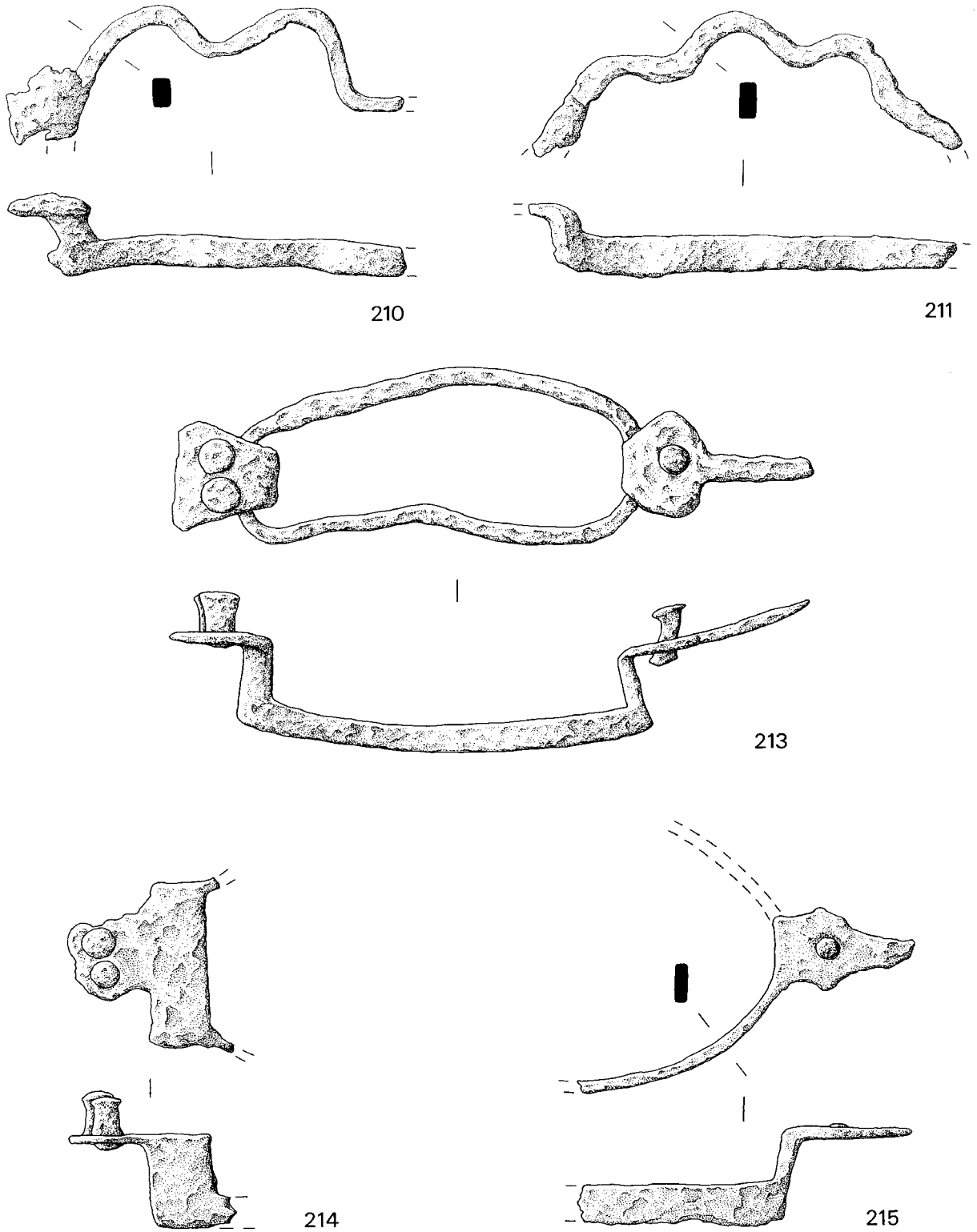

Fig 202 Iron: patten rings, ***210–11***, ***213–15*** *(1:2).*

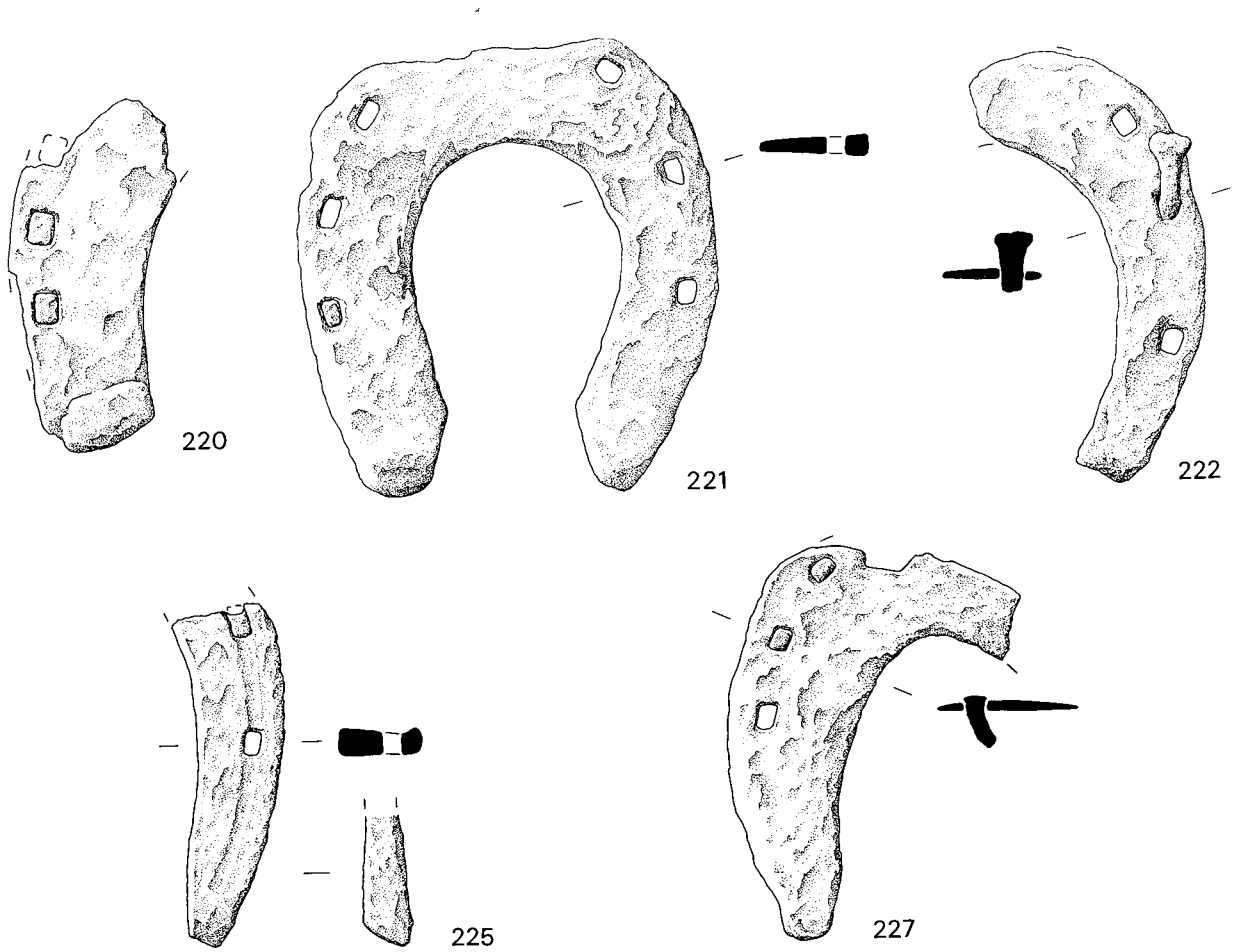

Fig. 203 Iron: horseshoes, ***220–2***, ***225***, ***227*** *(1:2).*

221 Horseshoe, complete. Toe worn, three nailholes in each arm. W.120mm, L.114mm.
**R81; P/Q 2/3 2; Phase 5*

222 Horseshoe arm with worn toe and three nailholes, one with nail. L.112mm.
**R51; P/Q 15/16 4; Phase 6*

223 Horseshoe arm with two nailholes and thickened calkins. L.104mm, arm W.21mm.
R14a; Y5 III/IV 3; Phase 5

224 Horseshoe arm fragment with thickened calkin, broken across nailhole. L.82mm.
R51; P/Q 15/16 4; Phase 6

225 Horseshoe arm fragment with thickened calkin and two nailholes set in fullered groove. L.90mm, arm W.25mm.
**R270; Y7 4; Phase 5*

226 Horseshoe. Toe fragment with three nailholes in remaining arm length. W.113mm, arm 38mm.
R269; W12/13 6; Phase 5

227 Horseshoe, one arm broken. Three nailholes in complete arm. L.105mm, arm W.35mm.
**R504; BH FG VI 2a; BH Phase 5*

x. WEAPONS (Fig 204)

228 is part of the basket hilt of a sword, of which more complete examples are known from Basing House and Bolingbroke Castle.[117] **229** is a spherical sword pommel; **230** is a dagger.

228 Curved, fragmentary bow for basket hilt of sword. L.102mm.[118]
**R115; X7 7; Phase 5*

229 Sword pommel. Diam.49mm.
**R88b; W5 4b; Phase 5*

230 Tanged dagger, blade damaged. L.236mm.
**R95; X5 III/IV 3; Phase 5*

xi. MISCELLANEOUS IRON OBJECTS (Fig 204)

231 Riveted disc. Diam.31mm.
**R27; Y7 6; Phase 5*

232 Bar with flattened and curved terminal. L.119mm.
**R225; V2 3; Phase 5*

233 Series of sheet-iron fittings, several with non-ferrous coating. Two drawn.
**R99; V14 2; Phase 5*

234 Incomplete, U-shaped bracket with fitting spike, the arms of hollow, U-section. Similar to rests for gun barrels, but evidently too insubstantial. H.95mm.
**R285; T7 III 2; Phase 5*

117. Dufty 1971, 54, pl.IIIA; Goodall 1976b, 30, Fig 15, No 55

118. Blair 1981, 253–352

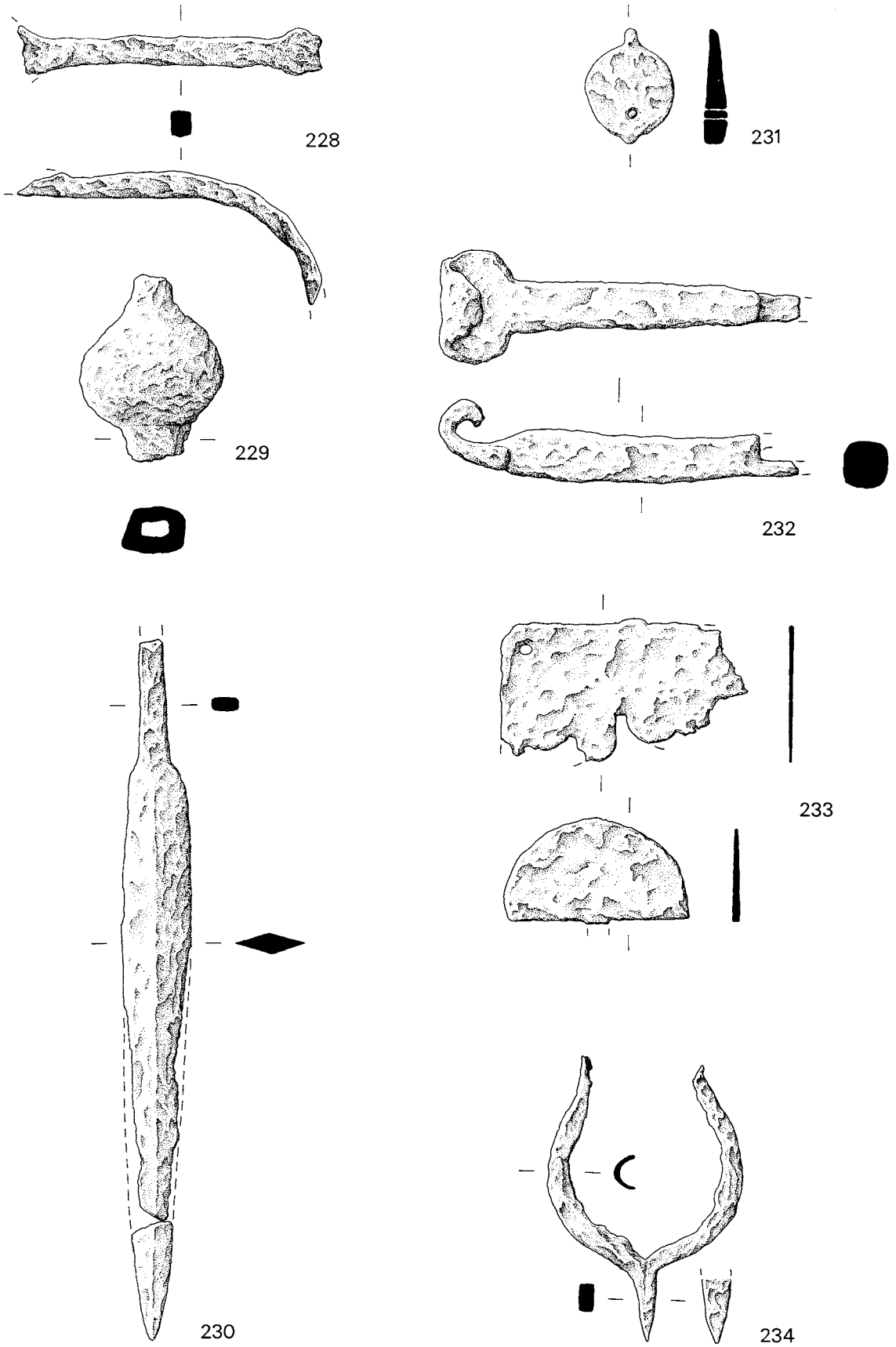

Fig. 204 Iron: weapons, basket hilt of sword, ***228****; sword pommel,* ***229****; tanged dagger,* ***230****; miscellaneous objects,* ***231–4*** *(1:2).*

16

SPURS

by Blanche M. A. Ellis

(Fig 205)

i. Introduction

Most of the spurs from Nonsuch cannot be dated closely within the period of occupation of the palace. During the last three-quarters of the sixteenth century spurs were functional but not particularly fashionable objects. Most were plain with horizontally straight sides and many had short, down-curved necks with moderately sized rowels. After about 1600 spurs became fashionable accessories as well as riding aids but alongside other more elaborate types, straight-sided spurs with down-curved necks continued in use. Examples survive from excavations of the Civil War period including Basing House (Hants.),[1] Sandal Castle (W.R. Yorks.) [2] and Beeston Castle (Ches.).[3] Most of these seventeenth-century straight-sided spurs had sides which were deep at their junction behind the wearer's heel, tapering to slenderness at their terminals. The terminals were often of evenly set figure-8 form with their rings projecting equally above and below the spur sides as on **4** and **5** from Nonsuch. There is no evidence for these evenly set terminal rings before 1600, but taking into account the slender sides of **4**, a date in the second half of the sixteenth century cannot be ruled out.

Although severely rusted, some of the Nonsuch spurs have slight traces of what may have been non-ferrous plating. Tin was frequently used to protect and enhance the appearance of iron spurs.[4]

The spurs are described as they were worn, with the terminals of their sides at the front and the rowels at the back.

ii. Catalogue

1 Rowel spur for the right foot. Heavily coated with rust and distorted by the twisting of its complete side. The sides appear to have been of D-section with their front ends curved under the wearer's ankle. The front end of one is lost but the other has an elegant two-ring terminal elongated to curve downwards from its upper to its lower ring, with a buckle in its upper ring. The buckle shows by its position that the spur was worn on a right foot, because buckles were worn to the outside. The buckle frame has a flat top; its sides form a slight angle at the centre and it has a rounded lower edge. The spur neck projects from a rectangular moulded area behind the junction

1. Moorhouse 1971, Fig 21, No 83
2. Mayes and Butler 1983, Fig 11, Nos 10, 11 and 20
3. Ellis (ed) 1993, Nos 5–20
4. Jope 1956, 35–42

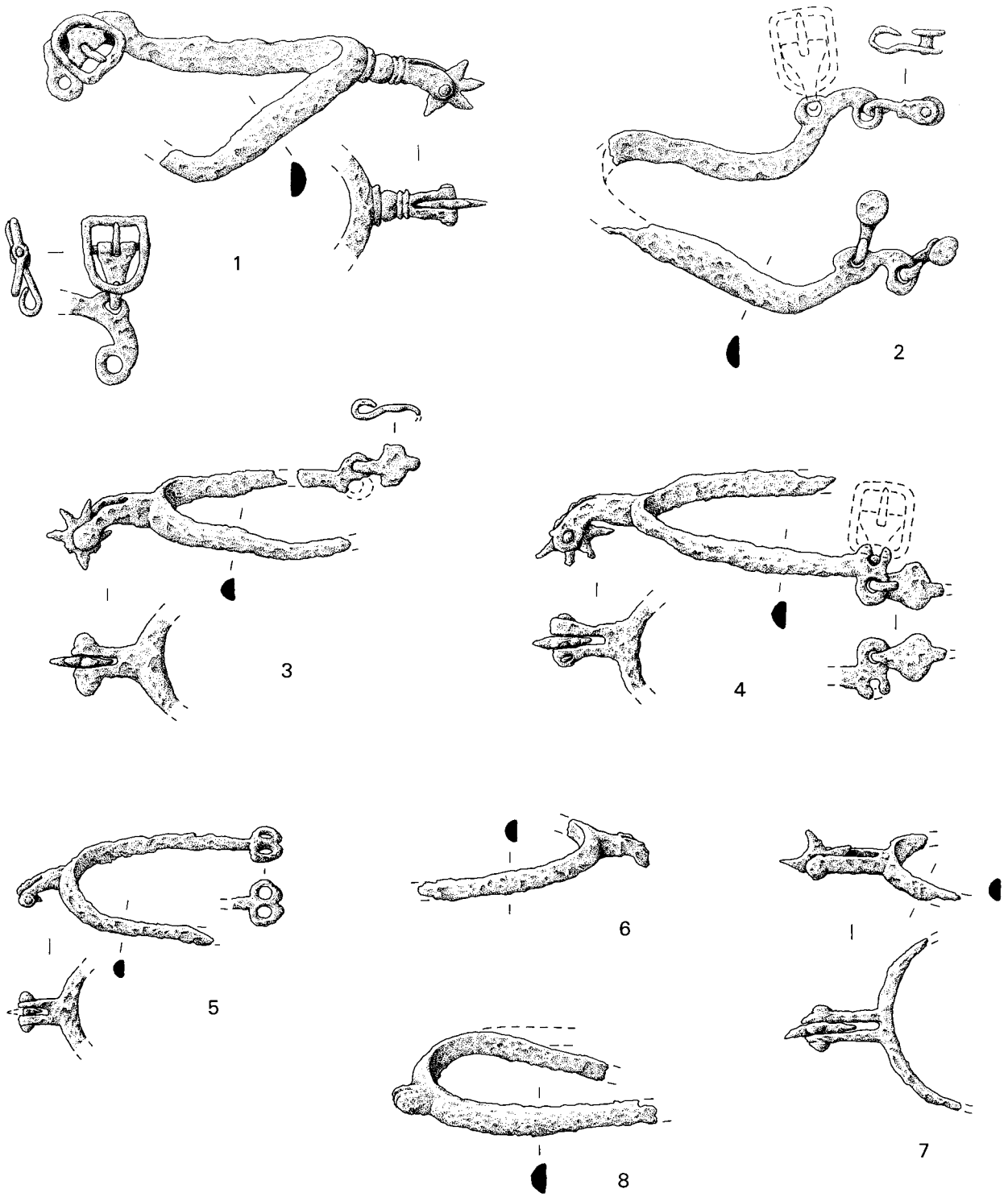

Fig. 205 Iron: rowel spurs, ***1–7****; spur fragment,* ***8*** *(1:2).*

of its sides and swells into a round moulding before the division of the rowel box, which is flanked by two ridges. The rowel box curves downwards and the damaged star rowel must originally have had six to eight points. Dates to 1600–1670.
Overall L.140mm. Neck with rowel L.40mm. Original Diam. of rowel *c*.30mm.
R151; Y4 35=Well**; Phase 4*

Elongated, curling forms of spur terminal are occasionally found from about 1450-1800, but became moderately popular during the first half of the seventeenth century. Terminals of this type also occur on three spurs of the Civil War period from Beeston Castle (Ches.).[5]

2 Iron, similar to **1** and possibly its pair, as its find context also suggests. The X-ray shows traces of non-ferrous plating. Both the D-section spur sides survive separately. Their arc behind the wearer's heel with the neck and rowel are missing. The sides, which are heavily encrusted with rust and soil, taper slightly forwards and bend under the wearer's ankle, rising towards elongated two-ring terminals. One of these retains the rusted fragment of a buckle in its top ring, from where the terminal curls forward and downwards to its lower ring, which holds a mushroom stud attachment for the undersole leather. The terminal on the other side has two similar stud attachments. Although the sides are now separated, the fact that the studs of the attachment for the leathers would have faced outwards makes it possible to position them correctly in relation to each other (as in Fig. 205). As buckles were worn to the outside of the feet, it is clear that this spur was worn on a left foot. Dates to 1600–1670.
Length of sides, now incomplete, 105mm and 90mm. Length of attachments about 25mm.
SF298; Y4 33=Well**; Phase 4*

3 Rowel spur. Iron. The straight D-section sides taper slightly, the front ends have both broken up but their fragments include a heavily rusted terminal with one hook attachment for a spur leather. The short, down-curved neck has very prominent conical rowel bosses and a star rowel, originally of eight rounded points, four of which survive.
Main fragment overall L.90mm. Neck. L.20mm. Original Diam. of rowel c.26mm. Attachment L.24mm. Dates to 1560–1660
SF231; W8 5=G7**; Phase 4*

4 Rowel spur. Iron, heavily rusted. The front end of one side has broken off. The slender D-section sides are horizontally straight. The complete side has an evenly set figure-8 terminal with its rings projecting equally above and below the end of the side. A hook attachment with a fan-shaped body remains in the lower ring while the scrap of another is rusted into the top ring. The short, down-curved neck has a rowel which originally had about eight points, four of which remain. Probably dates to 1600–1650, but possibly late sixteenth century.
Spur body overall L.112mm. Neck L.30mm. Original Diam. of rowel c.26mm. Attachment L.23mm.
SF232; W8 5=G7**; Phase 4*

5 Rowel spur. Iron, heavily encrusted with rust which is lifting what may be traces of non-ferrous plating. Slender, D-sectioned sides taper to become very thin next to the one remaining evenly set figure-8 terminal, which has been twisted through almost 90°. The small neck, which is short and broad, curves downwards towards conical rowel bosses. The rowel box divides most of the neck. One thin, sharp point remains from a very small rowel. Dates to 1650–1680.
Overall L.88mm. Neck L.16mm.
**SF449; V8 3; Phase 5*

6 Rowel spur. Iron, heavily encrusted and flaking. Fragment with one straight, very slightly tapered D-section side lacking its terminal, and a stump of the other side. The very small, down-curved neck is broken, and the rowel lost. Dates to 1630–1680.
Fragment overall L.75mm.
**R272; X8 2; Phase 5*

7 Rowel spur. Iron, now rusted into fragments, with possible traces of non-ferrous plating. The stumps of both slender, straight, D-sectioned sides are still attached to the short straight neck. The latter is entirely divided by the rowel box containing a star rowel originally of six rounded points (four of which survive), between conical rowel bosses. A detached flake of one side has a small figure-8 terminal. Dates to 1530–1650.
Fragment overall L.50mm. Neck L.23mm. Orig. Diam. of rowel *c*.22mm.
R88a; W5 4a=D1**; Phase 5*

8 Spur fragments. Iron, heavily encrusted with rust and soil. The D-section, horizontally straight sides have been compressed and both terminals are missing. Only the stump remains of a neck of round or oval section. Dates to 1530–1680. Overall L.85mm.
Accompanied by another fragment which may be the neck and part of a rowel, or else part of a side, embedded in rust. L. 36mm.
R170; W5 4=D1**; Phase 5*

5. Ellis (ed.) 1993, Nos 2, 3 and 4

9. Unidentified fragment. A rather solid, rectangular section iron bar with both ends broken. One end curves into the beginning of an arc. It is heavily rusted but appears to broaden into a disc shape before the break. The other, straight, end has a small raised ridge across it before it begins to spread diagonally outwards at the break, suggesting the possibility that it may be the lower part of the side of a stirrup, or the beginning of a spur terminal. The rather solid rectangular section makes it unlikely that it is part of a spur. Impossible to date.
Overall L.107mm.
SF115; X7 7; Phase 5

17

WOODEN POCKET SUNDIAL

by Francis R. Maddison *and* Penelope Gouk

(Figs 206–7)

Part of a sixteenth century ?German pocket horizontal dial, fashioned from wood. The piece has a maximum length of 31mm., and an average thickness of 3mm. The dial was originally round, and formed the lower part of a small box, of which the detachable lid may have had a mirror on the inner surface.

Two eyelets, inserted on a diameter of the dial-plate (i.e., the engraved area the wooden fragment), served to retain a hinged, triangular gnomon (now missing), which cast its shadow on the circular hour scale, divided to show equal hours and numbered in Arabic numerals. The hour scale was possibly originally pigmented. The punches used for the numerals are characteristic of Nuremberg work of the sixteenth and early seventeenth centuries.[1] Outside the hour circle there is a decoration formed by dots within small circles.

Bird symbols punched on either side of the gnomon supports recall the punch-marks of the Troschel and Tucher families, compass-makers of Nuremberg. A circular cavity at the northern end of the hour-plate contained a small magnetic compass for orienting the dial; only the pin for the compass needle survives.

SF475; Y4 34=Well**; Phase 4*

This pocket sundial is clearly similar to those discovered in the wreck of the *Mary Rose*,[2] and to another from an excavation in Worship Street, London.[3] The dial from Worship Street bears an Acorn Mark, indicating a different workshop from that which made the Nonsuch example. All these dials appear to be exports from the thriving sundial industry of Nuremberg, which began at the end of the fifteenth century, and was already an organised craft by 1535.[4]

1. On punch-marks see Gouk 1988, 117
2. Eight sundials or fragments of sundials including one in a case were found on the *Mary Rose*: see Gardiner and RIchards (ed.), forthcoming, find numbers 80A 0942 and 1669; 81A 0240, 0730, 1992 and 2026; 82A 5076 and 5681. We are grateful to Julie Gardiner for Information about these sundials, which are being studied for the report by Stephen Johnston, Museum of the History of Science, Oxford. For some photographs, see Knighton and Loades 2002, pls 1 and 4
3. Now, with another fragment, in the Museum of London: ML 3891. See Gouk 1988, 135, No 61 and Fig 132 for the Worship Street dial
4. Gouk 1988

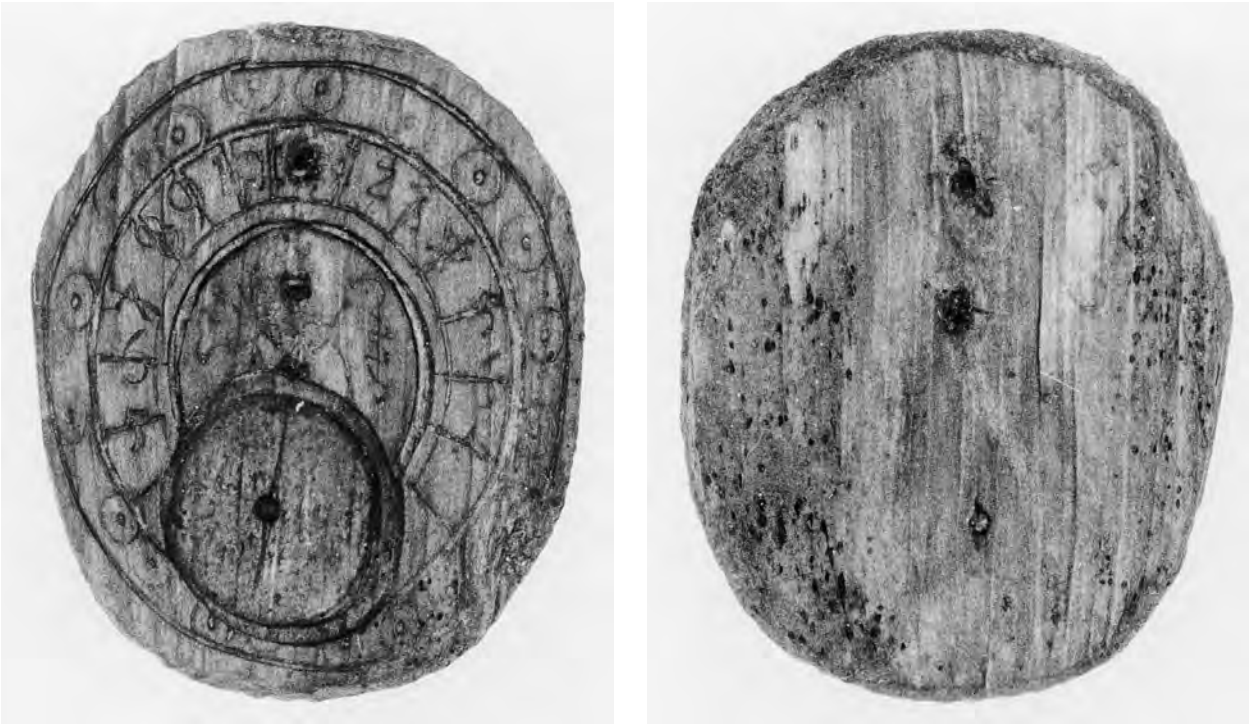

Fig. 206 Wooden pocket sundial: a, front; b, back (3:1).

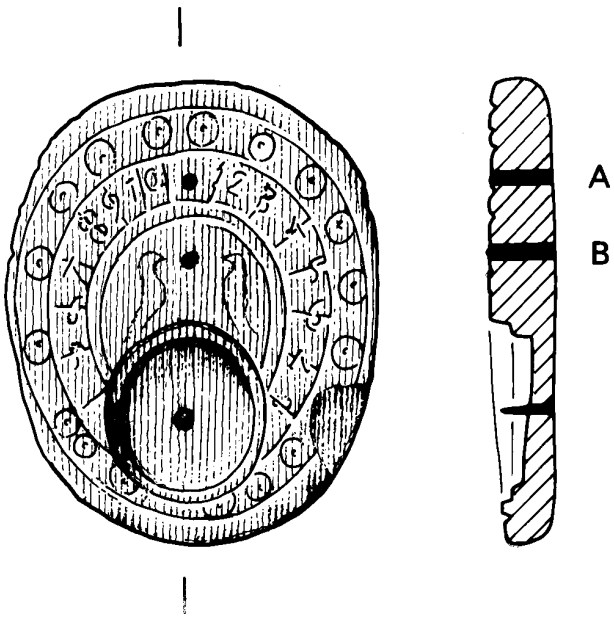

Fig. 207 Wooden pocket sundial (2:1).

18

WORKED BONE AND IVORY

by ARTHUR MACGREGOR

(Figs 208–14)

Thirty-five bone and ivory objects were found during the excavations of the palace and Banqueting House.

CATALOGUE

Group 1: Dice and gaming pieces

Dice

1 Complete cuboid bone die, with the numbers indicated by drilled circular depressions. No inlay or colouring.
7.5 x 7.5 x 7.5mm.
SF335; S1 12=G31**; Phase 4*

2 Complete bone die, the numbers indicated by small drilled depressions, with possible traces of black colouring.
5.8 x 5.8 x 6.2mm.
SF360; Y4 34=Well**; Phase 4*

3 Complete bone die, the numbers indicated by drilled circular depressions. No inlay or colouring.
7.5 x 7.5 x 7.5mm.
SF67a; W4 II/IV 4=G4**; Phase 4*

4 Bone die, chipped, but substantially complete, the numbers indicated by small drilled dots, containing traces of black colouring.
7×7×7mm.
SF197; W8 2=G6**; Phase 4*

The dice are carefully formed as regular cubes, only **2** being fractionally longer in one dimension than in the others. (Dice have been found elsewhere which are markedly longer in one axis, in which case the two faces at the longer ends are generally marked with the lowest numbers; the small irregularity on **2** is not significant in this context.) In each case the values are arranged so that the numbers on opposing faces total seven. All came from the garderobe pits, suggesting perhaps employment in furtive dice games rather than the more genteel recreations of the chamber.

Gaming pieces

5 Thin, flat ivory disc with incised on one side an irregular design of radial lines interspersed with random scratches.
Diam.29mm. Th.1.5mm.
SF209; W8 5=G7**; Phase 4*

6 Thin, flat disc of ivory with a fine groove running around the outer edge of the disc, which is carefully chamfered. No trace of colouring. Th.1mm. Diam.32.2mm.
**SF520; BH B5 III Drain fill; BH Phase uncertain*

Although produced in a similar way from the same material, these two pieces evidently belonged to different sets, being of different sizes. Both are made from thin slips of ivory cut radially from the tusk so as to section both the dense outer dentine and the marbled inner dentine. The disks themselves have been excised using a form of centre-bit (**6** is marked with a central depression in which the bit pivoted) in a technique similar to that used in the production of buttons (see below).

Possibly draughts pieces. The English form

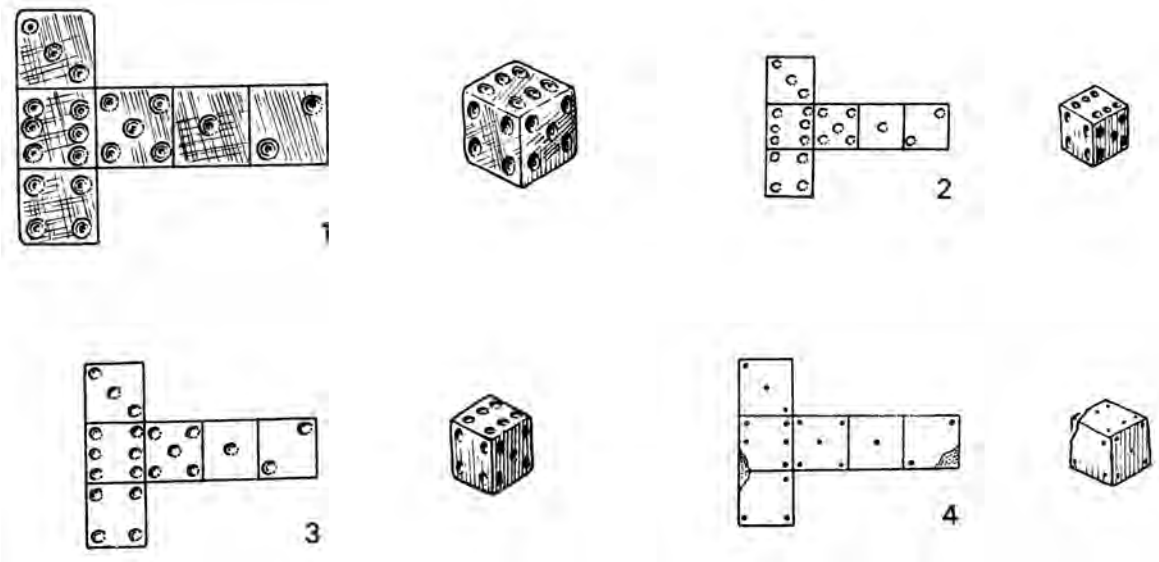

Fig. 208 Bone dice, ***1–4*** *(1:1).*

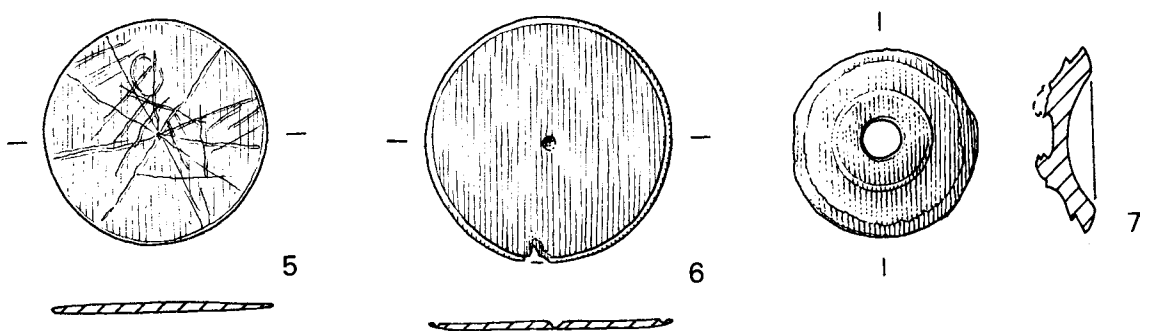

Fig. 209 Ivory gaming pieces, ***5***, ***6****; base of bone ?chess piece,* ***7*** *(1:1).*

of draughts is derived from a sixteenth century form of the French game.[1] Tables, which shared with chess the greatest degree of popularity among board games of the Tudor and Stuart periods,[2] was generally played with pieces of both larger diameter and much greater thickness.

Chessmen

7 The base of a bone chess piece (?). The lathe-turned base is hollowed out and the upper side is tiered. At the centre is a raised area with a threaded core. No trace of colouring.
Diam.25.1; Ht.7.8mm.
**SF259; X6 2; Phase 6*

This piece is possibly the base from a composite chessman. Some royal chess sets were lavish in the extreme: 'A Chess board said to have been Queen Elizabeth's inlaid with gold, silver and pearles' was among Charles I's possessions sold off under the Commonwealth, as was a 'A Chesse board of silver with 30 Men to it, being parcell Silver and parcell Cristall'. A 'Suite of Chesse men of Silver' accompanied a pair of playing tables in the same sale, which also included 'A Chesse Board of White Bone, carved and cutt upon for a paire of tables' and other gaming boards of cedar and cloth-of-gold, with others mounted with mother-of-pearl and glass.[3]

1. Bell 1960, 71
2. MacGregor 1989, 411
3. See MacGregor 1989, for a discussion of these

Group 2: Combs (all dimensions in mm)

8 Three fragments of a double sided ivory comb. One complete and one split end piece. Six complete coarse teeth; fine teeth incomplete or missing. The teeth have chamfered ends.
L.43; complete end piece L.58.5, max. Th.3.2; central reservation W.11.5, Th.3.5; coarse teeth L.24, Th.1.5; fine teeth Th.0.5mm.
SF363; T7 III 3=G26**; Phase 4*

9 Half of the end piece of a double sided ivory comb.
L.39, W. at tip 4.5, at centre 8.8, max. Th.3.8mm.
**SF47; U1 6; Phase 5*

10 A fragment of a double sided ivory comb. One end piece is complete, whilst the other is missing. Twenty-three, widely spaced coarse teeth are preserved *in situ*; none of the fine teeth survive. The maximum extent of each set of teeth is marked by a scribed line.
L.68.5, W.55; end piece W. at end 4.5; at centre 3.8; Th. 5.0; W. of central reservation 8.2, Th.4.4; coarse teeth L.8.8, W.1; fine teeth W.5; space between the coarse teeth 1, the fine teeth 0.5mm.
SF120; W1 5a=G2**; Phase 4*

11 Double sided ivory comb. Most of the fine teeth are preserved on one side, whilst on the other all the widely spaced coarse teeth are broken and most are missing. The double concave form of the central reservation is reflected in the curving profile of the comb.
L.90, max.W.65.2; end piece W. at tip 7, at centre 6.5; central reservation W. at end 17.5, at centre 13.6; central reservation Th.3.1; fine teeth Th.0.5, L.23; coarse teeth Th.1.5, L. not preserved; space between fine teeth 0.2, between coarse teeth 2mm.
**SF116; W2 5a; Phase 5*

12 Double sided ivory comb broken into three incomplete parts. One half and one complete end piece preserved, together with the central reservation. Almost half of the fine teeth and fewer of the coarse teeth are preserved.
L.75.8, W.60; end piece max. W. at tip 7.5, at centre 6.5; central reservation W. at end 15, at centre 12.8, Th. 3; fine tooth Th.0.5, L.21.5; coarse tooth Th.2, L. 21; space between fine teeth 0.5, between coarse 2mm.
**SF117; W2 5a; Phase 5*

13 Part of the central reservation of a double sided ivory comb. The reservation has an even width. Thirteen coarse teeth are preserved. No fine teeth survive. The coarse teeth are cut from either side of the comb at different angles giving them a six-sided profile. The fine teeth are flat.
L.62, W. of central reservation 14.5, Th.4.2; fine tooth Th. 0.5, L. not preserved; coarse tooth Th.1.5, L. 28; space between fine teeth 0.5, between coarse teeth 3mm.
**SF119; W2 5a; Phase 5*

14 The complete end piece of a double sided ivory comb.
L.72, W. at tip 72, at centre 8.8, max.Th.7; central reservation W.8.2mm.
SF105; W4 II/IV 4c=G4**; Phase 4*

15 A fragment of a double sided ivory comb. A portion of the central reservation survives. Only one of the blade-like finely cut teeth is intact; stumps of widely spaced teeth opposite.
Central reservation W.9, Th.3; fine tooth L.21.4, Th.0.5; coarse teeth Th.2.5; space between the fine teeth 0.5 and the coarse 2.5-3mm.
**SF333; Q2 5; Phase 5*

16 A fragment of a double sided ivory comb. Part of the central reservation and two of the coarse teeth are preserved. The widely spaced coarse teeth have chamfered ends with a blunt, rounded profile.
Central reservation W.10.2, Th.3: L. of coarse teeth 20.5, Th.2; Th. of fine teeth 0.5; space between coarse teeth 2.5, between the fine teeth 0.5mm.
**SF167; V8 3; Phase 5*

17 Part of a double sided ivory comb with four coarse and eight fine teeth. The coarse teeth are chamfered to a point; a lightly scribed line on either side marks the ultimate extent.
W.47.5; central reservation W.14.5, Th.1.8; coarse teeth L.16.5, W.1.9; fine teeth L.16.5, Th.0.8; space between the coarse teeth 0.6, and the fine 0.4mm.
**SF290; Y4 30; Phase 5*

18 A fragment of a double sided ivory comb. One end piece is completely preserved, as are nine coarse and five fine teeth. A further six fine teeth survive but are no longer attached to the comb. The coarse teeth are all chamfered to a point.
W.62.3, max.Th.3.6; end piece W. at end 6.5, at centre 7; central reservation W.16.3; coarse teeth L.23, W.2; fine teeth L.23, W.0.8; space between fine teeth 0.5; the coarse 0.50mm.
**SF347; R14 I/II 2; Phase 6*

19 Two adjoining fragments of a double sided ivory comb. Only three fine teeth survive.
L.13.9, Th.2.7; W. of central reservation 17.5; fine teeth L.19.6, Th.0.5; coarse teeth Th.1.0; space between fine teeth 0.5, and coarse 2mm.
**SF501; BH FG 6 1; BH Phase 7*

20 Fragment of the end piece of a double sided ivory comb.
L.42.4, W.8.5, max.Th.4mm.
**SF474; Unstratified*

The Nonsuch combs constitute a group that is strikingly uniform in material and in form. All

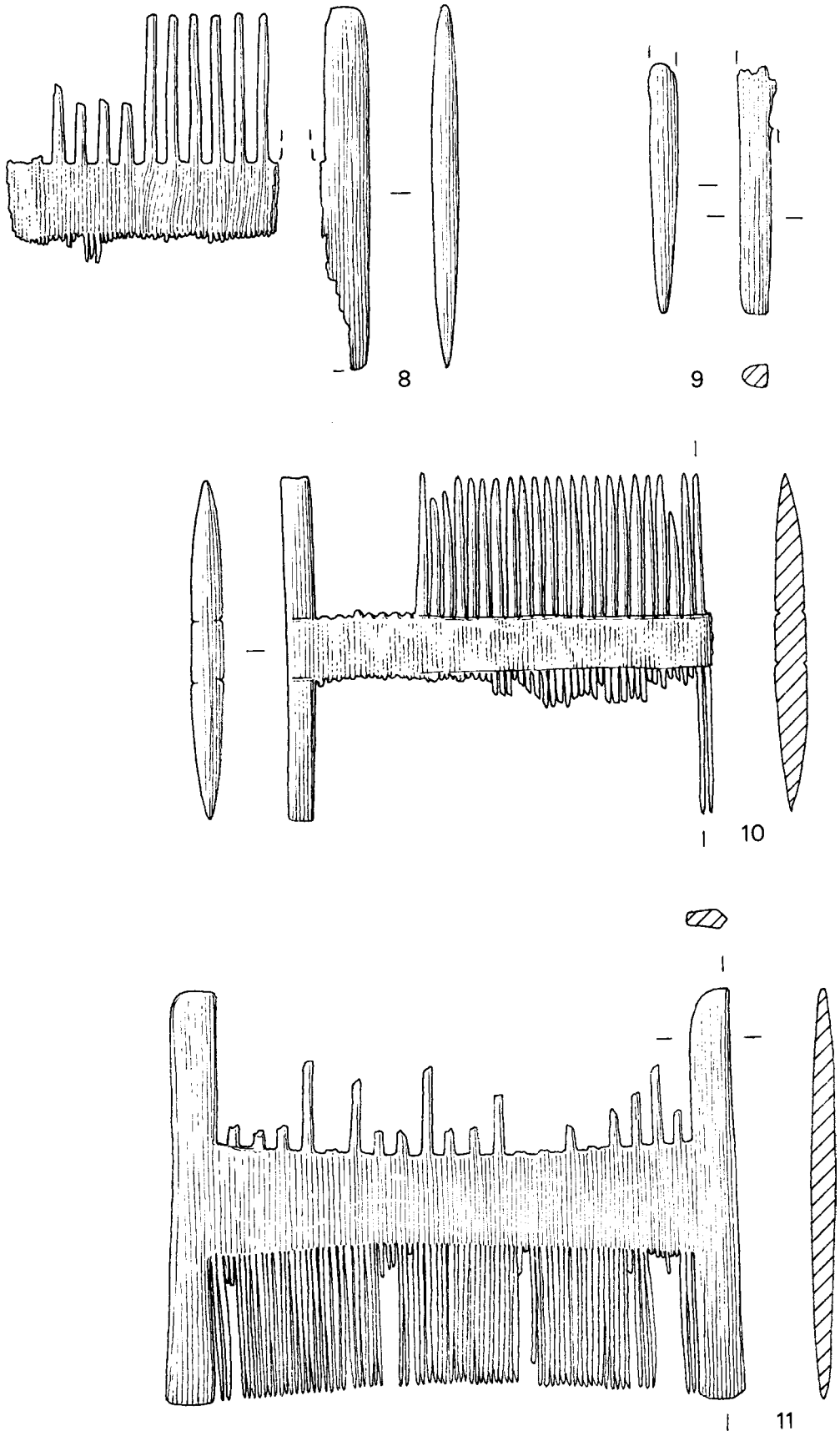

Fig. 210 Ivory combs, ***8–11*** *(1:1).*

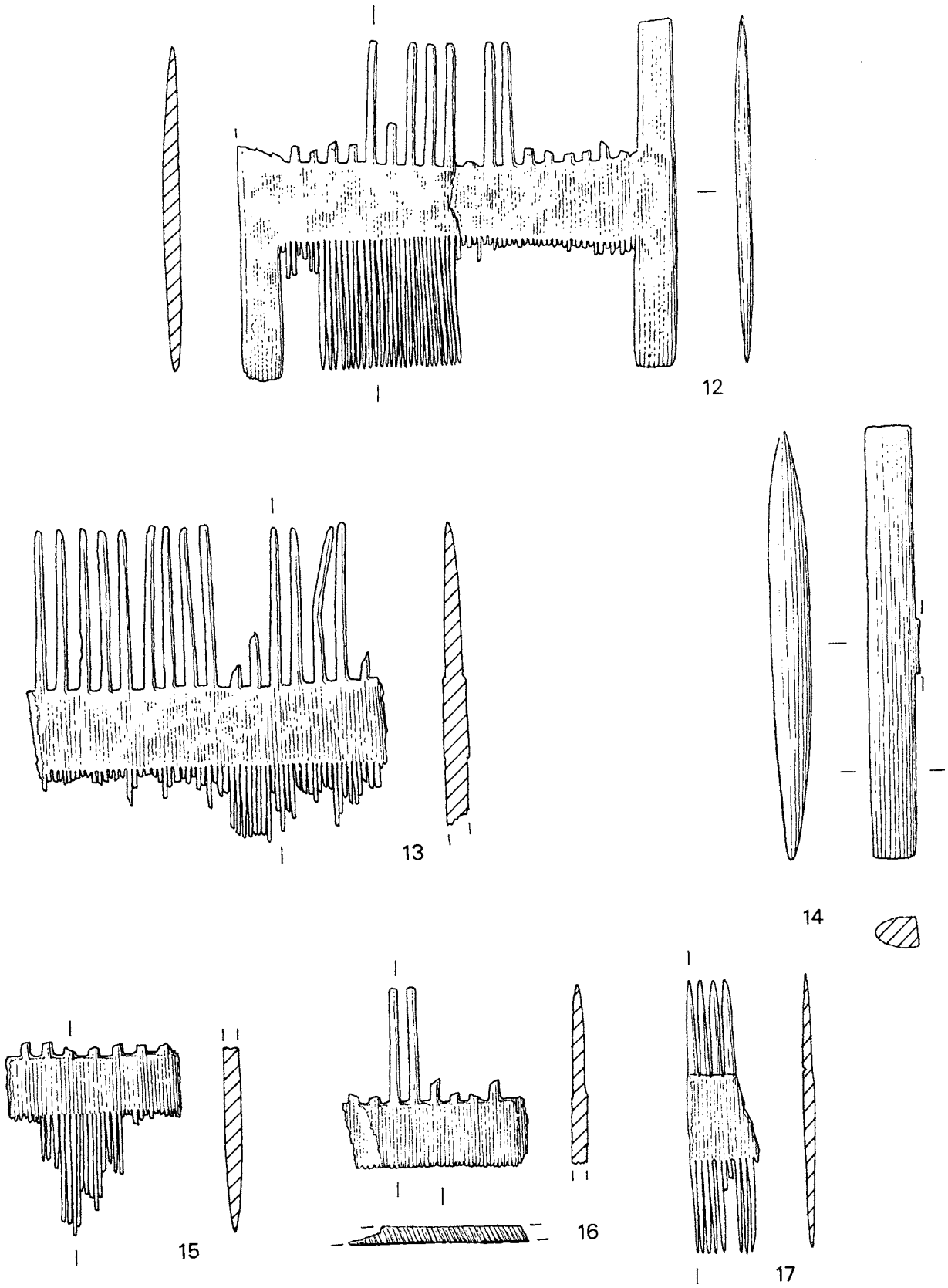

Fig. 211 Ivory combs, ***12–17*** *(1:1).*

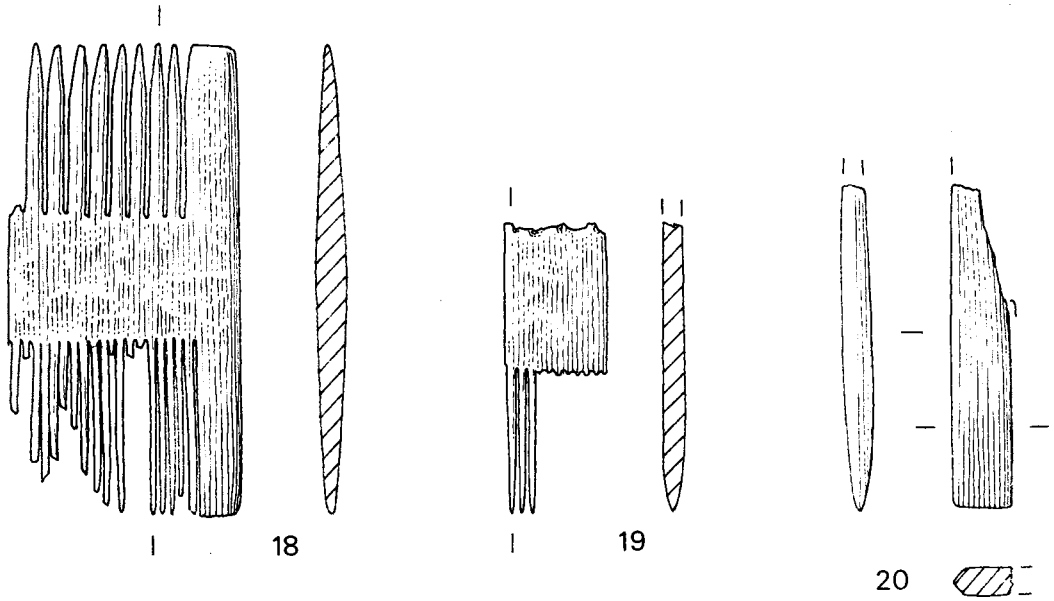

Fig. 212 Ivory combs, ***18–20*** *(1:1).*

are of elephant ivory, a feature which immediately distinguishes them from the products of more humdrum sites where (under appropriate environmental conditions) combs of bone, wood, or horn might have been expected. All are cut so that the teeth are aligned in the direction of the 'grain', for maximum strength. The combs are basically rectangular in outline and are cut with coarse teeth on one side and fine on the other; substantial end pieces and a central reserve left after cutting the teeth result in an elongated H-shape. The end pieces on **11** have been shaved in the central area to produce a slender, concave effect, while the others are straight in outline and rounded in cross-section. The central reserve areas are mostly parallel-sided but in **11** and **12** the reserve narrows symmetrically towards the centre, resulting in a double-concave outline. In the case of **11** the tips of the teeth also form a concave curve, while on **12** they form a straight line.

In each case the two principal sides of the comb have been filed into a blade-like edge so that the teeth, when cut into them, have ready-formed pointed ends. In the case of the narrower teeth, no further shaping has been deemed necessary. Amongst those with widely spaced coarse teeth the majority of the ends of the teeth are formed into blunt, rounded tips; amongst those in which the coarse teeth are separated from each other by a simple saw cut, two instances were found (**17** and **18**) where the tips have been tapered to form conical points, while in one case (**10**) no further shaping was carried out following the cutting of the teeth. In some instances (most notably **13**) the teeth are not cut at 90° to the main axis but are arranged at a slight tangent: this arrangement not only provides for the maximum cross-sectional area to be included in each tooth, but avoids aligning the teeth with the planes of greatest weakness running naturally through the ivory.[4]

Group 3: Cutlery handles

Only those handles lacking blades are considered here. Bone knife handles attached to surviving iron blades are considered above p 399–403.

21 Ivory handle, broken towards the blade end. Oval in section with a rounded bulbous end and tapering sides. Interior hollowed for a whittle tang, now lost.
L.74., max.W.19.mm.
**SF294 Y4 31; Phase 5*

22 Ivory handle, broken, with rectangular section and slightly tapering straight sides, terminating in a straight-cut end, rounded in cross-section. Interior hollowed for a whittle tang, which does not survive.

4. MacGregor 1985, 81–2

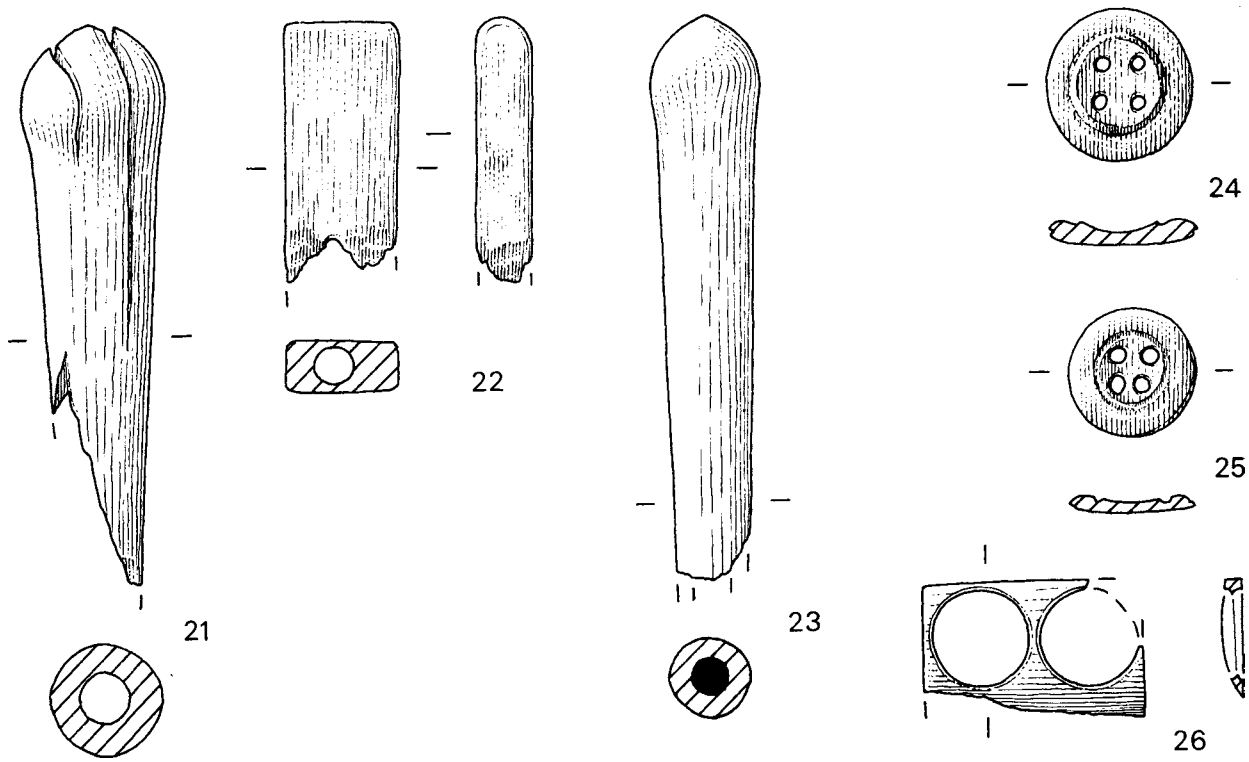

Fig. 213 Ivory cutlery handles, ***21–3****; bone buttons,* ***24–5****; bone button offcut,* ***26*** *(1:1).*

A conventional type from the 18th century onwards.[5]
L.35, max.W.17, Th.7mm.
**SF421; W2 1; Phase 8*

23 Ivory handle, broken off at the blade end, but containing traces of a tang. Oval in section, with tapering sides and a bulbous rounded terminal. Heavily corroded towards the blade end, and for much of its surviving length.
Similar in form to **21**.
L.77, max.W.15mm.
**SF515; BH D5 IV 7; BH Phase 3*

Group 4: Buttons

24 A circular polished bone button, with four thread holes placed symmetrically within the dished central area. A concentric groove separates the dished area from the rounded rim, which has a slight lip around its outer edge.
Diam.20, Th.0.5; Diam. of thread holes 1.5mm.
**SF194; W6ext 2; Phase 5*

25 A circular bone button, with four thread holes placed asymmetrically within the dished central area. A concentric groove separates the dished area from the rounded rim, which has a lip around its outer edge.
Diam.17.2, Th.2.5; Diam. of thread holes 2.5mm.
**SF266; Unstratified*

26 Offcut from the manufacture of bone buttons. The bone piece has one flat and one convex surface, and two circular perforations with a diameter of 1.35mm. A slight lip runs around the interior edges of the perforations.
L.29.8, max.Th.4.mm.
**SF422; U14/15 1; Phase 8*

Buttons of the type represented by **24** and **25** were cut from strips of prepared bone (**26**) with a centre-bit. Two bits of differing profiles would seem to have been used, one for the obverse which would excise the dished area and its surrounding groove at the same time, and a less elaborate bit used to cut from the opposite side of the bone and to form the reverse of the button; slight discrepancies in size or positioning resulted in the lipping seen both on the buttons and on the offcut.

5. Hayward 1957

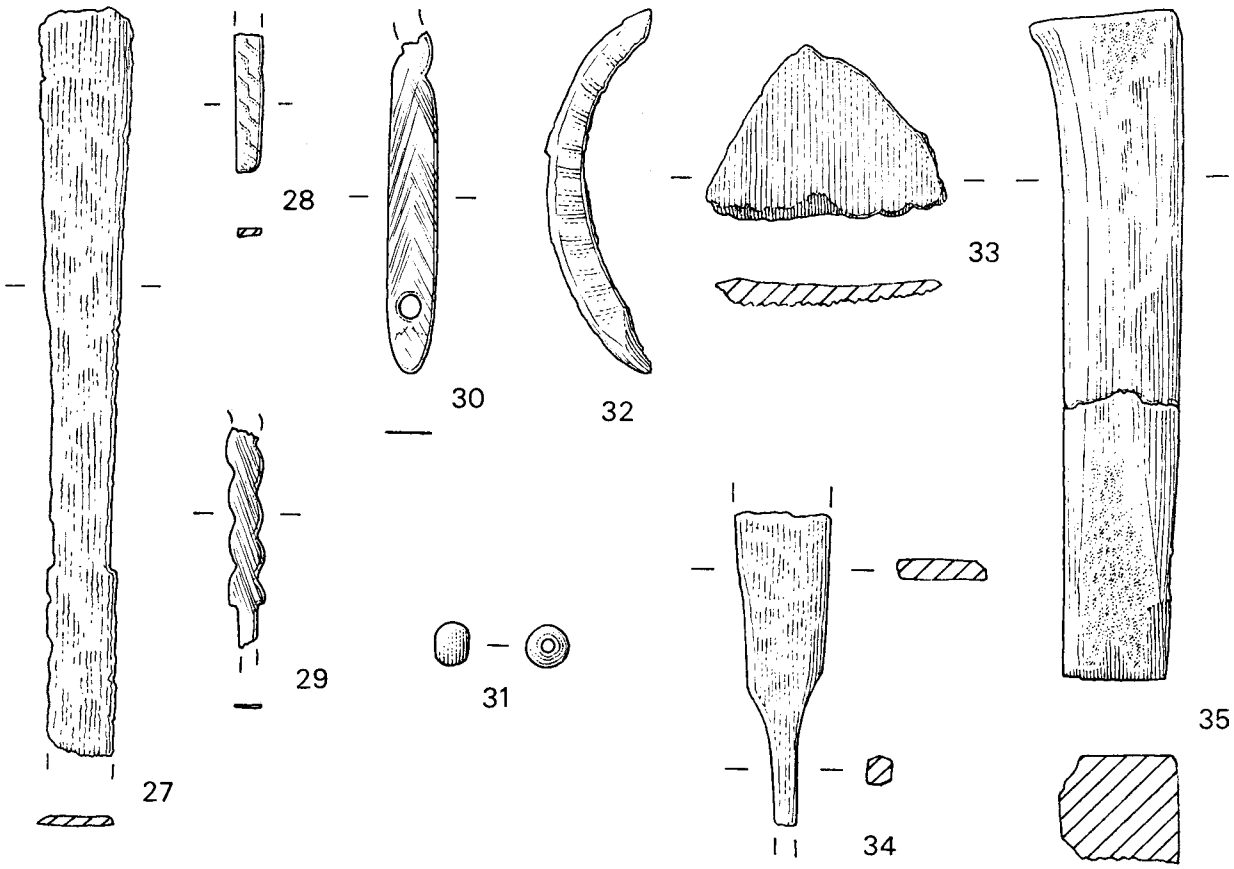

Fig. 214 Decorative inlays: tortoise shell, ***27****; mother of pearl,* ***28****; bone strips,* ***29****,* ***30****. Bone bead,* ***31****. Manufacturing waste,* ***32–5*** *(1:1).*

Group 5: Decorative inlay

27 Black tortoise shell strip, probably used as decorative inlay. The strip is shaped, tapering towards the centre from one end, and from its narrowest point expanding slightly to become parallel sided.
L.98, max.W.11, Th.1mm.
SF369; S1 14=G31**; Phase 4*

28 Mother of pearl strip, one side of which is carved with a diagonal step design.
L.18, W. 3.1, Th.1mm.
**SF447; Y7 6; Phase 5*

29 Carved bone strip, broken at one end, and rounded at the other. A circular perforation pierces the rounded end. The broken end is carved with what appears to be the beginnings of a guilloche design, similar to (and perhaps part of) **30**, below.
L.45, max.W.6.1, Th.0.1; Diam. perforation 2.8mm.
SF373; Q14 111 5=SA G**; Phase 5*

30 Carved bone strip, broken at either end. Carved in a guilloche design. At one end this design terminates and the strip narrows and becomes straight-sided.
L.28.2, max.W. 4.9, Th.0.1mm.
**SF332; Q14 1V 5; Phase 5*

These four fragments are probably all pieces of decorative inlay, as applied to furniture, caskets, gaming boards, and the like.

Group 6: Beads

31 Complete spherical bone bead. Undecorated.
Diam.5, Diam. of perforation 1.5mm.
SF220; W8 3=G6**; Phase 4*

Beads of this type were produced by the same technique as was used for the bone buttons described above.

Group 7: Manufacturing waste

32 Fragment of boars tusk, arc-shaped, with many irregular cuts. An offcut.
L.49, W.5, Th.4mm.
**SF293; Y4 14; Phase 5*

33 A flat, triangular shaped offcut, probably rib. All the edges are smoothed to some extent, suggesting that it may have been utilised.
L.32, W.24, Th.3.2mm.
**SF444; Y7 6; Phase 5*

34 Bone offcut broken at both ends. One end is carved almost to a point. The edges are chamfered.
L.41.4, Th.2.5mm.
**SF80; Y4 1; Phase 8*

35 Two adjoining fragments of deer antler tine, from which the dense outer tissue has been cut on four sides for utilisation. Roughly rectangular in section, with a flat terminal.
L.89, Max.W. 20, max.Th.17mm.
**SF502; BH FG 6/7; BH Phase 5*

19

LEATHER

by the late J. H. Thornton

(Fig 215)

i. Introduction

Eighteen fragments of shoes were found at Nonsuch Palace. No leather survived at the site of the Banqueting House, where similar contexts to those in which leather was found at the palace did not survive. Only the remains of shoes were found.

Of this group the majority, as might be expected, were found in the lowest levels of the well in the kitchen area (**6**–**17**). Six of the fragments found in the well (**10**–**16**) probably came from the same shoe. Two pieces were found in the bottom levels of Garderobe 26 (**1** and **2**). One fragment was found in X 15, layer 5 (**4**) which is very near to Dump 2. It is most unfortunate that the find spot of **18** is now not known. Of all the shoes found at Nonsuch, this is the most complete example.

The size of most of the fragments precluded the possibility of many of them being given dates, but in those cases where it was possible (**6**, **7,** and **3**) an early to late sixteenth century date is posited. This is further substantiated by the fact that this group is composed entirely of welted shoes which may be dated broadly to the sixteenth and early seventeenth centuries. All the fragments show signs of having been reused and repaired, or of having been 'cannibalised' for repairs to other shoes.

ii. Catalogue

1 A very deteriorated fragment one edge flanged and apparently carrying two rows of stitch holes. The inner line spaced at *c* 50mm apart,the outer holes are too indefinite to be measured with certainty but are possibly *c* 7mm apart. This is probably the remains of the upper quarter showing where they were lasted and attached to the insole. The doubtful second row of stitching may in fact be the other side of the first row, the margin of the insole still being attached to the quarter and flattened in burial.
*SF468; T7 III 3=**G26**; Phase 4*

2 A small rectangular cutting (4.5 x 0.7 x 0.2cm) with a pointed end. The fragment is too small to be identified.
*SF469; T7 III 3=**G26**; Phase 4*

3 A number of fragments of a leather shoe, including the toe end of a vamp, the toe puff and pieces of the sole or insole. The toe sections have marginal stitch holes penetrating from surface to surface *c* 8mm apart suggesting that the fragments were part of a welted shoe rather than of a turnshoe. One sole section, possibly from the

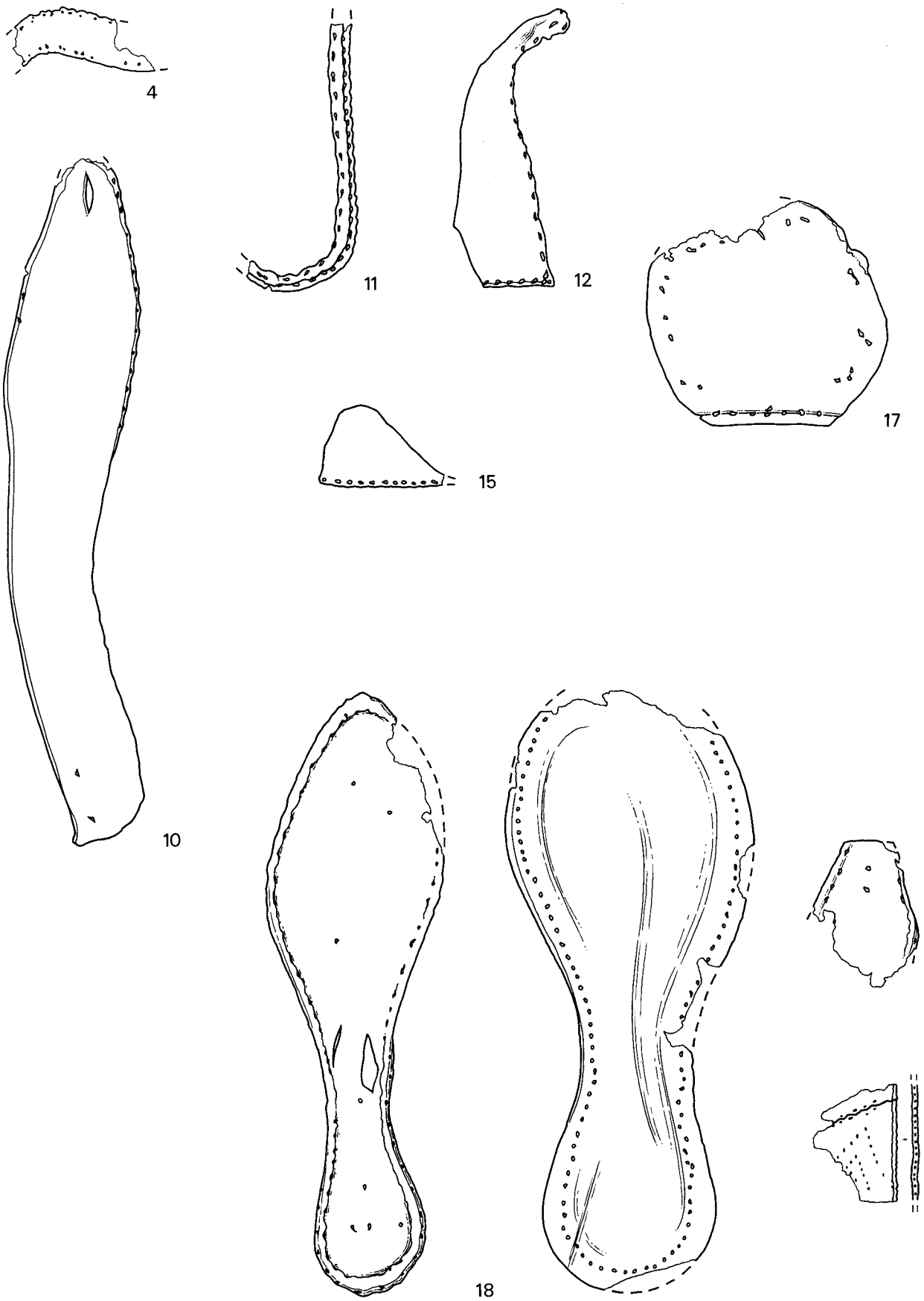

Fig. 215 Leather shoes, ***4***, ***10–12***, ***15***, ***17***, ***18*** *(1:2).*

waist, has marginal holes but these appear to be grain-flesh rather than edge-flesh. This is possibly a welted insole. There is some indication of bracing thread having been used to last the upper. Holes near the centre of the fragment suggest that upper additions to the shoe were made.
The fragments are possibly to be dated to c 1500.
*SF471; W8 3=**G6** or **G7**; Phase 4*

4 A very small fragment of thin leather (4.5 x 1.5mm) with seams along both edges.
**SF473; X14 5; Phase 5*

5 Some very deteriorated fragments of the left foot of a welted insole with the tread and toe missing. Some indication of very deteriorated nail holes on a central line showing where the insole was tacked to a last during the manufacture of the shoe.
SF472; Y4 22; Phase 5

6 A very deteriorated fragment,possibly from the toe of a vamp with marginal grain-flesh holes, some incomplete, *c* 8.0mm apart.
The piece probably dates to the sixteenth century.
*SF456; Y4 33=**Well**; Phase 4*

7 A very deteriorated fragment of leather (*c* 15.0 x 8.0cm) with what appear to be parallel slashes at one end suggesting that it may be part of a sixteenth century vamp. The opposite sides appear to be cut rather than torn but there are no visible stitch holes. It is also possible that this fragment is in fact part of a sole.
*SF457; Y4 35=**Well**; Phase 4*

8 A very small fragment of leather (*c* 4.5 x 10.0cm) through which two rows of holes run spaced at 4.0mm and 8.0mm respectively. This would suggest that the piece is a fragment of a welt.
*SF458; Y4 35=**Well**; Phase 4*

9 A very deteriorated section of leather,broken into two parts which fit together (12.0 x 8.5cm). It is possibly the forepart repair of a clump sole for a broad toed shoe. Ill- defined marginal holes show where it was attached.As with other specimens of leather from Nonsuch, the deterioration of the fragments is so pronounced that precise identification is difficult.
*SF459; Y4 36=**Well**; Phase 4*

10 Half the insole (right side),the insole having been cut lengthways from the toe to the heel of a welted shoe. A possible big toe impression and base curvature suggest that the fragment is of a left shoe. There is an edge-flesh seam with stitch holes placed *c* 8.0mm apart.
SF460; Y4 37=Well**; Phase 4*

11 Several pieces of welt (*c* 6.0 x 7.0cm) with the usual two rows of holes *c* 8.0mm apart on the upper \insole\welt, and 4–5.0mm apart on the welt\sole.
SF461; Y4 37=Well**; Phase 4*

12 The insole margin of the vamp of the upper. This portion extends from partway round the toe and has a pleat made by tucking the leather in and stitching it (the stitches are still in situ), it then passes down the inside of the shoe and finishes in a butted seam where it was originally joined to the quarter. The marginal seam, where it was stitched to make a welt, has holes at 7.0mm intervals (corresponding with the insole). The seam of the butted quarters has a stitch length of 3–4.0mm.
SF462; Y4 37=Well**; Phase 4*

13 A fragment of the lower part of an inside quarter extending partway round the heel. The front end has a butted seam corresponding to the end of the vamp.
*SF463; Y4 37=**Well**; Phase 4*

14 A fragment of a heel with the usual attaching seam along the lower margin and a scalloped top edge where it was blind stitched inside the quarter (the stitch length is *c* 5.0mm).
*SF464; Y4 37=**Well**; Phase 4*

15 A small triangular section with marginal stitch holes, grain-flesh, at *c* 4.0mm intervals. The position of this piece is not clear.
SF465; Y4 37=Well**; Phase 4*

16 A small marginal fragment with stitch holes at *c* 4.0mm.
*SF466; Y4 37=**Well**; Phase 4*

17 An almost circular piece of leather *c* 9.0cm across. The edge appears to be cut all round (it is torn at one place). There are stitch holes set at irregular intervals except at one straight section (*c* 4.5cm long) where they are set in a groove *c* 7.0mm apart. This fragment may be part of a sole or heel.
SF467; Y4 37=Well**; Phase 4*

18 A number of fragments forming most of the left foot of a welted shoe. The insole, which is fairly pointed, still has part of the welt and upper (very deteriorated) round the forepart although the welt securing thread itself has apparently disappeared. The stitch length may be estimated to have been *c* 7.0mm. At the toe end the vamp has considerable pleats and the toe probably overhung the sole (as may be observed on contemporary monumental sculpture).

The vamp may have been slashed at the throat, but this is conjectural; the present openings may be the result of wear and tear.

The sole is almost complete except for the toe end and has the usual row of marginal holes, grain to flesh, spaced at 4.0–5.0mm and set in a groove *c* 7.0mm from the edge. Wear may be observed in the usual places – the forepart and the outside back of the heel seat.

Other fragments include a seat piece, possibly the piece referred to above, with marginal edge \flesh holes (6.0mm apart). It could be part of the fellow shoe.

Also a number of smaller fragments, one of which has fine edge stitching (with a stitch length of 6.0mm) and is probably a piece of an upper.

The insole length of this shoe is *c* 21 x 6.0cm which is equivalent to a size thirteen in a modern shoe. At Exeter it was considered that this size was worn by women or youths.[1] The shoe is important as it preserves the various components of the shoe *in situ*. It dates to the late sixteenth century.

**SF470; Unstratified*

1. Friendship-Taylor 1984, 323

20

MISCELLANEOUS OBJECTS

by Martin Biddle

(Figs 216–24)

Catalogue

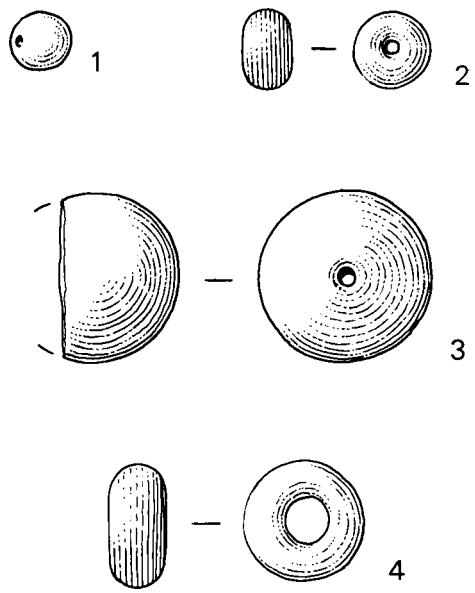

Fig. 216 Miscellaneous objects: beads, ***1–4*** *(****1****,* ***4*** *glass;* ***2****, amber;* ***3****, jet) (1:1).*

Beads

1 Bead, glass. Hollow sphere, D:8mm, the glass less than 0.5mm in thickness, pierced at opposite poles. The outer surface is now a matt mottled brown and grey, but was perhaps originally silvered or pearl-like.
SF359; T7 III 3=G26**; Phase 4*

2 Bead, amber. Annular, with a small straight hole. D:11mm; D. of hole; 1.5mm.
SF72; U7 8a=G9**; Phase 4*

3 Bead, jet. Large, spherical, slightly flattened at the surviving pole around a straight hole. D:23mm; D. of hole: 2mm. Possibly a rosary bead.[1]
**SF417; Q10 III 6; Phase 5*

4 Bead, glass. Annular, irregular, with a large straight hole. Translucent, light green bubbly glass. D:17mm; D. of hole: 7mm.
SF126; X15 10a=D2**; Phase 5*

For another bead, see Worked bone **31** (p 426).

Bottle-stoppers

5 Bottle-stopper, stoneware. Dark purple-brown stoneware sphere with a patch of orange fibres protruding from one side. D:13mm.
SF271i; W12/13 8=G11**; Phase 4*

6 Bottle-stopper, stoneware. Mottled brown stoneware sphere with a patch of orange fibres protruding from one side. D:14mm.
SF271ii; W12/13 8=G11**; Phase 4*

1. For similar jet beads from 15th- and 16th-century contexts at Winchester, see Biddle 1990, 644, 660–1, Nos 2109–13

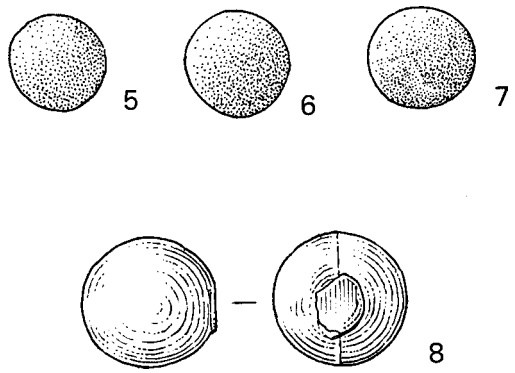

Fig. 217 Miscellaneous objects: bottle-stoppers, ***5–8*** *(****5–7****, stoneware;* ***8****, glass) (1:1).*

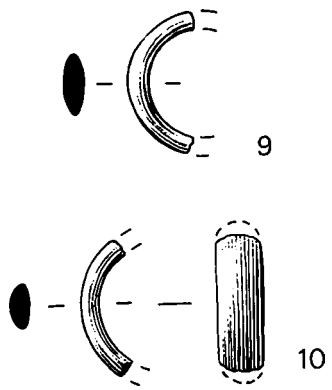

Fig. 218 Miscellaneous objects: jet finger rings, ***9–10*** *(1:1).*

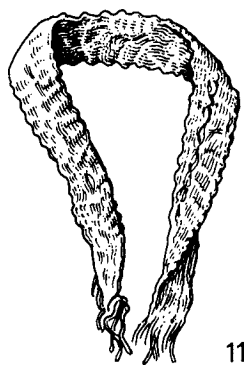

Fig. 219 Miscellaneous objects: metal braid, ***11*** *(1:1).*

7 Bottle-stopper, stoneware. Mottled grey and brown stoneware sphere with a patch of orange fibres protruding from one side. D:14mm.
SF420; Q14 III 5=SA G**; Phase 5*

8 Bottle-stopper, moulded glass. Translucent, light green. Casting seam on the circumference and flattened to one side, with orange fibres adhering where the sprue was wiped off.
**SF196; Q8 3; Phase 5*

Since **5–8** all date to the second half of the nineteenth century they are intrusive in the deposits in which they were found.

Finger rings

9 Finger ring, jet. Rounded section flattened on the inside. Half missing. Original D:20mm.
SF301; Y4 34=Well**; Phase 4*

10 Finger-ring, jet. Oval section flattened on the inside. Rather more than half missing. Original D:21mm.
SF160; W5 4a=D1**; Phase 5*

Jewellery

11 Braid, metal (?silver). Woven metal braid consisting of a continuous 'warp' S-twisting from side to side of the braid with thinner 'wefts' woven throughout its length to either side of a heavier central cable. The ends are frayed and broken. W. of braid: 6mm; extant L: *c* 120mm.
SF451; W12/13 8=G11**; Phase 4*

12 Dress ornament, copper alloy, originally gilt, with white glass flowers. The ornament, probably once circular, consists apparently of three tiers, a larger lower tier of nine flowers (one now detached), a smaller middle tier also perhaps of nine, and an upper/central flower with two or more flowers (possibly once four) around it. The basic structure, as seen from the back, consists of two tiers of radiating spokes of tightly wound wire twisted into spiral rods. These are joined at the centre by a vertical element which holds the tiers apart and presumably passes through to provide the fixing of the upper, central flower. The spokes of the larger tier are joined at their circumference by a 'rim' of scrolled strip, and each spoke terminates in a flower. The spokes of the second tier also end in flowers, but they seem to have stood free, not linked by a wire scroll. The flowers each consist of eight petals surrounding a white glass bead. The surface of the beads is covered with tiny blobs of white glass. The beads are held in position by wires which pass through the central hole and end in a loop. The central flower is composed of the same elements with an

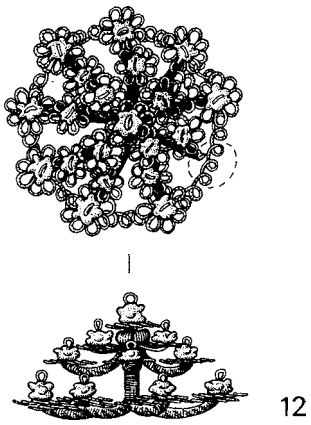

Fig. 220 Miscellaneous objects: dress ornament, ***12*** *(copper alloy with white glass flowers) (1:1).*

apparently more complex set of perhaps four surrounding petals, but the area is too squashed for certainty. Max. D. 32mm.
**SF509; BH D5 IV 5; BH Phase 4*

The structure of the ornament, supported on spiral rods of tightly wound wire, would have allowed the flower to quiver with the movements of the wearer. Such flowers appear to have formed elements in festive head attire for women, fashionable in the late sixteenth and early seventeenth century. A portrait of Catherine Killigrew (1579–1640), later Lady Jermyn, shows an elaborate 'head-dress of silver wire and pearls that would have quivered and shimmered with movements of the head'.[2] This same portrait shows the outer edges of her sleeves ornamented with free-standing flowers set on long stalks. The Nonsuch flower appears to be an example of a cheaper version of such ornaments and since it comes from the demolition of the Banqueting House is datable before 1667. The extraordinary development of hair fashions in the earlier part of the century is well illustrated by the brass of Dame Margaret Chute (d. 1614) at Marden in Herefordshire.[3] Here the hair is brushed up to a patterned nine-peaked crown, each peak ending in a wheel-like ornament. Whether or not this crown is lace, as Macklin suggests, it must have been supported by wirework. Comparable finds seem to be either rare or unrecognised, apart from a large fragment of a wire-work head-dress found on the Thames foreshore at Butler's Wharf, Southwark, in 1987.[4]

Toilet implements

13 Cosmetic implement, fine-grained grey-green stone. Long, thin, tapering, and finely worked, swelling at one end before finishing like a flat pencil, tapering at the other to a fine point. L:59.5mm.
SF201; W5ext 2d=G5**; Phase 4*

From the same garderobe (**G5**) as the sprinkler box (**14**). Possibly for use with eye-liner?

Of the geological origin of this piece, Mr B.C. Worssam writes: A grey-green fine-grained slate or slaty mudstone. Fine laminae, apparently silty, can be discerned parallel to its length along its two narrower sides. To an extent, therefore, the flattened shape of the implement is determined by its geological texture. A Paleozoic age is indicated, and a Devon or Cornwall provenance.

14 Medicinal or cosmetic sprinkler box, wood (?box, *Buxus sempervirens*) with contents in place. The box is circular and consists of three separate parts. The sides and the perforated internal plate are turned from a single block. The plate divides the interior into an upper and a lower compartment, the perforations (23 survive in whole or in part out of an original total of *c* 40) allowing the contents of the lower compartment to pass through. The base fits over a rebate on the sides and was presumably glued in place. It is decorated on the edge with a single turned moulding. The lid is rebated to fit into the box and the rebate has a projecting pawl which engages in a notch on the inside of the rim. The opposite side of the body and lid are missing, together with any trace of a corresponding feature, whether a pawl or a hinge. The lid presumably snapped or was twisted into place, as there is no sign of any external fitting to keep it shut. The top of the lid has a series of turned mouldings. The contents now form a solid block, green in colour as if strongly copper in composition. External D: *c* 40mm; internal D: 34mm (both measurements uncertain due to distortion); overall H: 28mm.
SF245; W5ext 3=G5**; Phase 4*

Small containers of hard woods, box, ebony, and lignum vitae, intended for a wide range of medicinal, cosmetic, and other preparations, were products of high-grade speciality turners.[5] Pounce-pots were a typical product of this craft,[6] but XRF analysis shows that the contents of this box consist not of pounce but mainly of copper and lead, with traces of arsenic and zinc, and

2. Weinstein 1989, 323–4, Pl LVI
3. Macklin 1907, 282–3
4. Weinstein 1989
5. Pinto 1969, 14–15, 261, 371, 373
6. Eg Findlay 1990, 134, Nos. 157–60. I owe this reference to Hazel Forsyth

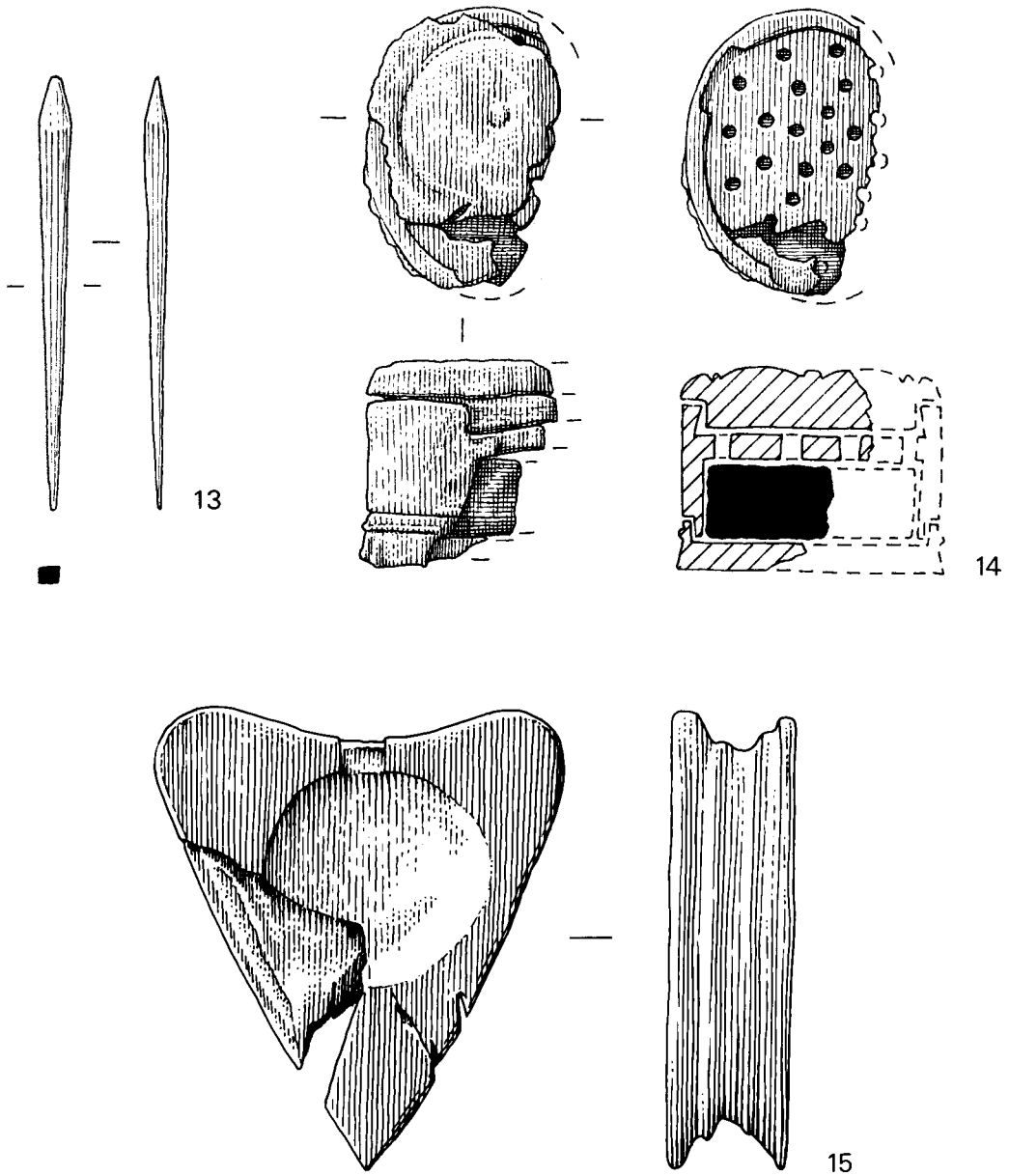

Fig. 221 Miscellaneous objects, toilet implements: slate ?eye-pencil, ***13****; boxwood sprinkler with contents,* ***14****; jet ?cosmetic palette,* ***15*** *(1:1).*

examination under the microscope suggests that they may originally have been present in practically any form other than a solid block; powder or turnings are equally possible.[7] The fashion for gold hair powder in vogue in France in the later seventeenth century was imitated for the less wealthy by the use of powdered copper.[8] The Nonsuch sprinkler may be an artefact of this fashion.

15 ?Cosmetic palette, jet. Heart-shaped, with reeded sides and a deep rounded circular depression in its upper surface. Overall L:64mm; Th:19mm. **SF413; P/Q 15/16 16a=**G19**; Phase 4*

16 ?Painter's or ?cosmetic palette, ormer shell (*Haliotis tuberculata L.*).[9] The shell contains a red pigment consisting of lead carbonate (probably in the form of white lead), calcium carbonate,

7. Catherine Mortimer, Ancient Monuments Laboratory, English Heritage, kindly undertook the analysis and examination

8. Matthews 1973, 22, and cf 26–7 for the introduction of vinaigrettes after 1720

9. Identification by June Chatfield

and iron oxide, with a small amount of material of silica type but virtually no organic binder.[10] L:91mm; W:61mm.
*SF 452; U7 8=**G9**; Phase 4*

Dr June Chatfield writes: The presence of a red pigment in an ornamental shell with a mother-of-pearl interior led us to suggest initially a 'dressing table' function for this object, before later analysis of the pigment. The nearest source for ormer shells is the Channel Islands and northern France, so there is a possibility that the shells might have been brought to Nonsuch by artist craftsmen from France.
Miss Joyce Plesters writes: Shells were often used by painters as containers for paint and pigments, certainly in the medieval and early Renaissance periods and possibly also in Roman times. Two oyster shells of possibly fourteenth-century date, found in a wall in Canterbury Cathedral, contained a pigment caked together as if it had originally been mixed as paint, but no organic binding material could be detected. It seems likely, though, that had organic binding media of a water-soluble nature, such as plant gum, animal glue or egg tempera, been present initially, they may well have been leached out by moisture or destroyed by micro-organisms. For work on a smaller scale, such as on easel paintings, and for keeping more precious materials such as powder gold and expensive lake pigments, mussel shells were often used.
Lead white mixed with iron oxide might reasonably be expected in sixteenth or early seventeeth-century England, and occasionally chalk might have been added to the lead white, but the presence of calcium carbonate might result from contamination by damp earth, and the small amount of silica might exist as a natural impurity in an iron oxide/natural ochre pigment. I consider that it is highly likely that the shell and its contents are a painter's palette plus pigment or paint. The absence of oil medium at this date might indicate an aqueous medium which has now been leached out or perished, possibly pointing to the shell and contents having been employed in wall painting.
Professor M. S. Tite comments: In view of the presence of calcium carbonate, it seems very unlikely that this material would have been used as a ceramic paint, since the calcium carbonate would decompose when fired and disrupt the paint surface. It is possible that the substance was used as a cosmetic, both white lead and iron oxide being used for this purpose during the Tudor period. However, use as a paint cannot necessarily be ruled out in spite of the absence of any remaining organic binder.

Trenchers

17 ?Trencher, wood. Part of a perhaps once circular plain wooden disk, bevelled on one face, the edge rounded.
SF?; Y4 35=Well**; Phase 4*

18 ?Trencher, wood. Part of a perhaps once circular turned wooden disk. The upper face has a slightly raised rim with five mouldings and a bevelled edge.
SF?; Y4 35=Well**; Phase 4*

17 and **18**, if correctly identified as trenchers, take their place beside the pewter bowls, plates, and platters from the same deposit.[11] Trenchers seem usually, however, to have had a plate-like rim:[12] **18** may qualify, but both are perhaps more like breadboards, while **17**, which is entirely plain, might be the bottom of one of the wooden buckets whose iron fittings were found in the same well.[13]

Other

19 Handle, iron, wood, and copper alloy. The iron core is apparently the whittle tang of an implement, perhaps a knife or fork, although other high quality domestic tools cannot be excluded. The wooden hilt expands towards the end and has been charred. It is bound with an apparently continuous spiral of copper-alloy wire which has itself been tightly twisted throughout its length to produce a fine cable, providing a better grip. There is no sign of a hilt-plate and the tang does not seem to have penetrated the end of the wood. L:61mm.
SF198; W5ext 2d=G5**; Phase 4*

For other whittle-tang handles, see Worked bone **21–2** (p 424–25) and Knives in Iron **137–9** and **147–59** (p 399, p 401).

20 Offcut, stone. Square rod of fine-grained, reddish-grey stone apparently split on all four sides from a slab originally sawn on both faces, the saw marks now appearing on the flat ends of the rod. One end has subsequently been pared away on two faces and the four diagonal facets thus formed have been worn smooth by rubbing, polishing, or sharpening something against them. L:53mm.
**SF260; X9 1; Phase 8*

Mr. B. C. Worssam writes: A square rod of cleaved,

10. Identification by N A R Falla, Paint Research Association, Teddington
11. See above, p 328–34
12. Pinto 1969, 87–9
13. See above, p 393–4, Iron **113–21**

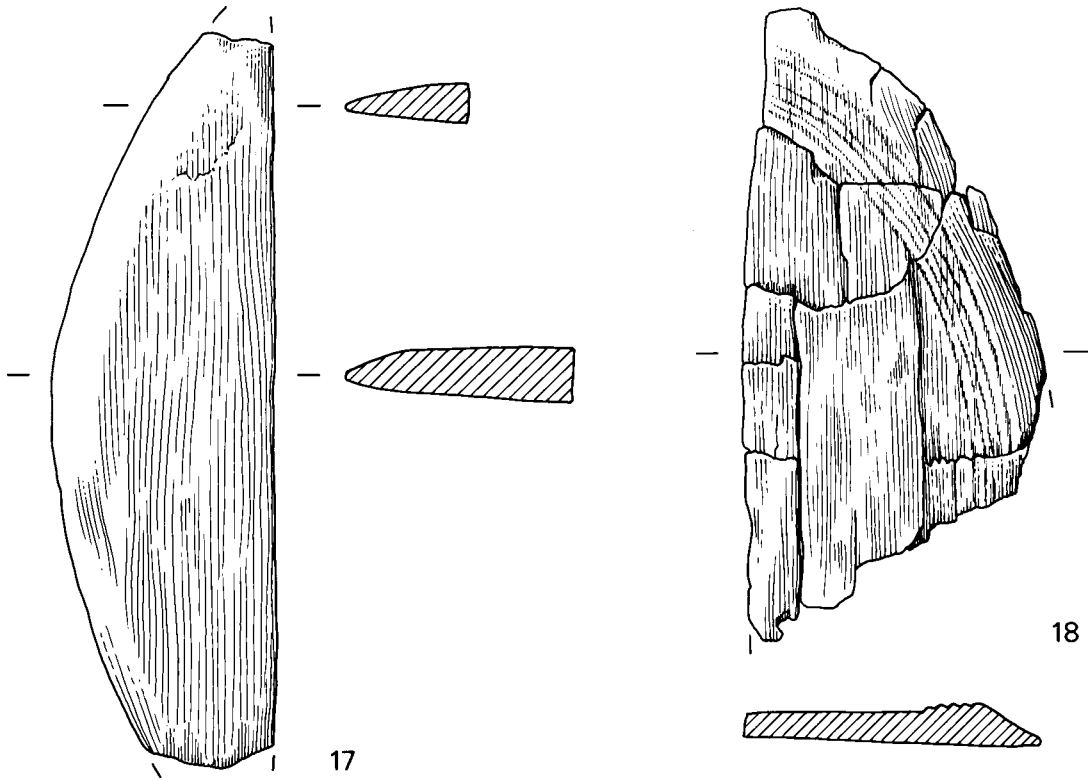

Fig. 222 Miscellaneous objects: wooden ?trenchers, ***17****,* ***18*** *(1:2).*

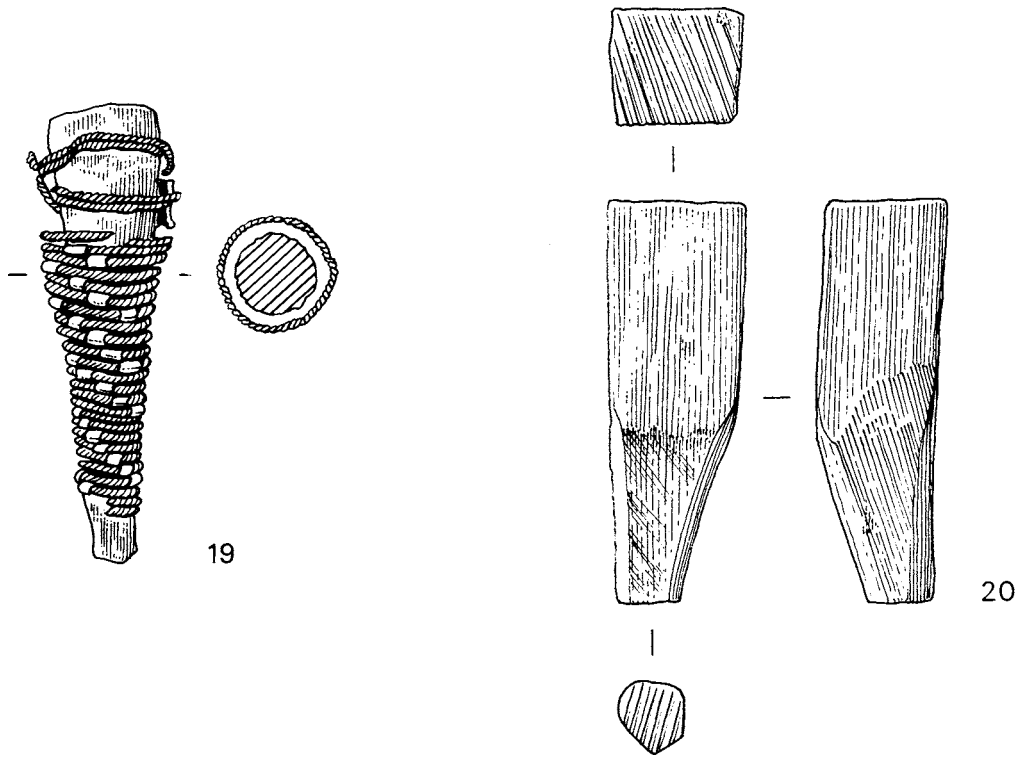

Fig. 223 Miscellaneous objects: handle, ***19*** *(wood with copper-alloy binding and iron core); stone offcut,* ***20*** *(1:1).*

laminated slightly silty mudstone, medium grey (10YR 5/1) in colour, and part stained reddish brown (2.5YR 5/4). The two flat ends of the rod show saw marks, and the four sides along which it has been split show cleavage traces, parallel to its length. It is pared pencil-like at one end, and the pared facets, presumably cut with a chisel, are smoother than the sides of the piece. On one facet can be discerned fine parallel lines, which appear to be traces of bedding laminae. On another facet, at right angles to the first, are slightly curved grooves, which may be related to the cleavage.

Despite the cleaved appearance of the stone, its specific gravity, of 2.5, is close to that of two samples of Coal Measures mudstone in my possession (2.5 and 2.45). It is less than that of a roofing slate (probably from N. Wales) and of a green Lake District slate (both 2.8), and much less than that of a pyritic Delabole slate (3.2) – an indication that the specimen is less highly metamorphosed than a true slate.

The rock is perhaps best described as a slaty mudstone. It must be of Paleozoic age, and the cleavage direction close to that of the bedding suggests that it comes from a tightly folded sequence. The red staining is of the sort developed close to Triassic unconformity surfaces, penetrating along joint planes.

Bearing in mind its probable derivation from a sixteenth- or seventeenth-century context, the stone is most likely to be from Devon or Cornwall. I would expect slaty mudstone of this type to have been mainly used for paving slabs or kerbs

21 Model book, carved from a single block of box wood (*Buxus sempervirens*).[14] The book has three raised bands on the spine and two straps to hold it closed. H:35mm; W:23mm; Th:14mm.
SF293; Y4 36=Well**; Phase 4*

The object is complete in itself and shows no sign of attachment to e.g. a statue or a piece of decorative woodwork *à la* Grinling Gibbons.[15] The neat carving and use of a fine quality wood suggest that the book is not a toy, e.g., part of the furnishing of a 'doll's house'. It might perhaps be a space filler from a cabinet of miniature books such as the travelling library once owned by Sir Julius Caesar and now in the British Library, although this and two other similar collections of miniature books in the British Library include no such space fillers.

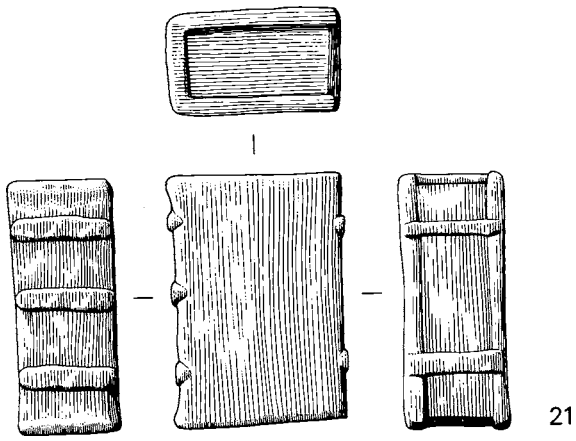

Fig. 224 Miscellaneous objects: boxwood model book, ***21*** *(1:1).*

Of the seven known English travelling libraries surviving in whole or in part from the seventeenth century, six come from Jacobean court circles of the first quarter of the century. Two of these were made for James's sons. Prince Henry's was assembled in the last few years of his life, between 1609 and his death in 1612; the greater part of Prince Charles's was put together in 1605–6 when he was only five, and the remainder had been added by about 1608.[16] None of these libraries contains any wooden model stop-gaps,[17] but the observation that Charles's library was put together in two stages suggests, if its case was provided from the start, that there will initially have been gaps to fill, perhaps while the missing volumes were sought. Between 1603 and 1610 the two young princes were frequently at Nonsuch, then a dower house of their mother, Anne of Denmark, they and their companions forming what Sir Thomas Chaloner described in 1607 as a 'courtly college'.[18] It cannot be suggested that the Nonsuch model book came from one of the princes' travelling libraries, for it seems too small to match the books in those collections, and with its pronounced bands too old fashioned, but the palace provides precisely the context in which a stop-gap from a travelling library might have been lost, or discarded because a volume had been secured to fill a gap. Lord Lumley's library provides perhaps its most obvious source.

14. Identified by the Jodrell Laboratory, Royal Botanic Gardens, Kew
15. A point made by Dr. B C Barker-Benfield
16. Nixon and Jackson 1979; Emmerson 1983. I owe these references to the kindness of Dr Dennis Rhodes and Mr J.S.G. Simmons
17. Dr Rhodes very kindly examined Sir Julius Caesar's and two other travelling libraries in the British Library to establish this point; neither Nixon and Jackson 1979 nor Emmerson 1983 mention stop-gaps, but the cases for the princes' travelling libraries are not known to survive and any stop-gaps could have been lost with them
18. Molyneux (ed) 1948, vol. i, xx–xxi; Dent 1981, 185–6; Strong 1986, 11

21

ANIMAL BONE

by Alison Locker

(Figs 225–9; Tables 30–81)

i. Introduction

The entire assembalge of animal bones, numbereing 30,000 (including all the unidentifiable material), was recorded by the author in 1979, using the original automated animal bone recording system devised by R.T. Jones.[1] The data then remained in archival form until 1992 when this report was written using the paper archive, the old system having been superseded by other methods with which it was incompatible.

Half of the sample (49%) was identifiable to species or group level, of which 80% were mammal, 14% bird, and 5% fish. It is this portion of the assemblage that is the subject of this report. After the elimination of certain contexts the size of the sample discusses here is 11, 552 bones (Tables 80–81).

Animal bones were recovered from pre-palace deposits, ie pre-1538 and associated with Cuddington Village (Phases 1 and 2), through to post-palace material (Phases 6–8), broadly dated from the late seventeenth to twentieth centuries. This report concentrates on the deposits asociated with the occupation of the palace (Phase 4) and the demolition material (Phase 5), for which the contents of the many garderobe pits and the major groups (Table 1) provided a rich sample probably to be attributed to the occupation of the palace by the Bekeley family during the 1670s and 1680s and as such still representative of high status consumption.

The diverse species recorded, especially the birds and fish, reflect the excellent recovery rate, untypical of amterial excavated in the 1950s and 1960s in this country, when the importance of sieving was not really appreciated.

the fish were identified with the help of Alwyne Wheeler (formerly of the Natural History Museum), the birds with the help of Graham Cowles (Natural History Museum, Tring) and Jenny Coy (formerly of the University of Southampton, for English Heritage), who had herself originally undertaken the identification of the Nonsuch animal bone.

The bone was initally segregated into phases and then spacially within individual phases into the Outer Court of the palace, the Kitchen Court, and the Inner Court. This grouping into areas was carreid out for all periods, but in this report these groupings have only been retained

1. Jones *et al* 1982

for the main periods of occupation (Phase 4) and demolition (Phase 5) to show any differences in distribution of sepcies or body-part between the different areas of the palace.

Tables 30–79 summarise the total number of bones for each species, indicating body-part distribution where appropriate. The 'Large Ungulate' refers to fragmented bone which could be described as 'cattle sized' and is most likely to be cattle, although horse and red deer cannot definitely be excluded. Similarly 'Small Ungulate' is most likely to be ovicaprid, but pig, fallow deer, and roe deer cannot be excluded. Goat and sheep have been positively identified from horn cores, but the main group is referred to as ovicaprid and should be regarded as sheep.

The following lists show those species identified from the entire assemblage.

Mammal

Cattle (*Bos* sp. domestic), sheep (*Ovis* sp. domestic), goat (*Capra* sp. domestic), ovicaprid, pig, (*Sus* sp. domestic), horse (*Equus* sp. domestic), red deer (*Cervus elaphus*), fallow deer (*Dama dama*), roe deer (*Capreolus capreolus*), dog (*Canis* sp. domestic), cat (*Felis* sp. domestic), hedgehog (*Erinaceus europaeus*), mole (*Talpa europaea*), rabbit (*Oryctolagus cuniculus*), hare (*Lepus* sp.), water vole (*Arvicola terrestris*), fiels vole (*Microtus agrestis*), house mouse (*Mus musculus*), black rat (*Rattus rattus*), brown rat (*Rattus norvegicus*), stoat (*Mustela erminea*), weasel (*Mustela nivalis*), polecat (*Mustela putorius*), and domestic ferret (*Mustela* sp. domestic).

Bird

Domestic fowl (*Gallus* sp. domestic), domestic goose (*Anser* sp. domestic), domestic duck (*Anas* sp. domestic), grey heron (*Ardea cinerea*), bittern (*Botaurus stellaris*), night heron (*Nycticorax nycticorax*), goose (*Anser* sp.), swan (*Cygnus* sp.), mute swan (*Cygnus olor*), mallard (*Anas platyrhynchos*), garganey (*Anas querquedula*), teal (*Anas crecca*), pintail (*Anas acuta*), eider (*Somateria mollissima*), goldeneye (*Bucephala clangula*), goshawk (*Accipiter gentilis*), buzzard (*Buteo buteo*), hen harrier (*Circus cyaneus*), peregrine (*Falco peregrinus*), kestrel (*Falco tinnunculus*), grouse (*Lagopus lagops*), pheasants (*Phasianidae*), partridge (*Perdix* sp.), turkey (*Meleagris gallopavo*), quail (*Coturnix coturnix*), crane (*Grus grus*), corncrake (*Crex crex*), coot (*Fulica atra*), oystercatcher (*Haemotopus ostrlegus*), ringed plover (*Charadrius hiaticula*), golden plover (*pluvialis apricaria*), lapwing (*Vanellus vanellus*), knot (*Calidris canutus*), redshank (*Tringa totanus*), godwit (*Limosa* sp.), curlew (*Numenius arquata*), woodcock (*Scolopax rusticola*), jacksnipe (*Lymnocryptes minimus*), snipe (*Gallinago gallinago*), black-headed gull (*Larus ridibundus*), herring/lesser black back gull (*Larus argentatus/Larus fuscus*), kittiwake (*Rissa tridactyla*), pigeon (*Columbidae*), domestic pigeon/rock dove (*Columba* sp. domestic/*Columba livia*), wood pigeon (*Columba palumbus*), stock dove (*Columba oenas*), collared dove (*Streptopelia decaocto*), tawny owl (*Strix aluco*), swift (*Apus apus*), green woodpecker (*Picus viridus*), swallow (*Hirundinidae*), house martin (*Delichon urbica*), pipit (*Anthus* sp.), pied wagtail (*Motacilla alba*), red-backed shrike (*Lanius collurio*) , wren (*Troglodytes troglodytes*), thrushes (*Turdus* sp.), fieldfare (*Turdus pilaris*), blackbird (*Turdus merula*), redwing (*Turdus iliacus*), songthrush (*Turdus philomelos*), finch (*Fringillidae*), greenfinch (*Carduelis chloris*), sparrow (*Passer* sp.), house sparrow (*Passer domesticus*), starling (*Sturnus vulgaris*), magpie (*Pica pica*), raven (*Corvus corax*), rook (*Corvus frugilegus*), crow (*Corvus corone*), and jackdaw (*Corvus monedula*).

Fish

Roker (*Raja clavata*), sturgeon (*Acipenser sturio*), eel (*Anguilla anguilla*), conger eel (*Conger conger*), salmon (*Salmo salar*), trout (*Salmo trutta*), pike (*Esox lucius*), carp (*Cyprinus carpio*), barbel (*Barbus barbus*), chub (*Leuciscus cephalus*), roach (*Rutilus rutilus*), cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), whiting (*Merlangius merlangus*), ling (*Molva molva*), hake (*Merluccius merluccius*), tub gurnard (*Trigla lucerna*), perch (*Perca fluviatilis*), red sea-bream (*Pagellus bogaraveo*), thick-lipped grey mullet (*Chelon labrosus*), turbot (*Scophthalmus maximus*), plaice (*Pleuronectes platessa*), flounder (*Platichthys flesus*), and sole (*Solea solea*).

Amphibia

A number of frog (*Rana* sp.) and toad (*Bufo bufo*) bones were also present, largely from the garderobes, which they may have used as a *hibernaculum*.

ii. THE PRE-PALACE DEPOSITS (PHASES 1 AND 2): CUDDINGTON, PRE-1538

Animal bone was recovered from the Cuddington structures below the Outer Court (Fig 10, C, D) and from the church and burial area below the Inner Court (Fig 10, A). The sample from the latter was more varied, yielding approximately twice the amount of material from the structures below the Outer Court, but this reflects the much greater volume of material excavated from the church and burial area.

tables 30–32 show the range of bones identified. Most of the sample is domestic food waste, except for a few bones of horse, dog (which includes part of the skeleton of a male dog, approximately 450mm tall at the shoulder)[2], jackdaw, and crow. Ovicaprid and small ungulates are the most common groups, particularly chopped rib sections which also showed cut markes. Together with axially and obliquely split vertebrae and broken os coxae these suggest the consumption of chops, breast and leg of mutton, a trend which is repeated throughout all periods.

Rabbit does not feature as importantly as in the later periods of palace ocupation and demolition, and fallow deer is only represented by the extremities of the hind limbs. Hare was identified from a single metapodial.

A survey of Cuddington manor and its surrounding lands drawn up before Henry VIII acquired the site describes a warren for coneys on high ground to the south of the manor house. The adjoining Banstead Downs, already belonging to the king 'were "hale and lively" for sheep and coneys; here there was great plenty of partridges, hares and coneys in coverts of fir and juniper. Beyond, to the south, were forty square miles of "commodious country" with pheasants, partridges, foxes, hares, badgers and "all kinds of vermin"'.[3] Although deer are not specifically mentioned, the surrounding landscape would have provided them with excellent cover.

The fish are all edible (Table 32). One of the two fresh water species is of interest, for carp (identified in this case from a characteristic serrated dorsal fin spine, a feature also shared by barbel, but this specimen more closely resembled carp) are a species introduced sometime after the mid fourteenth century in England[3a] and kept in stocked fish ponds. Fish ponds were constructed at some date in the lifetime of the palace, but the earlier survey makes no mention of them, although describing other features associated with the maor house, including a dove-house, in some detail.[4]

iii. PALACE CONSTRUCTION (PHASE 3): 1538–46

The relatively small groups of bones identified from the construction phase of the palace (Tables 33–35), compared with the later occupation and demolition material, could possibly represent the debris of meals consumed during construction. The food remains from the construction deposits indicate a substantial difference in status by comparison with the greatly increased variety of species from the occupation and demolition deposits, particularly by comaprison with the birds and fish from the garderobes.

The bones from the areas of the three courts are combined in Tables 33–35. Over 50% of the bones came from the area of the Outer Court, which also showed the greatest variety of species. Of the small ungulate remains over half are rib fragments, again chopped and cut, split vertebral fragments are the next most frequent in occurrence. This pattern is also mirrored in the large ungulate remains, although ribs do not feature so prominently.

2. After Harcourt 1974
3. Dent 1981, 27
3a. Hoffman 1995, 72
4. Dent 1981, 27

Abbreviations used in Tables 30–79

Ant	Antler	Gen	General layer/deposits (amalgamated)
BV	Banqueting House Site V	L	long, large
Carp	Carpal(s)	Lowther	1930 trenches at Banqueting House
Cell, Cellar	Great Cellar	Ovic	Ovicaprid
D	Dump (1 *or* 2)	S	small
Fall	Fallow deer	Tars	tarsal(s)
frag, fr	fragment(s)	Tl	Total(s)

Table 30. Animal bone: mammal bones from pre-palace deposits (Phases 1 and 2).

	Ox	Ovic	Pig	Horse	Ungulate L	Ungulate S	Fallow deer	Dog	Rabbit	Hare	Total
Skull frag	2	1	2	–	3	5	–	1	–	–	14
Maxilla	2	–	2	–	1	–	–	–	–	–	5
Mandible	2	2	3	–	1	2	–	2	1	–	13
Scapula	4	2	3	–	2	–	–	2	3	–	16
Humerus	3	2	1	–	1	5	–	2	–	–	14
Radius	3	7	–	–	1	6	–	2	–	–	19
Ulna	4	–	–	–	1	2	–	1	1	–	9
Metacarpal	2	1	–	–	–	–	–	–	–	–	3
Phalanges	10	1	1	1	1	1	–	–	–	–	15
Vertebrae	–	2	–	–	11	14	–	10	–	–	37
Ribs	–	–	–	–	19	55	–	15	–	–	89
Os Coxa	2	1	1	–	4	13	–	1	1	–	23
Femur	4	2	–	–	6	3	–	3	3	–	21
Tibia	2	5	1	1	3	8	–	2	7	–	29
Calcaneum	4	1	–	–	1	3	–	–	–	–	9
Astragalus	1	–	–	–	–	–	1	–	–	–	2
Metatarsal	4	3	–	1	–	4	2	–	–	–	14
Metapodial	2	–	1	–	–	3	–	–	2	1	9
Carp/Tars	–	–	–	–	2	5	–	–	–	–	7
L bone frag	–	–	–	–	23	–	–	–	–	–	23
Total	51	30	15	3	80	129	3	41	18	1	371

Table 31. Animal bone: bird bones from pre-palace deposits (Phases 1 and 2).

Domestic fowl	9
Goose	1
Pigeon	2
Jackdaw	2
Crow	2
Total	16

Table 32. Animal fish bones from pre-palace deposits (Phases 1 and 2).

Pike	1
Carp	1
Cod	3
Gadoid	1
Plaice	1
Total	7

Table 33. Animal bone: mammal bones from palace construction deposits (Phase 3).

	Ox	Ovic	Pig	Horse	Ungulate L	Ungulate S	Fallow deer	Dog	Cat	Rabbit	Total
Antler frag	–	–	–	–	–	–	8	–	–	–	8
Skull frag	1	–	–	–	3	–	–	–	–	–	4
Mandible	–	3	–	–	1	1	2	–	1	2	10
Scapula	2	1	2	–	–	2	–	–	–	5	12
Humerus	1	8	–	–	3	7	–	–	–	1	20
Radius	1	11	2	–	–	4	1	–	–	1	20
Ulna	1	1	–	–	–	–	–	–	–	5	7
Metacarpal	–	3	–	–	–	–	3	1	–	–	7
Phalanges	9	–	2	2	–	–	16	–	–	–	29
Vertebrae	1	3	–	1	19	14	–	–	–	1	39
Rib	–	–	–	–	22	58	–	–	–	–	80
Os coxa	–	–	–	–	1	4	–	–	–	4	9
Femur	4	2	–	–	3	3	–	–	1	6	19
Tibia	1	7	3	–	3	1	2	–	–	7	24
Calcaneum	2	–	–	–	–	3	–	–	–	–	5
Astragalus	4	–	–	–	–	–	–	–	–	–	4
Metatarsal	–	1	–	1	–	1	5	–	–	–	8
Metapodial	–	1	1	–	–	–	–	–	–	–	2
L bone frag	–	–	–	–	34	5	–	–	–	–	39
Total	27	41	10	4	89	103	37	1	2	32	346

Table 34. Animal bone: bird bones from palace construction deposits (Phase 3).

Domestic Fowl	9
Goose	4
Teal	1
Partridge	1
Coot	1
Lapwing	1
Pigeon	2
Redwing	1
Crow	2
Jackdaw	3
Total	25

Table 35. Animal bone: fish bones from palace construction deposits (Phase 3).

Roker	3
Pike	1
Plaice	2
Total	6

Most of the fallow deer remains are from the area of the Kitchen Court (Table 33). These comprise two antler fragments, two mandibles, one radius, two metacarpals, 16 phalanges, two tibiae, and two metatarsals. All are extremities and therefore waste, as were the few deer remains from the area of the Outer and Inner Courts. The radius and tibiae are all distal ends and from the lower part of the leg, bearing little meat.

The species from the area of the Kitchen Court were only those that were eaten. Horse was identified from the Outer and Inner Court, and dog from the Outer Court. Rabbit occurs in small numbers n all three areas. Apart from a domestic fowl ulna and a goose humerus, the birds came from the Outer and particularly from the Inner Court deposits (Table 34).

Fish were few, one species from each area (Table 35).

iv. PALACE OCCUPATION (PHASE 4): 1538/46–1682/8

The main source of animal bone in the occupation period are the garderobe shfts, built into the walls of the palace, and often occupying one half of a chimney stack along the outer walls of the Outer and Inner Courts (p 25, 36, 64; Figs 15–24; Table 1). these brick-lined pits were filled with domestic debris deriving from both the occupation and demolition phases (see p 36, 45, 453). There ws also a large deposit from the well in Room 24 of the Kitchen Court and two dumps, one from the Inner Court being particularly rich in animal bone (Dump 2). The only floor deposit is from the Great Cellar (Room 34) opening onto the Outer Court. None of the animal bone from the occupation (Phase 4) is thought to be associated with the preence of the royal household. The garderobes were periodically thoroughly cleaned, and the material discussed here is attributed to the use of the palace by the Berkeley family in the 1670s and 1680s (see p 67–9).

The Outer Court

The greatest number of garderobes containing occupation debris are here. They vary greatly in the quantity and variety of their contents. A small amount of material from general occupation levels is also summarised. The composition of thelarger assembalges is then shown in greater detail.

The mammal bones from the Outer Court occupation deposits (Table 36) show a similar pattern for each grou except the combined general deposits. Smalll ungulate, rabbit, and ovicaprid remains are clearly the most numerous, followed by a large ungulate and ox. Rabbit occurs frequently throughout and (assuming that entire animals were acquired) a minimum of 31 individuals has been calculated from the number of left femora. The hare bones in Garderobe 9 are probably from a single individual.

Within the identified larger mammals, leaving rabbit (19%) aside, the small ungulate and ovicaprid groups, particularly in Garderobes 4, 5, 6, and 9. The body-part distribution for these groups, along with fallow deer, for whom the dominance of waste areas of the carcase is a continuing trend, is shown in Table 39, where ox includes large ungulate and ovicaprid includes small ungulate.

A square hole on the medial side of the second tine of a fallow deer antler from Garderobe 4 may be the result of its being shot by a crossbow bolt. Some pieces of lead were also found with this antler and may be attributed to target practise.

The dominance of axially split vertebrae and rib fragments in the small ungulate category is evident (Table 36). In Garderobe 9 they form 56% of all ovicaprids, in Garderobe 4 60%, and in Garderobe 6 70%. In Garderobe 5 the percentage is lower at 28%, but this garderobe has a relatively higher proportion of metatarsals, metacarpals, and phalanges than the others (23%).

These garderobes all lie on the east side of the Outer Court, and may suggest that the apartments on the west side were not occupied when the palace ws used by the Berkeley family (see p 36–7, 68).

The deposits in the great Cellar are the only floor contexts from Nonsuch and reflect much the same body-part distributions as do the garderobes, with a high emphasis (66%0 on small ungulate rib fragments. Garderobes 1 and 31 were in the north-east and north-west turrets of the Outer Gatehouse (Fig 5). Garderobe 1 contained only demolition material and presumably was not used during this later period of occupation. Garderobe 31 contained a small sample of mammal bones and very few birds or fish (Tables 36–8).

Table 37 shows the bird species identified in the Outer Court occupation deposits. The range is large, particularly from Garderobe 4. Domestic fowl is the most common species identified from every feature, forming 42% of all birds. In Garderobe 4 the number for green woodpecker

is inflated by the remains of parts of at least four individuals. There is also part of a single tawny owl, and parts of at least four jackdaws. The domestic fowl remains include parts of three skulls, one of which was similar to the *Gallus gallus* domestic game cock in the collections at Tring.[5] The other two skulls were similar to the female, the domestic game hen.[6] Some of the fowl bones retained soem porosity showing that they were immature. Eight of the 13 pigeon bones were immature, which may suggest the use of pigeon houses/dove cotes. Both a 'pigeon house and some sheds for poultry' at Worcester House were described in teh 1650 survey of Nonsuch Great Park.[7] The two bones identified as wood pigeon are from mature individuals. the distal end of the tibiotarsus was chopped, evidence of the removal of the feet.

A garderobe pit from Oatlands Palace, also in Surrey, datable to before 1650, produced a small but interesting group of animal and bird bones. There were 76 mammal bones, 6 ox, 33 sheep, 12 pig, and 25 rabbit.[8] Thesheep bones were largely parts of vertebrae, long bones being absent. The birds were mostly from the same garderobe, with a few from another pit dated to the 1650 demolition: 183 bird bones were identified,[9] composed of 67% domestic fowl from at least 14 individuals, and 11% jackdaw from at least four individuals. Wild/domestic goose, mallard, partridge, turkey, rock dove/pigeon, short eared owl, jay, magpie, and jackdaw were specifically identified. The species list and composition is remarkably similar to Nonsuch. It would be interesting to compare larger samples should they become available.

Tabel 38 shows that 57% of the fish bones from the Outer Court occupation deposits are from Garderobe 4, with the flatfishes (plaice and flounder) most numerous, although the larger and more costly turbot was frequent in Garderobe 9. The other important group is the 'white fishes', ie cod, haddock, whiting, and ling, the latter may have been pickled or salted and brought down from the northern part of the North Sea. Fresh water fish indicative of rivers and stocked ponds are not numerous.

Table 36. Animal bone: mammal bones from Outer Court occupation deposits (Phase 4).

	Gen	**2**	**3**	**4**	**5**	**6**	**7**	**9**	**26**	**31**	**D1**	**Cellar**	**Total**
Ox	6	7	–	19	17	10	1	8	–	5	2	2	77
Ovicaprid	2	18	12	76	76	47	6	40	9	4	10	24	324
Pig	1	–	1	4	2	1	–	4	3	7	–	2	25
Horse	–	–	–	–	–	3	–	–	–	–	–	–	3
Ungulate L	5	14	6	13	32	17	2	42	9	12	3	8	163
Ungulate S	–	62	30	213	150	236	17	193	26	33	29	96	1085
Fallow	–	3	–	12	1	2	–	9	–	–	2	2	31
Red/Fallow	–	1	–	–	–	–	–	–	–	–	–	–	1
Dog	–	–	–	–	2	–	–	–	–	–	–	–	2
Cat	1	–	–	–	4	–	–	5	–	–	–	–	10
Hedgehog	–	5	–	–	–	–	–	–	–	–	–	–	5
Rabbit	–	62	6	78	67	84	15	55	8	20	7	20	422
Hare	–	–	1	–	–	1	–	31	–	–	–	–	33
House mouse	–	–	–	2	–	–	–	–	–	–	–	–	2
Rat	1	–	–	–	–	–	–	1	–	–	–	–	2
Total	16	172	56	417	351	401	41	388	55	81	53	154	2185

5. BM 1868.2.1975
6. BM 1868.2.1965
7. Dent 1981, 296
8. Done 1989, see Cook and Poulton forthcoming
9. Cohen 1989

Table 37. Animal bone: bird bones from Outer Court occupation deposits (Phase 4).

	Gen	2	3	4	5	6	7	9	26	31	D1	Cellar	Total
Domestic Fowl	1	23	2	121	14	25	17	30	1	5	4	20	263
Domestic Goose	–	6	–	–	1	–	3	–	–	–	–	–	10
Domestic Duck	–	2	–	3	4	2	–	–	–	–	–	–	11
Grey Heron	–	–	–	1	–	–	–	–	–	–	–	–	1
Bittern	–	2	–	–	–	–	–	–	–	–	–	–	2
Night Heron	–	–	–	1	–	–	–	1	–	–	–	–	2
Goose	–	8	–	9	2	–	1	3	1	–	–	2	26
Swan	–	–	–	5	–	–	–	–	–	–	–	–	5
Mute Swan	–	–	–	1	–	–	1	1	–	–	–	–	3
Mallard	–	–	–	–	–	1	–	–	–	–	–	–	1
Teal	–	–	–	1	1	–	–	–	–	–	–	–	2
Pintail	–	–	–	–	1	–	–	–	–	–	–	–	1
Goldeneye	–	–	–	1	–	–	–	–	–	–	–	–	1
Peregrine	–	3	–	–	–	–	–	–	–	–	–	–	3
Kestrel	–	–	–	2	–	–	–	–	–	–	–	–	2
Red Grouse	–	–	–	–	–	2	–	–	–	–	–	–	2
Pheasants	–	–	–	1	–	–	1	–	–	–	–	–	2
Partridge	–	1	1	1	–	2	–	1	–	–	–	–	6
Turkey	–	–	–	1	–	1	–	–	–	–	–	–	2
Crane	–	–	–	1	–	–	–	–	–	–	–	–	1
Lapwing	–	1	–	1	–	1	–	–	–	–	–	–	3
Knot	–	1	–	–	–	–	–	–	–	–	–	–	1
Redshank	–	–	–	1	–	–	–	–	–	–	–	–	1
Woodcock	–	2	–	–	–	–	–	–	–	–	–	–	2
Godwit	–	–	–	1	–	–	–	–	–	–	–	–	1
Blackheaded gull	–	4	–	2	–	–	2	–	–	–	–	1	9
Pigeons	–	–	–	–	–	–	2	–	1	–	–	1	4
D. Pigeon/R. dove	–	3	–	13	3	1	–	1	–	4	–	–	25
Wood Pigeon	–	–	–	2	–	–	–	–	–	–	–	–	2
Tawny owl	–	2	–	18	2	–	–	–	–	–	–	–	22
Green woodpecker	–	–	–	34	–	1	–	–	–	–	–	–	35
Swallows	–	1	–	2	–	–	–	–	–	–	–	–	3
House Martin	–	–	–	1	–	–	–	–	–	–	–	–	1
Wren	–	1	–	–	–	–	–	–	–	–	–	–	1
Thrushes	–	–	–	4	–	–	–	–	–	–	–	–	4
Fieldfare	–	–	–	1	–	–	–	–	–	–	–	–	1
Blackbird	–	–	–	–	–	–	1	–	–	–	–	–	1
Redwing	–	–	–	3	–	–	–	–	–	–	–	–	3
Song Thrush	–	–	–	2	–	1	–	–	–	–	–	–	3
Finches	–	2	1	–	1	–	–	–	–	–	–	–	4
Sparrow	–	–	–	2	–	–	–	–	–	–	–	–	2
House Sparrow	–	–	–	2	–	–	–	–	–	–	–	–	2
Starling	–	–	–	29	1	1	–	–	–	–	–	–	31
Rook	–	1	–	–	–	–	–	–	–	–	–	–	1
Crow	–	–	4	–	–	–	1	–	7	–	–	–	12
Jackdaw	–	17	–	73	–	7	1	3	–	–	–	1	102
Total	1	80	8	340	30	45	30	40	10	9	4	25	622

Table 38. Animal bone: fish bones from Outer Court occupation deposits (Phase 4).

	2	4	5	6	9	26	31	Dump 1	Cellar	Total
Elasmobranch	–	2	–	–	–	–	–	–	–	2
Sturgeon	–	1	–	–	–	–	–	–	–	1
Conger eel	1	–	–	–	1	–	–	–	–	2
Pike	–	2	–	–	–	–	–	–	–	2
Carp	5	–	–	–	3	–	–	–	–	8
Barbel	–	2	–	–	–	–	–	–	–	2
Cod	–	20	7	–	4	–	6	–	–	37
Haddock	–	6	–	–	–	–	–	–	–	6
Whiting	1	13	1	–	–	–	–	–	–	15
Ling	–	12	1	–	2	–	–	3	–	18
Gadid	–	2	1	–	–	–	–	–	–	3
Tub Gurnard	–	1	–	–	–	–	–	–	–	1
T L G Mullet*	–	–	–	–	2	–	–	–	–	2
Turbot	–	–	–	–	31	1	–	–	–	32
Plaice/Flounder	–	63	9	–	–	–	–	–	–	72
Plaice	10	2	1	–	–	–	–	–	1	14
Flounder	5	1	–	–	–	–	–	–	–	6
Flatfish	3	28	12	3	–	–	–	–	1	47
Total	25	155	32	3	43	1	6	3	2	270

*T L G Mullet = Thick lipped grey mullet

Table 39. Animal bone: body-part distribution of mammals from the occupation fills of four garderobes in the Outer Court (Phase 4).

	G.4			G.5			G.6			G.9			Total
	Ox	Ovic	Fall	Ox	Ovic	Fall	Ox	Ovic	Fall	Ox	Ovic	Fall	
Antler/Horn	–	–	2	–	–	–	–	–	2	–	–	5	9
Skull frag	–	2	–	1	10	–	–	–	–	–	4	–	17
Maxilla	–	2	1	1	–	–	–	–	–	–	2	–	6
Mandible	1	–	1	–	2	–	–	1	–	–	1	–	6
Scapula	2	5	–	1	23	–	–	5	–	5	16	–	57
Humerus	–	5	–	1	9	–	2	10	–	–	15	–	42
Radius	1	10	–	2	8	1	–	19	–	–	7	–	48
Ulna	1	8	–	1	5	–	1	8	–	–	7	–	31
Metacarpal	–	3	1	–	13	–	–	2	–	–	4	–	23
Phalanges	1	10	6	1	20	–	3	1	–	–	6	5	53
Vertebrae	1	111	–	13	32	–	2	58	–	12	60	–	289
Ribs	6	54	–	10	26	–	5	137	–	14	67	–	319
Os coxa	3	10	1	1	8	–	3	13	–	6	17	–	62
Femur	–	13	–	1	3	–	2	10	–	1	1	–	31
Tibia	–	11	–	4	6	–	1	8	–	1	9	–	40
Calcaneum	–	5	–	–	6	–	–	2	–	–	1	–	14
Astragalus	1	2	–	–	8	–	1	1	–	–	1	–	14
Metatarsal	–	2	–	–	16	–	–	–	–	–	4	–	22
Metapodial	–	–	–	–	3	–	–	–	–	–	1	–	4
Carpal/Tarsal	1	20	–	1	11	–	–	–	–	–	1	–	34
L bone frag	5	2	–	–	–	–	1	–	–	10	1	–	19
Total	23	275	12	38	209	1	21	275	2	49	225	10	1140
Garderobe totals		310			248			298			284		–

The Kitchen Court

The sample from the Kitchen Court is relatively small, comprising the contents of a single well (Tables 40–42), and some general deposits (Tables 43–8). The quantity may reflect a decline in use of the palace kitchens, perhaps because the Outer Court lodgings were effectively self-contained in the 1670s and 1680s, meals being prepared on the fireplaces within individual appartmentsThis arrangement might explain the richness if the deposits in the garderobes serving the lodgings (Biddle pers comm).

The well deposits (Tables 40–42) complement the garderobe deposits in having a relatively high proportion of ovicaprid and small ungulate remains, in aprticualr rib sections and axially split vertebrae. Yhese are both mutton and lamb since some vertebrae have unfused epiphyses, but they are not from very younf animals.

Of the identified mammal sample (Table 40), 51% belongs to ovicaprid and small ungulate , of which 66% are rib and vertebral fragments. The other species frequently identified is rabbit, comprising 39% of the whole sample. No foot bones of rabbit came from the well, but whether this means that the feet had already been removed wen the animals were skinned is unclear, particularly since small numbers of metapodials were recovered from some of the garderobes. This possibility that the apparent absence or scarcity of foot bones in the well is a factor of their small size cannot be excluded, although the recovery of so many small fish and bird remains suggests that the feet of the rabbits may already have been removed.

The foot bones of rabbits were by contrast over-represented in a pit at Little Pickle, Bletchingly, Surrey, dated to 1540 and possibly related to the occupation of Place Farm by Anne of Cleves, suggesting perhaps that on that the feet were cut from the carcase and separately disposed of in this pit.[10] A variety of birds were identified, food remains were mostly domestic fowl, and there were three species of hawk (Table 41). The fish were marine, except for carp, and dominated by ling and plaice (Table 42). Carp were also identified from Little Pickle, as described above,[10a] and in the Nonsuch assemblage were largely identified from the characteristic pharyngeal teeth and serrated dorsal fin spines, though some less definitive anatomies were also included.

The bones from the rest of the occupation deposits in the Kitchen Court (Tables 43–4) reflected the well deposits, with a high proportion of rib fragments and vertebrae from small ungulates, and a lower proportion from large ungulates. A few bones of pig were identified from the general occupation deposits, whereas in the well pig was only identified from demolition levels. In the well deposit rabbit compriss 39% of the total number of bones, whereas it only represents 15% in the rest of the Kitchen Court occupation.

As Table 44 shows, few bird bones were present, mostly deomestic fowl. No fish bones were found.

The Inner Court

The occupation deposits in the garderobes, particularly Garderobe 11, provide the largest sample of animal bones from the Inner Court (Tables 45–6), but these deposits were not as rich as those from the garderobes of the Outer Court (Tables 36–9).

Among the mammal bones from the occupation fill in Garderobe 11, vertebrae form 49% of all small ungulate remains, and ribs 34% (Table 45). Fallow deer are represented by parts of the forelimb (humerus and ulna) and hindlimb (femur and ?tibia) joints, as well as by the limb extremities The sample is small, but it is also unusual, as most of the fallow deer remains from

10. Bourdillon 1992

10a. Bullock 1994

Nonsuch derive from the head or the lower legs, and represent waste from the prepard carcase. The number of rabbit bones in Garderobe 11 is inflated by 20 vertebrae; the limb bones suggest at least two individuals. Garderobe 19 also has a high proportion of ovicarid and small ungulate bone, in particualr rib fragments of small ungulates. The sample from Garderobe 22 is very small.

A mandible of a house mouse was also identified in Garderobe 11, as were a pair of polecat humeri and a single tibia (from Context 2137; W12/13 8), possibly from the same animal. Interestingly, the demolition levels of this garderobe produced the remains of at least two other individuals identified as domestic ferret, all from Context 2133 (W12/13 7; Table 60). Ferrets may have been used for rabbiting in the warrens.

A single vertebrae centrum of a plaice was identified from Garderobe 11, but no other fish bones were recovered from these garderobes.

The bird bones from the occupatiob fills of the Inner Court are dominated as in most other features by domestic fowl (Table 46). There were also a number of jackdaw bones, particularly from Garderobe 11, derived from at least two individuals. The consistent presence of jackdaw in the Nonsuch deposits could be evidence of their destruction as a pest, perhaps because they nested at the top of chimneys.

Table 40. Animal bone: mammal bones from the occuaption fill in the Kitchen Court well (Room 24) (Phase 4).

	Ox	**Ovic**	**Ungulate L**	**Ungulate S**	**Fallow deer**	**Red/ Fallow**	**Cat**	**Rabbit**	**Black rat**	**Total**
Antler	–	–	–	–	1	1	–	–	–	2
Skull frag	–	–	–	1	–	–	–	6	–	7
Maxilla	–	1	–	–	–	–	–	1	–	2
Mandible	–	–	–	–	–	–	–	13	2	15
Scapula	–	3	1	–	–	–	1	11	–	16
Humerus	2	1	–	1	–	–	–	11	–	15
Radius	–	5	–	–	–	–	–	8	–	13
Ulna	–	4	–	1	–	–	–	11	–	16
Metacarpal	–	1	–	–	–	–	–	–	–	1
Phalanges	4	–	–	7	–	–	–	–	–	11
Vertebrae	4	–	1	48	–	–	–	21	–	74
Rib	–	–	1	51	–	–	–	–	–	52
Os coxa	1	–	2	7	–	–	–	14	–	24
Femur	3	5	–	1	–	–	–	13	–	22
Tibia	2	1	–	3	–	–	–	5	–	11
Calcaneum	2	4	–	–	–	–	–	–	–	6
Astragalus	1	2	–	–	–	–	–	–	–	3
Metatarsal	–	1	–	–	–	–	–	–	–	1
Metapodial	–	–	–	3	–	–	–	–	–	3
Total	19	28	5	123	1	1	1	114	2	294

Table 41. Animal bone: bird bones from the occupation fill in the Kitchen Court well (Room 24) (Phase 4).

Domestic fowl	48
Grey Heron	1
Teal	2
Goshawk	2
Buzzard	2
Hen Harrier	1
Red Grouse	2
Partridge	6
Quail	5
Godwit	3
Pigeon	1
Blackbird	3
Greenfinch	1
Rook	1
Total	78

Table 42. Animal bone: fish bones from the occupation fill in the Kitchen Court well (Room 24) (Phase 4).

Conger eel	7
Carp	1
Whiting	1
Ling	31
?Hake	1
Plaice	10
Total	51

Table 43. Animal bone: mammal bones from the rest of the Kitchen Court occupation deposits (Phase 4).

	Ox	**Ovic**	**Pig**	**Ungulate L**	**Ungulate S**	**Fallow deer**	**Red/ Fallow**	**Dog**	**Rabbit**	**Total**
Antler	–	–	–	–	–	1	1	–	–	2
Skull fr	–	–	–	–	1	–	–	–	–	1
Maxilla	–	–	1	–	–	–	1	–	1	3
Mandible	–	–	1	–	–	–	–	–	–	1
Scapula	–	1	–	3	1	–	–	–	–	5
Humerus	–	2	–	–	1	–	–	–	3	6
Radius	1	–	–	1	2	–	–	–	1	5
Ulna	–	1	1	1	–	–	–	–	–	3
Metacarpal	–	–	–	–	1	–	–	–	–	1
Phalanges	–	–	–	–	–	1	–	–	–	1
Vertebrae	–	–	–	7	15	1	–	–	2	25
Rib	–	–	–	18	50	–	–	–	–	68
Os coxa	–	–	–	–	3	–	–	–	3	6
Femur	–	–	–	–	3	2	–	–	4	9
Tibia	–	5	–	1	4	1	–	–	1	12
Calcaneum	–	2	–	–	1	–	–	–	1	4
Astragalus	–	7	–	–	–	–	–	–	–	7
Metatarsal	–	1	–	–	2	1	–	–	–	4
Metapodial	–	–	1	–	–	–	–	1	10	12
L bone fr	–	–	–	3	–	–	–	–	–	3
Total	1	19	4	34	84	7	2	1	26	178

Table 44. Animal bone: bird bones from the rest of the Kitchen Court occupation deposits (Phase 4).

Domestic Fowl	5
Partridge	1
Crow	2
Jackdaw	1
Total	9

Table 45. Animal bone: mammal bones from the occupation fills of Inner Court Garderobes 11, 19, and 22 (Phase 4).

	Garderobe 11							Garderobe 19				Garderobe 22							
	Ox	**Ov**	**Pi**	**LU**	**SU**	**FD**	**Ra**	**Ov**	**LU**	**SU**	**Ra**	**Ox**	**Ov**	**Pi**	**Ho**	**FD**	**LU**	**SU**	**Total**
Skull frag	–	–	–	–	7	–	1	–	–	–	–	–	–	–	–	–	–	–	8
Maxilla	–	3	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	4
Mandible	–	–	–	–	–	–	2	–	–	–	1	–	–	–	–	–	–	–	3
Scapula	1	1	1	–	1	–	4	1	–	–	–	–	–	–	–	–	–	–	9
Humerus	3	12	–	–	1	1	2	3	–	1	1	–	1	–	–	–	–	1	26
Radius	2	2	–	–	–	–	–	4	–	1	1	–	–	–	–	–	–	1	11
Ulna	–	2	–	–	2	1	3	2	–	–	1	–	1	–	–	–	1	–	13
Metacarpal	–	2	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	4
Phalanges	–	–	–	–	–	7	–	1	–	–	–	1	–	–	–	5	–	–	14
Vertebrae	1	–	–	1	51	–	20	–	5	2	–	–	–	–	–	–	1	–	81
Rib	3	–	–	–	36	–	8	–	3	21	–	–	–	–	–	–	1	–	72
Os coxa	–	1	–	–	6	1	–	–	–	1	–	2	–	–	1	–	1	–	13
Femur	2	1	–	–	1	1	4	2	–	1	1	1	–	–	–	–	–	–	14
Tibia	2	2	–	–	–	2	4	2	–	–	–	–	1	–	–	–	–	–	13
Calcaneum	2	1	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	5
Astragalus	2	2	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	6
Metatarsal	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	2
Metapodial	–	–	–	–	–	–	5	–	–	–	–	–	–	–	–	–	–	–	5
L bone frag	–	–	4	1	–	–	–	–	1	–	–	–	–	–	–	–	4	–	10
Total	18	30	5	2	105	17	53	15	9	27	5	4	4	1	1	7	8	2	313
Garderobe totals				230						56					27				–

FD = Fallow Deer, Ho = Horse, LU =Large Ungulate, Ov = Ovicaprid, Ox = Ox, Pi = Pig, Ra = Rabbit, SU = Small Ungulate

Table 46. Animal bone: bird bones from the occupation fills of Inner Court Garderobes 11 and 19 (Phase 4).

	Garderobe 11	**Garderobe 19**	**Total**
Domestic fowl	13	6	19
Domestic duck	–	1	1
Lapwing	1	–	1
Blackbird	5	–	5
Starling	1	–	1
Jackdaw	12	3	15
Total	32	10	42

Palace occupation: comment

The bone from the occupation phase of the palace suggests that mutton was the mainstay of the meat consumed, particularly chops, breast, and shoulder. The evidence for beef consumption does not suggest that any particular cuts were favoured, but there is little evidence for heads or feet of cattle, suggesting that joints or sides were prepared elsewhere prior to being brought to the apartments or Kitchen Court. There is more evidence for the extremities of sheep, and this may be a function of the size of the carcase, final trimming taking place immediately prior to cooking. The occupation levels provide no positive evidence for any species of deer other than fallow. In 1538 a thousand deer were collected from various parks belonging to the king 'for replenishing the parks of Nonsuch and Kinton'.[11] By 1650 ther e were 180 fallow deer in the

11. Dent 1981, 32

Little Park and 300 in the Great Park, wher there were also eight red deer.[12] Rabbit is very plentiful, but hare was also identified and could easily have been caught locally by coursing or trapping.

A great variety of bird species has been identified. The main domesticated groups provided the bulk of the meat consumed, particularly domestic fowl, a number of skull remains showing that the birds were brought in whole. Goose, duck and pigeon were also common. Some immature bones suggest that the pigeons were perhaps from a local pigeon house.

Among the other bird species, those likely to be eaten can be grouped either by habitat or by methods of catching. The typical game birds taken by hunting with dogs or hawking, as well as by trapping with decoys, include the ducks, mallard, teal, pintail, and goldeneye, and also grouse, partridge, woodcock, woodpigeon and quail.

Swan was regarded as a high-status bird and wsa more commonly consumed than peacock, which due to its dry flesh had lost favour by the seventeenth century and was not identified at Nonsuch. Turkey was introduced in the first quarter of the sixteenth century[13] and soon became popular, but turkey was only identified from single bones in the Outer Court Garderobes 4 and 6. Crane used to be a migrant in this country and features on medieval and post-medieval menus.

Water birds and those associated with the margins of water including heron, bittern, gulls, and waders such as lapwing, knot, redshank, and godwit could have been caught by fowlers. The fish ponds were mentioned in the Parliamentary Survey of 1650: 'in the said greate parke there are severall fishponds very well imbanked ordered and fitted for preservation of fishe and foule and if stroed may be much improved'.[14] Even if the ponds were not subsequently stocked, many species of water bird may have been drawn to them.

Numerous species of small birds were also eaten and these would include thrushes, fieldfare, and blackbirds. Trapped by netting, liming, or hawking, they were consumed in a variety of ways: in spicy broths, potted, and baked and roasted. Some of the earlier medieval enthusiasm for a wide variety of birds had waned but throughout the seventeenth century many species no longer eaten today were still commonly consumed.

There are some birds identified which would not have been eaten. The tawny owl and other birds of prey must represent disposal of carcases although often only a few bones are present. They include peregrine falcon, kestrel, goshawk, hen harrier, and buzzard. The latter is favoured as a beginner's bird for falconers and was formerly much more common across the country. Hawking was presumably practised in earlier periods at the palace, but it is not clear whether these bones are residual or provide evidence for hawking in the later years of the occupation.

Some of the birds may be incidental inclusions, having accidentally fallen down the chimney shafts ventilating the garderobes. This may account for the presence of tawny owl and some of the corvids, in particular jackdaw.

The fish are dominated by marine species. The larger fish such as cod and ling are represented mainly by vertebrae, suggesting that they may have been brought to Nonsuch already headed and in some preserved condition such as pickled, salted, or dried. The largest sample of fish came from Garderobe 4 in the Outer Court where 61% of the fish sample comprised flat fish, principally plaice and flounder. These would have been caught on lines or in traps in shallow waters or along the shoreline, and were probably purchased at local fish markets. Other flatfish identified were turbot from Garderobe 9 (including skull fragments indicating at least one whole fish of around 65 cms length, and average size today),[15] and sole, also caught along the shoreline.

12. Dent 1981, 293, 297
13. Hope 1990, 44
14. Dent 1981, 298
15. Wheeler 1978, 344

Sturgeon was identified from 'scutes', the plates along the side of the body. These fish were caught on thier migration routes up river, notably the Thames, before modern pollution made conditions unsuitable. The flesh was often salted, both preserving and tenderising it. If fresh, the flesh had to be cut into pieces and soaked.[16] Pieces of sturgeon were also roasted in front of the fie, as were stuffed pike on spits.[17] Although the property of the crown, sturgeon also appeared on the open market.

Other marine species present were roker, conger eelm whiting, hake, haddock, gurnard, and mullet, All of these species were eaten and may have been purchased fresh or preserved. Roker and other rays have cartilaginous skeletons which do not preserve well and are often represented only by dermal denticles (known as bucklers in roker), and occasionally by loose teeth which are difficult to attribute to species.

The freshwater species from the palace occupation – pike, carp, barbel, and chub – could all have been kept in the fishponds. Carp with its tolerance of low oxygen and muddy conditions was ideally suited to fishponds. It is not known at what level the fish ponds were maintained in this later period of the palace, nor whether any fish at all could have been taken from them.

v. PALACE DEMOLITION (PHASE 5): 1682–90

The demolition deposits comprise principally the layers of rubble filling the cellars and robber-trenches and (where preserved) covering the floors of the palace. The bones recovered from these general demolition deposits in the three courts are shown in Tables 51–3, 57–9, and 67–9. Demolition fills were also present in the garderobes (Tables 47–50, 60–61) and in the Kitchen Court well (Tables 54–6), as well as in the soakaways and Dump 2, but these latter produced relatively few animal bones (Tables 62–6).

The bones from the demolition deposits in the garderobes, well, and other features have been presented separately from those found in the general demolition deposits because the pottery and other finds suggest that there was a great deal of mixing of the deposits during demolition, especially in the garderobes. Rubble falling down the shafts appears to have sunk deep into the soft fills displacing material upwards, while in some cases deposits of garderobe fills, lodged on ledges higher up the shafts, were dislodged to fall on top of rubble derived from the upper parts of the structure. A good deal, sometimes a great quantity, of material deposited during the occupation of the palace (Phase 4) was thus found mixed up with the rubble derived from the demolition (Phase 5). This material derived from the occupation has been kept separate, both here and in the other classes of finds, from the remaining material derived from the general demolition of the palace.[18]

The Outer Court

Animal bones came from the demolition deposits in ten of the Outer Court garderobes (Tables 47–50). Garderobes 1 and 31 are associated with the Outer Gatehouse, and Garderobe 26 with the Inner Gatehouse. It is clear from Tables 47–9 that the largest sample of demolition material comes from Garderobe 2: 78% of mammals, 75% of the birds, and 97% of the fish from this phase and area come from this feature.

The relatively large numbers of ovicaprid and small ungulate bones are evident from Garderobe 2 and their body-part distribution is shown in Table 50: 50% of the bone is attributable

16. Wilson 1973, 44
17. Ibid. 53
18. See above, p 36, 45, 444

to ovicapridand small ungulates, of which 73% is from vertebrae and ribs. The most freequent ly occurring part of the body in the ovicaprids, the scapula, shows that at least ten animals are represented by the shoulder. However, as the meat is likely to have been purchased butchered into sides or quarters, if not into individual joints, estimates of minimum numbers for cattle, sheep, and pig are inappropriate. Minimum numbers are more valid for rabbits and domestic fowl which are likely to have been acquired whole. The concentration of ovicaprid forelegs includes scapula, humerus and radius, but not the limb extremities, ie metacarpals and phalanges. The scapulae usually show the end of the blade broken off. Of the humeri, eleven are frm the midshaft and distal end, which probably reflects the poor preservation qualities of the proximal end. Radii are represented by both proximal, midhsaft, and distal ends and both humeri and radii show evidence of chopping on the midshafts.

For the hind limb, the ox coxa is chopped across the neck of the ilium and slao across the acetabulum, and femora are chopped across the midshaft, and also at the proximal and distal ends, sometimes leaving a section of shaft. Tibiae are often chopped through the midshaft, with the midshaft and proximal end more commonly found than the distal end. No metatarsals were identified. The rib fragments of ovicaprids/small ungulates were usually in sections equivalent to approximately a quarter of their full length, and showed cut marks. Cervical, thoracic, and lumbar vertebrae were split axially and chopped, indicating the consumption of neck of mutton as well as chops.

Ox and large ungulate fragments are too few to indicate any selection of joints (Table 50). With the exception of the seven phalanges, the other bones could have come from prepared joints. Pork, as shown by the entire assemblage from Nonsuch, does not seem to have been popular. Rabbit is numerous, parts of at least 38 animals being present, represented by the whole skeleton except for the feet (the significance of which has already been discussed).[19] The mammal bones from Garderobe 2 suggest an emphasis on rabbit and the leg joints, neck and chops of lamb or mutton.

Garderobe 1 also included 38 mole bones, from at least four individuals, 40 short-tailed vole bones from at least 12 individuals, 5 house mouse bones from at least 2 individuals, and 492 frog/toad bones from at least 47 individuals. All the bones from Garderobe 1 come from a single context (87; U1 6). There is no occupation material in this garderobe. The concentration of these small mammals and amphibia has three possible explanations. The house mice and voles may have entered the shaft and been unable to get out (but this is unlikely to apply to the mole). Second, frogs and toads may have used the brick-lined shaft as a *hibernaculum* during the winter months. The third possibility is that the small mammals are from owl pellets, the shaft being below a roost. Only tawny owl has been identified from the palace. This owl usually nests in trees, and the barn owl (*Tyto alba*) would be more likely to have a roost at a shaft top in an old building. The composition of the bone sample from Garderobe 1, very different from any other sample from the palace, amy reflect the fact that this part of the palace may have remained standing, perhaps as a ruin, until well into the eighteenth century.[20]

The cat bones from Garderobe 9 belong to a single skeleton (Table 47). Garderobe 4 also contained three house mouse bones and one bone attributed to short tailed vole came from Garderobe 2.

There are a great variety of bird species from the demolition deposits in the Outer Court garderobes (Table 48). These come largely from Garderobe 2, and 47% are domestic fowl. Only one skull fragment was identified, but from the 24 coracoids (the most commonly occurring bone) a minimum number of 12 birds was estimated. Ten of the 24 coracoid bones were porous, evidence of immaturity.

19. See above p 448

20. See above p 47–8, 54, 62–3, 66

Pigeon wing bones were more common than legs. Of the 38 identifications for this species in Garderobe 2, 14 were coracoids and 11 were humeri, and all but four of these were porous, again suggesting the use of a pigeon house.

Of the 36 species/families identified in Table 48, 17 species are identified from a single bone, and a further five from no more than two. This may call into question the significance of the variety of the species recorded when they may be represented by only one or two occurences. The variety may be merely the result of opportunism in fowling, netting, and liming, compared with the domestic groups and other species, such as the pigeons and blackbird, which appear consistently.

The variety of the fish species is also largely attributable to the sample from Garderobe 2 (Table 49). Flatfishes, ie plaice and flounder, account for nearly 50% of the fish species in this garderobe. Turbot is only represented by one bone and would have been much more expensive than plaice and flounder, both commonly caught along the shoreline and in the tidal reaches of the Thames.[20a]

It is interesting that the 'white fishes', such as cod, whiting, and ling, are not more stronglt represented, since they had been staple species, both salted and dried, but may have already begun to decline in popularity at the end of the seventeenth century. Ling, whose most southerly distribution does not extend to the southern part of the North Sea, was brought down from farther up the coast, already salted and dried. The tub gurnard could be taken on lines from the bottom in shallow waters, much as plaice or flounder. The quantity of carp is of interest and again suggests that stocks still remained in the Nonsuch ponds.

Table 51 shows the bones from the rest of the demolition deposits of the Outer Court. Ovicaprids and small ungulates account for 64% of the sample (again with a high proportion of vartebrae and ribs), 18% are from ox and large ungulates, and rabbit accounts for 12%. The relative proportions of ox and large ungulate, ovicaprid and small ungulate, and pig seem to remain the same whether the contexts are general occupation or demolition deposits, or garderobe fills, whereas rabbit is better represented in the garderobes. This could reflect either the type of deposit, or the level of recovery between different deposits.

In addition, and not shown on Table 51, were three antler fragments, indistinguishable between fallow and red deer, a single bone of mole, 9 of rat, 1 of brown rat, and 2 of hedgehog. The brown rat was only identified at Nonsuch in demolition and later deposits (identification of the two species of rat was restricted to skulls and mandibles; post-cranial bones are referred to as rat). The species is thought to have arrived in Britain via ships at the beginning of the eighteenth century, whereas the black rat has been identified from Roman deposits.[21] The presence of the brown rat in Context 101 (U8 2a) and in two contexts in the Kitchen Court (see below, p 459) might represent intrusion from later deposits, but this is by no means certain. Marks of rodent gnawing on some of the fowl bones in the Outer Court demolition deposits may be a result of contemporary activity or, if the rodents are intrusive, from later gnawing of these bones.

A variety of bird species were also identified in the general demolition deposits (Table 52), although the species list is poorer than for Garderobe 2: 68% were domestic fowl with no other species featuring in any number. There were no skull remains of fowl, but the rest of the carcase was present and showed no selectivity. Very few of the bones were porous. One femur and three tarsometatarsi from Context 102 (U8 2a) showed evidence of rodent gnawinf, the possible implications of which are noted in the last paragraph.

Fish were also present (Table 53). The sample was dominated by flatfishes, in particular plaice.

20a. Wheeler 1979

21. Armitage, West and Steedman 1984, 375

Table 47. Animal bone: mammal bones from demolition deposits in Outer Court garderobes (Phase 5).

	1	2	4	8	9	26	27	29	30	31	Total
Ox	1	25	17	1	10	–	1	4	6	12	77
Ovicaprid	1	100	6	3	2	–	1	9	32	9	163
Pig	1	10	1	–	–	–	–	1	2	1	16
Horse	–	–	–	–	–	–	–	1	–	–	1
Ungulate L	1	91	17	2	3	–	3	5	47	9	178
Ungulate S	4	678	51	14	6	1	5	24	29	22	834
Fallow deer	1	1	12	4	1	–	1	–	–	–	20
Red/Fallow	4	–	–	–	–	–	–	–	–	–	4
Cat	1	–	–	–	25	–	–	–	–	–	26
Dog	–	–	1	–	–	–	–	–	1	–	2
Rabbit	–	639	7	3	3	–	1	1	–	11	665
Hare	–	3	–	–	–	–	–	–	–	–	3
Total	14	1547	112	27	50	1	12	45	117	64	1989

Table 48. Animal bone: bird bones from demolition deposits in Outer Court garderobes (Phase 5).

	1	2	3	4	5	9	26	31	Total
Domestic fowl	1	130	1	–	1	–	5	12	150
Domestic duck	–	3	–	–	–	2	–	–	5
Grey heron	–	2	–	–	–	–	–	–	2
Goose	–	8	–	–	–	1	–	–	9
Garganey	–	1	–	–	–	–	–	–	1
Teal	–	8	–	–	–	–	–	–	8
Peregrine falcon	–	–	–	1	–	–	–	–	1
Kestrel	–	–	–	1	–	–	–	–	1
Red Grouse	–	2	–	–	–	–	–	–	2
Partridge	–	1	–	–	–	–	–	–	1
Quail	–	2	–	–	–	–	–	–	2
Crane	–	1	–	–	–	–	–	–	1
Oystercatcher	–	1	–	–	–	–	–	–	1
Golden plover	–	1	–	–	–	–	–	–	1
Redshank	–	1	–	–	–	–	–	–	1
Godwit	–	1	–	–	–	–	–	–	1
Curlew	–	1	–	–	–	–	–	–	1
Woodcock	–	6	–	–	–	–	–	–	6
Jacksnipe	–	1	–	–	–	–	–	–	1
Snipe	–	1	–	–	–	–	–	–	1
Black headed gull	–	9	–	–	–	–	–	–	9
Pigeon	1	38	–	3	–	–	–	–	42
Woodpigeon	–	1	–	1	–	–	–	–	2
Green Woodpecker	–	–	–	9	–	–	–	–	9
Tawny Owl	1	13	–	4	–	–	–	–	18
Swallow	–	1	–	–	–	–	–	–	1
Pipit	–	1	–	–	–	–	–	–	1
Wagtail	–	–	–	1	–	–	–	–	1
Blackbird	17	6	–	3	–	–	–	–	26
Songthrush	–	–	–	3	–	–	–	–	3
Finch	–	8	–	–	–	–	–	–	8
Greenfinch	–	–	–	2	–	–	–	–	2
Sparrow	–	1	–	–	–	–	–	–	1
Starling	–	1	–	–	–	–	–	–	1
Crow	–	18	–	4	–	–	–	–	22
Jackdaw	–	9	–	17	–	–	–	–	26
Total	20	277	1	49	1	3	5	12	368

Table 49. Animal bone: fish bones from demolition deposits in Outer Court garderobes (Phase 5).

	2	4	5	9	Total
Sturgeon	4	–	–	–	4
Eel	17	–	–	–	17
Conger Eel	6	–	–	–	6
Salmonidae	1	–	–	–	1
Pike	2	–	–	–	2
Carp	55	–	–	–	55
Chub	4	–	–	–	4
Roach	7	–	–	–	7
Cod	8	2	–	–	10
Whiting	1	–	–	–	1
Ling	4	–	–	1	5
Gadid	2	–	–	1	3
Tub Gurnard	30	–	–	–	30
Red Sea Bream	1	–	–	–	1
Thick lipped Grey Mullet	2	–	–	–	2
Turbot	1	–	–	–	1
Plaice	29	5	–	–	34
Flounder	4	–	–	–	4
Plaice/Flounder	107	–	–	–	107
Sole	–	–	1	–	1
Total	285	7	1	2	295

Table 50. Animal bone: mammal bones by anatomy from demolition deposits in Outer Court Garderobe 2 (Phase 5).

	Ox	Ovic	Pig	Ungulate L	Ungulate S	Fallow deer	Dog	Rabbit	Hare	Hedge-hog	Total
Skull frag	–	–	–	–	–	–	–	3	–	–	3
Maxilla	–	–	–	–	–	–	–	9	–	–	9
Mandible	–	2	–	–	–	–	–	45	–	1	48
Scapula	1	19	2	–	7	1	–	92	–	–	122
Humerus	–	15	3	–	2	–	–	70	1	1	92
Radius	3	17	–	2	4	–	–	49	1	–	76
Ulna	–	5	1	1	2	–	–	76	1	–	86
Phalanges	7	–	2	–	2	–	–	–	–	–	11
Vertebrae	3	7	1	13	165	–	1	102	–	–	292
Rib	–	–	–	51	402	–	–	–	–	–	453
Os Coxa	–	14	–	2	20	–	–	62	–	2	100
Femur	4	9	–	–	10	–	–	94	–	–	117
Tibia	3	9	1	1	5	–	–	35	–	1	55
Calcaneum	–	7	–	–	2	–	–	1	–	–	10
Astragalus	–	1	–	–	–	–	–	–	–	–	1
Metapodial	–	–	–	–	–	–	–	2	–	–	2
Carpal/Tarsal	–	–	–	4	7	–	–	–	–	–	11
L Bone frag	–	–	–	17	40	–	–	–	–	–	57
Total	21	105	10	91	668	1	1	640	3	5	1545

Table 51. Animal bone: mammal bones from the rest of the Outer Court demolition deposits (Phase 5).

	Ox	Ovic	Pig	Horse	Ungulate L	Ungulate S	Fallow deer	Red deer	Dog	Cat	Rabbit	Hare	Total
Ant/Horn	–	1	–	–	–	–	7	–	–	–	–	–	8
Skull fr	–	–	–	–	11	3	1	–	–	–	1	–	16
Maxilla	–	1	3	–	1	1	1	–	–	–	1	–	8
Mandible	5	6	3	–	1	1	1	–	3	–	8	–	28
Scapula	7	9	1	1	3	9	4	–	–	–	15	1	50
Humerus	4	33	–	–	3	10	8	–	–	–	30	–	88
Radius	6	38	2	–	2	10	2	–	–	–	14	–	74
Ulna	1	13	2	–	–	1	–	–	–	–	17	–	34
Metacarpal	6	3	–	3	–	2	5	1	–	–	–	–	20
Phalanges	11	4	2	1	1	–	2	–	–	–	–	–	21
Vertebrae	8	13	–	–	33	144	–	–	6	–	10	–	214
Rib	–	–	–	–	53	355	–	–	4	–	–	–	412
Os Coxa	8	23	–	–	6	17	–	–	–	–	17	–	71
Femur	8	12	3	–	2	14	4	–	–	–	27	–	70
Tibia	4	20	–	–	3	7	3	–	2	1	16	–	56
Calcaneum	2	9	2	–	–	–	2	–	–	–	–	–	15
Astragalus	1	10	–	–	–	1	–	–	–	–	–	–	12
Metatarsal	2	3	–	1	–	2	4	1	–	–	–	–	13
Metapodial	–	–	1	–	–	–	–	–	3	–	–	–	4
L bone fr	–	–	–	–	39	65	–	–	–	–	–	–	104
Total	73	198	19	6	158	642	44	2	18	1	156	1	1318

Table 52. Animal bone: bird bones from the rest of the Outer Court demolition deposits (Phase 5).

Domestic Fowl	108	Snipe	1
Domestic Goose	1	H/LBB Gull*	1
Domestic Duck	3	Pigeon	4
Goose	6	Green Woodpecker	2
Swan	1	Swallow	1
Mallard	2	Blackbird	2
Goldeneye	1	Songthrush	1
Red Grouse	1	Jackdaw	14
Partridge	4	Crow	3
Lapwing	2		
Woodcock	1	**Total**	159

* H/LBB Gull = Herring/Lesser Black Backed Gull

Table 53. Animal bone: fish bones from the rest of the Outer Court demolition deposits (Phase 5).

Roker	1
Sturgeon	1
Conger Eel	4
Pike	1
Carp	1
Roach	1
Cyprinid	1
Cod/Ling	1
Ling	1
Perch	1
Plaice	3
Flatfish (c.f.plaice)	56
Total	72

The Kitchen Court

Bones from the general demolition deposits are shown on Tables 57–9 and those from the demolition deposits in the well in Tables 54–6. In addition, a single fragment from the rib of a small ungulate comes from Garderobe 32.

The sample of mammal bones from the demoltion fills in the well (Table 54) is approximately half the size of the sample from the occupation deposits in the same well (Table 40). The single bones of mole, stoat, and weasel are likely to be incidental. Of the species that would have been eaten, the sample is dominated by rabbit and small ungulate ribs. Birds and fish bones were also few (Tables 55–6).

By contrast, the sample from the rest of the Kitchen Court demolition depsoits provides a large mammal sample (Table 57), with the largest sample of fallow deer from the whole site. The

remains are from both joints and carcase trimmings, and some of the few examples of roe deer were identified in these deposits. Ovicaprid and small ungulate remains are still dominant, particularly ribs and vertebrae. For ovicaprids the forelimb, ie scapula, humerus, and radius, is well represented. In the hind limb, the femur (often represented by a shaft fragment) and tibia are most common.

The birds (Table 58) comprise largely domestic fowl, but also include jackdaw (whose presence has already been discussed) and partridge. Other game birds such as woodcock are present but as single or few occurrences.

The fish (Table 59) are few, but dominated by ling vertebral centra, likely to be from stored fish. The pike, carp, and roach could be from the palace ponds. However pike and roach could also have been caught in local rivers, while carp were transportes in barrels of water and could also be kept alive for two or three days wrapped in wet moss and fed bread and milk, which was said to remove the muddy flavour of flesh. Their tolerance of low oxygen conditions enabled them to survive.

There were also (not shown in Table 57) a fragment of red or fallow deer antler, three bones of hedgehog, one of mole, one of vole, and three of brown rat. As stated earlier this species is not thought to have reached Britain until the early 1700s.[21a] A date of 1700 is based on T. Pennant's observations in his book *The British Zoology* published in 1760–1.[21b] There is no later datable archaeological material in contexts 1046 and 1053. However, an intrusive origin for these two skulls and mandible fragments must be considered, as well as a possible early record for this species. There is no evidence of rodent gnawing on other bones in these contexts, although there is in the demolition deposits from the Kitchen Court. The brown rat is an active burrower, [21c] so could be later than the other material. Sixteen post-cranial fragments were attributed to rat (indeterminate species). Ninety-nine bones of frog or toad were also identified.

Table 54. Animal bone: mammal bones from the demolition deposits in the Kitchen Court well (Room 24) (Phase 5).

	Ox	**Ovic**	**Pig**	**Ungulate L**	**Ungulate S**	**Fallow deer**	**Rabbit**	**Mole**	**Stoat**	**Weasel**	**Total**
Antler	–	–	–	–	–	8	–	–	–	–	8
Maxilla	–	–	1	–	–	–	2	–	–	–	3
Mandible	–	–	–	–	–	–	3	–	–	1	4
Scapula	–	–	–	1	–	–	5	–	–	–	6
Humerus	–	–	–	–	–	–	6	1	–	–	7
Radius	–	–	–	–	–	–	3	–	–	–	3
Ulna	–	–	3	–	–	–	3	–	–	–	6
Metacarpal	–	1	–	–	–	–	–	–	–	–	1
Phalanges	1	–	–	–	–	–	–	–	–	–	1
Vertebrae	–	–	–	2	2	–	6	–	–	–	10
Rib	–	–	–	5	28	–	15	–	–	–	48
Os Coxa	–	–	–	–	2	–	4	–	–	–	6
Femur	–	–	–	–	–	–	4	–	1	–	5
Tibia	1	1	1	–	2	–	5	–	–	–	10
Calcaneum	–	–	–	–	2	–	–	–	–	–	2
Astragalus	–	1	–	–	–	–	–	–	–	–	1
Metatarsal	–	–	–	–	1	2	–	–	–	–	3
Metapodial	–	–	1	–	–	–	–	–	–	–	1
L Bone fr	–	–	–	–	1	–	–	–	–	–	1
Total	2	3	6	8	38	10	56	1	1	1	126

21a. Robinson 1984, 286; see above, p 455
21b. Armitage pers comm
21c. Lyneborg 1971, 177

Table 55. Animal bone: bird bones from the demolition deposits in the Kitchen Court well (Room 24) (Phase 5).

Domestic Fowl	6
Woodcock	1
Black Headed Gull	1
Total	8

Table 56. Animal bone: Fish bones from the demolition deposits in the Kitchen Court well (Room 24) (Phase 5).

Whiting	1
Plaice/flounder	1
Total	2

Table 57. Animal bone: mammal bones from the rest of the Kitchen Court demolition deposits (Phase 5).

	Ox	Ovic	Pig	Horse	Ungulate L	Ungulate S	Fallow deer	Roe deer	Cat	Dog	Rabbit	Total
Antler	–	–	–	–	–	–	7	2	–	–	–	9
Skull frag	–	–	–	–	–	–	–	–	–	–	2	2
Maxilla	–	–	2	–	–	–	–	–	–	–	8	10
Mandible	1	7	6	–	–	22	4	–	–	–	13	53
Scapula	2	23	1	–	6	–	3	1	–	–	9	45
Humerus	7	28	2	–	2	4	2	–	–	–	25	70
Radius	3	30	3	–	4	11	5	–	–	1	18	75
Ulna	1	9	2	1	2	4	1	–	–	–	17	37
Metacarpal	1	12	–	–	–	4	6	–	1	–	–	24
Phalanges	14	5	2	5	–	3	6	–	–	–	–	35
Vertebrae	15	8	1	4	29	129	1	–	–	–	4	191
Rib	8	–	–	–	142	490	–	–	–	–	–	640
Os Coxa	1	16	–	–	11	32	1	–	–	2	33	96
Femur	3	9	–	–	3	29	2	–	–	–	41	87
Tibia	1	31	2	1	3	14	2	–	–	–	28	82
Calcaneum	1	12	–	–	–	4	2	–	–	–	7	26
Astragalus	1	7	1	1	–	–	1	–	–	–	–	11
Metatarsal	1	10	–	2	1	6	33	1	–	–	33	87
Metapodial	–	2	6	1	–	7	109	–	1	–	23	149
Carpal/Tars	2	–	–	–	1	10	–	–	–	–	–	13
L Bone frag	–	–	–	–	76	70	–	–	–	–	–	146
Total	62	209	28	15	280	839	185	4	2	3	261	1888

Table 58. Animal bone: bird bones from the rest of the Kitchen Court demolition deposits (Phase 5).

Domestic Fowl	61	Pigeon	4
Domestic Duck	1	Collared Dove	3
Grey Heron	1	Swift	1
Bittern	1	Green Woodpecker	1
Goose	1	Red Backed Shrike	1
Mallard	3	Thrushes	3
Teal	1	Blackbird	10
Eider	1	Redwing	1
Partridge	18	Songthrush	9
Plover	1	Finches	1
Lapwing	2	Greenfinch	1
Knot	1	House Sparrow	1
Curlew	1	Rook	8
Snipe	1	Jackdaw	25
Woodcock	2	**Total**	166
H/LBB Gull *	1		

*H/LBB Gull = Herring/Lesser Black Backed Gull

Table 59. Animal bone: fish bones from the rest of the Kitchen Court demolition deposits (Phase 5).

Roker	2
Pike	1
Carp	7
Roach	1
Cod	6
Ling	16
Turbot	1
Plaice	3
Plaice/Flounder	1
Flatfish	1
Total	39

The Inner Court

The demolition deposits in Soakaways C, D, E, and G produced some animal bone (Table 62). Soakaway B contained in addition one fragment of a fallow deer femur. The bones from the demolition deposits in the Inner Court garderobes are shwon in Table 60. The ferret bones in Garderobe 11 comprise 45% of the mammal bone from this feature and represent at least two animals. Polecat remains were found in the occupation fills of the same garderobe.[22] Ovicaprid and small ungulates form approximately half the total sample, with rib and vertebral fragments a major constituent as in other samples. Rabbit features more strongly in DUmp 2 (Table 64) than in the garderobes, but all the samples are relatively small.

Bird remains were only found in two garderobes (Table 61). The jackdaw bones from Garderobe 11 may be from a single individual.

Four soakaways also produced some mammal and bird bones, mainly Soakaway G (Tables 62–3). There is no evident selection of the bone discarded in the soakaways, the largest group being ovicaprid and small ungulate with no particular body-part favoured. The only notable feature is an absence of larger species, ie cattle and horse, perhaps reflecting the type of feature, since large pieces of bone would probably not have found their way into a soakaway.

The pig bones from Soakaway G are likely to be from a single foor or 'trotter'. The fallow deer skull fragment is from a male, showing the antler pedicle.

Dump 2 produced the largest sample of animal bones from the demolition deposits in the individual features of the Inner Court (Tables 64–6) and reflects the emphasis on ovicaprids and small ungulates, particularly their ribs and vertebrae. Table 59 shows that 61% of the bones are from ovicaprids and small ungulates, of which 65% are vertebrae and ribs.

The birds from Dump 2 are mainly domestic fowl, all parts of the body except the head being represented (Table 65). All the bird species would have been eaten except goshawk. The latter may be evidence of falconry, which would certainly have been practised during the royal occuaption of the palace. Turkey was introduced during the early sixteenth century, and has been identified here from an immature scapula. Identification is less than certain because of the immaturity of the bone, and peafowl must also be considered.

The fish include carp and chub, possibly from the palace fish ponds, the rest being marine species (Table 66).

The bone from the rest of the Inner Court demolition deposits is more varied (Table 67), but this is a small sample, dominated by ovicaprid/smal ungulate remains and rabbit, with a high proportion of ovicaprid/small ungulate rib and vertebral fragments again evident. The red deer bones are among the few identified from the site. Although they are all from the right forelimb, they are from different contexts and are not likely to belong to the same individual.

Over half the bird bones from the rest of the Inner Court demolition deposits are from domestic fowl (Table 68), with all parts of the body represented, but as these bones come from a number of different contexts it is not appropriate to estimate minimum numbers of individuals. The tawny owl bones are from a single context and are probably from one bird.

Only a few fish were identified, all of marine species except for a sinlge carp bone (Table 69).

vi. THE POST-PALACE DEPOSITS (PHASES 6–8) 1682/90–1959

The post-palace material dates from the seventeenth to twentieth centuries. Because of the large date range, only summaries of the total number of species are shown in Tables 70–72.

The horse bones from the Kitchen Court come from a single pit, mostly from Context 1127 (Y34) in the walled yard north of the Kitchen Court, and comprise at least two individuals.

22. See above, p 449

Judging from the epiphyseal fusion and two loose deciduous molars one was an immature animal of less than three and a half years. They were ponies of approxiamtely 13 and 14 hands,[23] and seem to have been buried during the demolition of the palace, or even later when the ruins were still visible.

Two fallow deer antler fragments from the Inner Court showed the tines had been sawn off, one of the few examples of antler working from the site. Three frog or toad bones were recovered from the Kitchen Court.

The many species of birds (Table 71) compare well with earlier samples, as do the fish, where the presence of carp suggests that some of the material may be residual from an earlier period (Table 72).

The birds are dominated by domestic fowl. The corvids (rook, crow, and jackdaw), partridge, blackbird, and songthrush were the next most numerous species.

The range of fish species was more restricted than the birds.

Table 60. Animal bone: mammal bones from demolition deposits in Inner Court Garderobes 10, 11, 12, 14, 15, 17, 19, and 21 (Phase 5).

	10	**11**	**12**	**14**	**15**	**17**	**19**	**21**	**Total**
Ox	1	–	–	–	–	–	–	–	1
Ovicaprid	1	15	–	8	–	4	–	2	30
Pig	–	2	–	3	–	1	–	–	6
Ungulate L	–	3	–	2	–	–	1	1	7
Ungulate S	2	27	–	9	5	2	1	20	66
Fallow	–	5	–	–	–	–	–	–	5
Rabbit	–	2	–	10	4	5	–	3	24
Ferret	–	45	–	–	–	–	–	–	45
Hedgehog	–	1	1	–	–	–	–	–	2
Total	4	100	1	32	9	12	2	26	186

Table 61. Animal bone: bird bones from demolition deposits in Inner Court Garderobes 11 and 15 (Phase 5).

	G.11	**G.15**	**Total**
Domestic Fowl	1	–	1
Grey Heron	–	1	1
Lapwing	1	–	1
Pigeon	1	–	1
Jackdaw	12	–	12
Rook	1	–	1
Total	16	1	17

23. Kieswalter 1888

Table 62. Animal bone: mammal bones from demoltion deposits in Inner Court Soakaways C, D, E, and G, (Phase 5).

	SA C	SA D			SA E					SA G						
	Ung S	Ox	Ung S	Red/ Fall	Ox	Ovic	Ung L	Ung S	Rabbit	Ox	Ovic	Pig	Ung S	Fallow deer	Rabbit	Total
Antler	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1
Skull frag	–	–	–	–	–	–	–	–	–	–	6	–	–	1	–	7
Maxilla	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1
Mandible	–	–	–	–	–	–	–	–	–	2	1	–	1	–	–	4
Scapula	–	–	–	–	–	–	1	–	–	–	1	–	4	–	–	6
Humerus	–	–	–	–	–	–	–	–	1	–	2	–	–	–	–	3
Radius	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1
Metacarpal	–	–	–	–	–	–	–	–	–	–	3	–	–	–	–	3
Vertebrae	–	–	–	–	–	–	–	1	–	1	1	5	1	–	–	9
Rib	1	–	–	–	–	–	–	4	–	–	–	–	7	–	–	12
Os Coxa	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	2
Femur	–	1	–	–	–	–	–	1	–	–	–	–	2	–	–	4
Tibia	–	–	–	–	–	–	–	1	1	1	1	–	–	–	–	4
Metatarsal	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
Metapodial	–	–	–	–	–	–	–	–	–	–	–	2	–	–	1	3
Carp/Tars	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
L bone frag	–	–	–	–	–	–	–	–	–	–	–	–	4	–	–	4
Phalanx	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
Total	1	1	1	1	1	1	1	7	2	4	16	8	21	1	1	67
Soak-away totals	1		3				12						51			

Table 63. Animal bone: bird bones from the demolition deposits in Inner Court Soakaway G (Phase 5).

Woodpigeon	1
Blackbird	2
Crow	1
Total	4

Table 64. Animal bone: mammal bones from Dump 2, Inner Court demolition (Phase 5).

	Ox	Ovic	Ungulate L	Ungulate S	Fallow deer	Red/ Fallow	Rabbit	Cat	Rat indet.	Total
Antler	–	–	–	–	–	1	–	–	–	1
Skull frag	–	–	2	3	–	–	5	–	–	10
Mandible	–	–	–	1	–	–	2	–	–	3
Scapula	–	4	–	1	–	–	4	–	–	9
Humerus	2	3	1	1	–	–	7	1	–	15
Radius	–	7	–	1	–	–	4	–	–	12
Ulna	1	2	–	–	–	–	7	–	–	10
Metacarpal	–	2	–	1	–	–	–	–	–	3
Phalanges	3	–	–	1	–	–	–	–	–	4
Vertebrae	9	4	1	36	–	–	5	–	–	55
Rib	–	–	8	77	–	–	4	–	–	89
Os coxa	1	3	1	6	–	–	9	–	–	20
Femur	3	5	–	8	1	–	3	–	–	20
Tibia	7	3	1	3	–	–	6	1	2	23
Calcaneum	2	5	–	–	–	–	–	–	–	7
Astragalus	3	1	–	–	–	–	–	–	–	4
Carpal/Tarsal	6	–	1	2	–	–	–	–	–	9
Metatarsal	1	–	–	–	–	–	–	–	–	1
L bone frag	–	–	3	1	–	–	–	–	–	4
Total	38	39	18	142	1	1	56	2	2	299

Table 65. Animal bone: bird bones from Dump 2, Inner Court demolition (Phase 5).

Domestic fowl	54
Domestic Duck	1
Goshawk	1
Lapwing	1
Grouse	2
Turkey	1
Pigeon	1
Blackbird	1
Crow	1
Total	63

Table 66. Animal bone: fish bones from Dump 2, Inner Court demoltion (Phase 5).

Carp	2
Chub	1
Cod	5
Ling	2
Plaice	1
Sole	1
Total	12

Table 67. Animal bone: mammal bones from the rest of the Inner Court demolition deposits (Phase 5).

	Ox	**Ovic**	**Pig**	**Horse**	**Ungulate L**	**Ungulate S**	**Red deer**	**Fallow deer**	**Rabbit**	**Hare**	**Hedge-hog**	**Total**
Ant/horn	–	1	–	–	–	–	–	2	–	–	–	3
Skull fr	–	1	–	–	–	–	–	–	–	–	–	1
Maxilla	–	–	1	–	–	–	–	–	–	–	–	1
Mandible	1	4	–	1	–	1	–	–	–	–	–	7
Scapula	–	1	–	–	–	–	–	–	1	–	–	2
Humerus	1	3	–	–	1	1	1	–	5	–	–	12
Radius	1	3	–	–	1	4	1	–	2	–	–	12
Ulna	–	2	–	–	–	–	1	–	3	–	–	6
Metacarpal	2	2	–	–	–	–	–	2	–	–	–	6
Phalanges	2	2	–	1	–	–	–	7	–	–	–	12
Vertebrae	2	3	–	–	7	16	–	–	–	–	–	28
Rib	–	–	–	–	10	64	–	–	1	–	–	75
Os Coxa	1	1	–	1	–	2	–	–	3	–	–	8
Femur	–	6	–	–	1	–	–	1	8	–	1	17
Tibia	3	–	–	–	–	2	–	–	1	–	–	6
Metatarsal	–	1	–	2	–	–	–	3	–	–	–	6
Metapodial	–	–	–	–	–	–	–	–	2	1	–	3
L bone fr	–	–	–	–	13	–	–	–	–	–	–	13
Total	13	30	1	5	33	90	3	15	26	1	1	218

Table 68. Animal bone: bird bones from the rest of the Inner Court demolition deposits (Phase 5).

Domestic Fowl	112
Domestic Duck	13
Goose	2
Mallard	2
Teal	2
Golden Plover	1
Curlew	1
Pigeon	16
Tawny Owl	11 (part skeleton)
Blackbird	3
Magpie	1
Jackdaw	30
Rook	1
Crow	19
Total	214

Table 69. Animal bone: fish bones from the rest of the Inner Court demolition deposits (Phase 5).

Conger Eel	1
Carp	1
Ling	1
Flatfish	1
Total	4

Table 70. Animal bone: a summary of mammal bones from post-palace deposits (Phases 6–8).

	Outer Court	Kitchen Court	Inner Court	Total
Ox	16	22	23	61
Goat	1	–	–	1
Ovicaprid	60	54	81	195
Pig	6	2	5	13
Horse	2	32	2	36
Ungulate L	56	80	67	203
Ungulate S	234	171	241	646
Fallow deer	13	19	5	37
Red deer	1	1	–	2
Red/Fallow deer	2	5	–	7
Dog	16	–	–	16
Cat	4	14	11	29
Rabbit	45	49	133	227
Hare	–	1	1	2
Hedgehog	–	–	1	1
Total	456	450	570	1476

Table 72. Animal bone: a summary of fish bones from post-palace deposits (Phases 6–8).

	Outer Court	Kitchen Court	Inner Court	Total
Conger Eel	–	–	1	1
Salmonidae	–	1	–	1
Pike	–	1	–	1
Carp	–	–	1	1
Cod	2	2	–	4
Ling	–	–	1	1
Gadidae	2	–	–	2
Plaice	1	1	–	2
Flatfish	–	1	1	2
Total	5	6	4	15

Table 71. Animal bone: a summary of bird bones from post-palace deposits (Phases 6–8).

	Outer Court	Kitchen Court	Inner Court	Total
Domestic Fowl	31	61	56	148
Domestic Duck	–	1	1	2
Grey heron	–	–	2	2
Bittern	–	1	–	1
Goose	1	1	6	8
Mallard	–	3	1	4
Teal	2	1	1	4
Eider	–	1	–	1
Partridge	1	18	8	27
Crane	–	–	1	1
Plover	–	1	–	1
Lapwing	1	2	5	8
Knot	–	1	–	1
Godwit	–	–	1	1
Curlew	–	1	–	1
Woodcock	–	2	–	2
Snipe	1	1	–	2
Black Headed Gull	–	–	1	1
Herring/L B B Gull*	–	1	–	1
Pigeon	2	4	2	8
Collared Dove	–	3	–	3
Swift	–	1	–	1
Green Woodpecker	–	1	–	1
Shrike	–	1	–	1
Thrushes	–	3	–	3
Songthrush	–	9	2	11
Blackbird	–	10	2	12
Redwing	–	1	–	1
Finches	–	1	–	1
Greenfinch	–	1	–	1
House Sparrow	–	1	–	1
Rook	–	11	–	11
Crow	4	–	2	6
Jackdaw	3	25	11	39
Total	46	168	102	316

*L B B Gull = Lesser Black backed Gull

vii. THE BANQUETING HOUSE (Figs 7 and 8)

The bones associated with the construction of the Banqueting House (Phase 2, 1538–46) were few, comprising some mammal bones (Table 73) and two wing bones of domestic fowl (Table 76). The sample is too small for further comment.

The occupation of the Banqueting House (Phase 3, 1538/46–1667) shows a restricted range of species, rabbit (for which parts of at least 10 individuals are represented) small ungulates, and the remains of a few mutton chops (Table 74). The domestic fowl bones are from at least two right legs, except for a fircula or 'wishbone' (Table 76).

Since the Banqueting House was intended for light snacks and refreshments taken during an evening's entertainment, the species and anatomy identified very much reflect the type of food served.[24]

24. Biddle, pers. comm.

The bone from the demolition deposits (Phase 4, 1667) returns to a wider distribution of species, which, although small, is more in keeping with palace deposits, showing a relatively high proportion of small ungulate ribs (Tables 75–6).

Except for a rabbit skull from the construction deposits and a rabbit femur from the occupation material, all the bone described above is from the main Banqueting House. The two rabbit bones are from the kitchen block attached to the Banqueting House (Figure 8, Site BV).

There are also three groups of material associated with the post-Banqueting House period (Phases 5–7; Tables 77–9). The group headed 'Lowther' is derived from the backfill of trenches excavated in 1930.[25] The BV material from the area of the kitchen block is very similar to the palace material, witha high proportion of ovicaprid/small ungulate ribs and vertebrae. Few bird bones were recovered (Table 78) and the only fish bones were from the kitchen block (Table 79).

Table 73. Animal bone: mammal bones from Banqueting House construction deposits (BH Phase 2).

	Ox	Ovicaprid	Ungulate		Rabbit	Total
			L	S		
Skull frag	–	–	–	1	1	2
Maxilla	–	1	–	–	–	1
Mandible	1	–	–	–	–	1
Humerus	–	1	–	–	–	1
Radius	–	1	–	–	–	1
Metacarpal	–	1	–	–	–	1
Vertebrae	–	–	1	1	–	2
Rib	–	–	1	4	–	5
Os coxa	–	–	–	–	1	1
Tibia	–	1	–	–	–	1
Metatarsal	–	–	–	1	–	1
Long bone frag	–	–	1	–	–	1
Total	1	5	3	7	2	18

Table 74. Animal bone: mammal bones from Banqueting House occupation deposits (BH Phase 3).

	Ox	Ungulate	Rabbit	Cat	Total
		S			
Skull frag	–	–	2	–	2
Maxilla	–	–	10	–	10
Mandible	–	–	16	–	16
Scapula	–	–	8	–	8
Humerus	–	–	10	–	10
Radius	–	–	8	–	8
Ulna	–	–	8	–	8
Phalanges	–	1	–	–	1
Vertebrae	–	8	12	–	20
Rib	–	4	7	–	11
Os coxa	–	2	8	–	10
Femur	–	–	19	–	19
Tibia	–	–	27	1	28
Calcaneum	–	–	4	–	4
Astragalus	–	–	1	–	1
Metapodial	–	–	17	–	17
Long bone frag	1	–	–	–	1
Total	1	15	157	1	174

25. See above, p 2

Table 75. Animal bone: mammal bones from Banqueting House demolition deposits.

	Ox	Ovic	Pig	Ungulate L	Ungulate S	Fallow deer	Dog	Rabbit	Total
Antler/Horn	–	–	–	–	–	1	–	–	1
Skull frag	–	–	–	1	1	–	–	–	2
Maxilla	1	–	2	–	–	–	1	–	4
Mandible	1	–	–	–	2	–	1	–	4
Scapula	2	2	–	–	2	–	–	–	6
Humerus	–	3	1	–	–	–	–	–	4
Radius	–	2	–	1	3	–	–	–	6
Ulna	–	1	–	–	1	–	–	–	2
Metacarpal	–	5	–	–	–	–	–	–	5
Phalanges	1	2	–	–	–	–	–	–	3
Vertebrae	–	–	–	3	3	–	1	–	7
Rib	–	–	–	4	10	–	–	–	14
Os coxa	1	–	–	–	1	–	–	–	2
Femur	–	1	1	–	–	–	–	2	4
Tibia	–	4	–	–	1	1	–	1	7
Astragalus	–	1	–	–	–	–	–	–	1
Metatarsal	2	4	–	–	–	–	–	–	6
Metapodial	–	–	–	–	1	–	–	–	1
Long bone frag	–	–	–	3	–	–	–	–	3
Total	8	25	4	12	25	2	3	3	82

Table 76. Animal bone: bird bones from all levels of the Banqueting House.

	Construction (BH Phase 3)	Occupation (BH Phases 4–5)	Demolition (BH Phase 6)	Total
Domestic fowl	2	6	2	10
Goose	–	1	–	1
Partridge	–	–	1	1
Blackbird	–	–	1	1
Crow	–	1	–	1
Jackdaw	–	–	5	5
Total	2	8	9	19

Table 77. Animal bone: mammal bones from post-Banqueting House and associated deposits.

	Post BH (BH Phases 7–9)	Lowther (BH Phase 8)	BV (BH not phasable)	Total
Ox	8	2	5	15
Ovicaprid	26	5	24	55
Pig	4	–	2	6
Horse	1	–	1	2
Ungulate L	13	7	28	48
Ungulate S	27	18	100	145
Fallow deer	2	–	13	15
Dog	3	–	–	3
Cat	–	1	–	1
Rabbit	3	1	11	15
Total	87	34	184	305

Table 78. Animal bone: bird bones from post-Banqueting House and associated deposits (BH Phases 5–7 and BV).

	Post BH (BH Phases 7–9)	BV (BH not phasable)	Total
Domestic fowl	2	5	7
Grey Heron	–	1	1
Partridge	1	–	1
Blackbird	1	–	1
Crow	–	1	1
Jackdaw	1	–	1
Total	5	7	12

Table 79. Animal bone: fish bones from post-Banqueting House and associated deposits (BH not phasable).

	BV (BH unphasable)
Carp	1
Flounder	1
Total	2

viii. AGEING

Ageing of the domestic species is most reliably carried out by the method of recording tooth eruption and wear developed by Grant.[26] The Nonsuch sample produced however relatively few mandibles suitable for ageing, and these were rarely complete, probably reflecting the purchase of joints or sides rather than whole carcases. The largest and most important groups came from the occupation and demolition deposits. Including broken mandibles, where the molar row was incomplete, there were onlt 7 ox, 20 ovicaprid, and 10 pig mandibles (which given the small total sample of pig represents a higher proportion than for the other two species).

The seven ox mandibles show a variety of age stages, including one immature animal of less than six months, four not older than three years, and two which are fragmentary but were probably from more mature animals.[27]

The ovicaprid mandibles are also mostly broken. They include three from lambs of less than three months (the first permanent molar not erupted), with the remainder from adults of varying maturity, reflecting a liking for mutton.

The pig mandibles are all from young adults, largely retaining the deciduous fourth premolar. The higher proportion of mandibles could indicate a preference for pig 'chaps' (cheeks), although port does not seem to have been very popular in the diet as a whole.

There were also a number of mandibles of fallow deer. Comparison of thier teeth eruption and wear with Chapman's study of deer in Richmond Park (though not represented as an ageing method),[28] suggests that there were no very young or very aged animals. If comparison with the Richmond Park sample is valid, the Nonsuch deer included a number around 3 years of age.

26. Grant 1982
27. Ages after Silver 1969, 297
28. Chapman and Chapman 1975, 231

ix. METRICAL DATA

A complete archive of measurements is available through the Ancient Monuments Laboratory, English Heritage. Of the domestic species, the largest samples were for ovicaprids and domestic fowl. The measured ox bones were fragmentary and the pig bones were often immature as well as few in number.

A number of ovicaprid (sheep) bones were complete and withers heights could be calculated[29] for 52 individuals from the demolition and occupation deposits (Fig 225). Only eight are from demolition material, and these tend to be the larger animals. The main group, comprising 60% of the sample, ranges from 58 to 65 cm in height. Armitage gives an average withers height of 64 cms for late medieval and Tudor sheep.[30] The Nonsuch animals are close to that size, but there are also some larger specimens at 68, 71 and 74 cm.

In the late 17th century the size of the longwool sheep is thought to have been increasing and Armitage has suggested a withers height for a primitive late medieval longwool at 64 cm, a late 17th/early 18th unimproved longwool at 79 cm, and a post-1800 improved cross at 69 cm.[31]

Although th elongwools were primarily kept for their wool their mutton was supplied to the London meat market. Defoe records that the largest sheep in the late 17th and early 18th centuries were the longwools of Lincolnshire and Leicestershire.[32] Longwool mutton was also provided to a lesser extent by Romney marsh sheep. The large range in size of the sheep from Nonsuch suggest that mutton may have been from both the longwool and short wool varieties. The size of the larger sheep from Nonsuch (which remain slender) is within the 71–81 cm range given for sheep from a late seventeenth-century pit from Aldgate, London, which Armitage has suggested come from Lincolnshire and Leicestershire longwools. Whether the lamb was purely from the short wool variety cannot be ascertained, but this would seem likely with the longwool being bred primarily for its fleece, with meat as a valuable, but secondary product.

Fig 226 plots distal breadth for the ovicaprid humeri against the minimum shaft breadth. The distribution shows a relationship between increased distal breadth and a corresponding increase

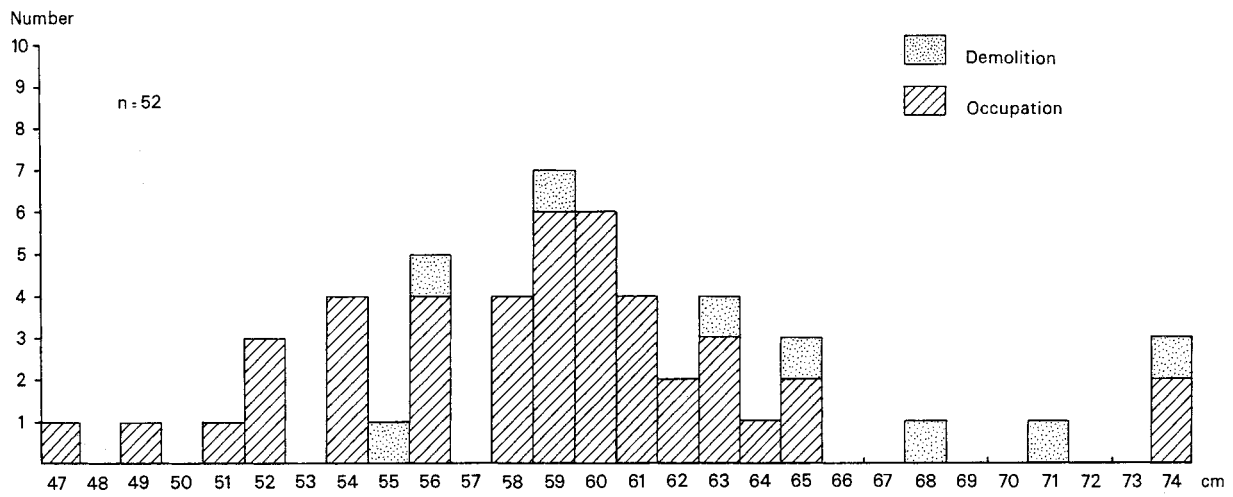

Fig. 225 Animal bone: sheep withers heights calculated from limb bone (after Teichert 1974).

29. After Teichert 1974; Teichert 1975
30. Armitage 1983, 92
31. Ibid.
32. Armitage 1984, 139

in shaft breadth, with a few outliers. Since none of the complete humeri were from the larger ?longwool types, it is not possible to explore ant corresponding increases in breadth with size. However, the three humeri with the largest shaft breadth could be related to increased sie and also to sex. The interpretation of metrical data is often clouded by size differences determined by both breed and sex. This is also reflected in the withers heights shown in Fig 225, but in that instance the differences are so great it may be justifiable to interpret them as due to breed as well as sex.

it would seem likely that both breed and sexdifferences are also highlighted in th emetrical data for domestic fowl. The three main leg bones (where complete) have been plotted in Figs 227–9.

In Fig 227, the data for the femur appears to fall into two groups, in which one has a greater total length, but both groups have similar ranges of slenderness. The longer femora have an index of 8.0–10.3, and the shorter ones 7.8–9.9. The group with the shorter total length is therefore relatively stouter.

The tibiotarsi (Fig 228), although not grouping as neatly, and with some outliers, reflect a similar trend, with a grouping of the shorter tibiotarsi. For the tarsometatarsi (Fig 229) only those with a measured spur of spur scaarhave been marked as males, since females, with rare exceptions do not show any evidence of spurs.[33] As with all the metrical data only fully fused mature bones were measured to ensure growth had ceased. Thus, since many of the domestic fowl bones were still porous, and therefore immature, the measured sample is a relatively small proportion of the whole. In each of the three figures total length × 100, to show length against slenderness.

The difficulties in separating the differences creatd by sex and breed are highlighted in Fig 229, where the tarsometatarsi with measured spurs have been marked as male, and the rest may be female. The ?males plot at the larger area of the length/slenderness index, but there are a few tarsometatarsi without spurs close to the maximum length, suggesting some variety in sexual dimorphism, possibly between breeds.

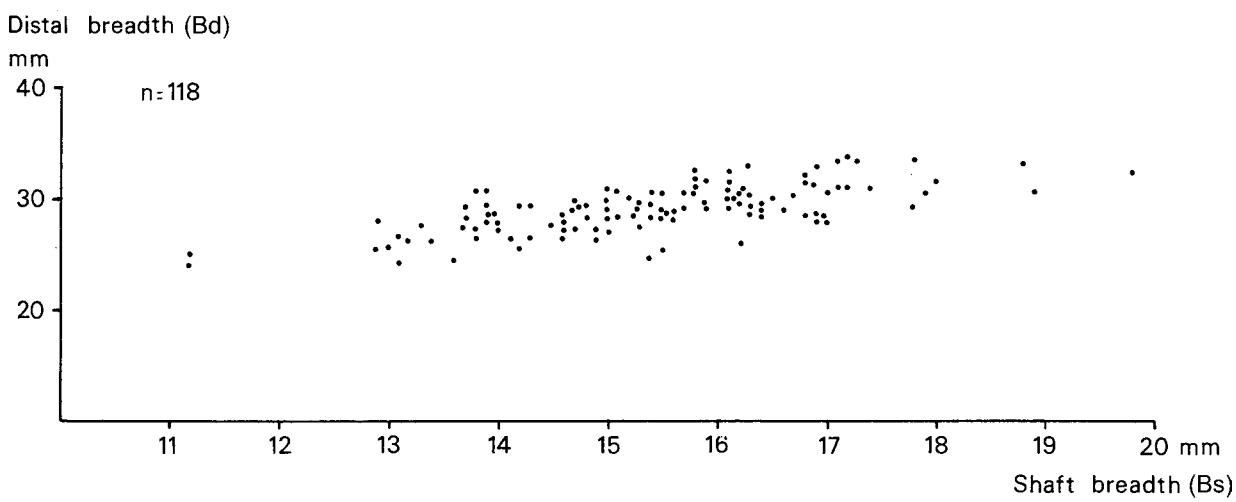

Fig. 226 Animal bone: ovicaprid humerus, distal breadth plotted against minimum shaft breadth.

33. West 1985, 14

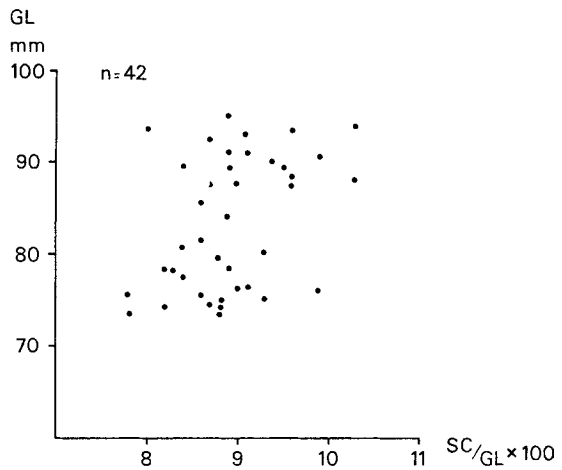

Fig. 227 Animal bone: domestic fowl femur from occupation and demolition deposits.

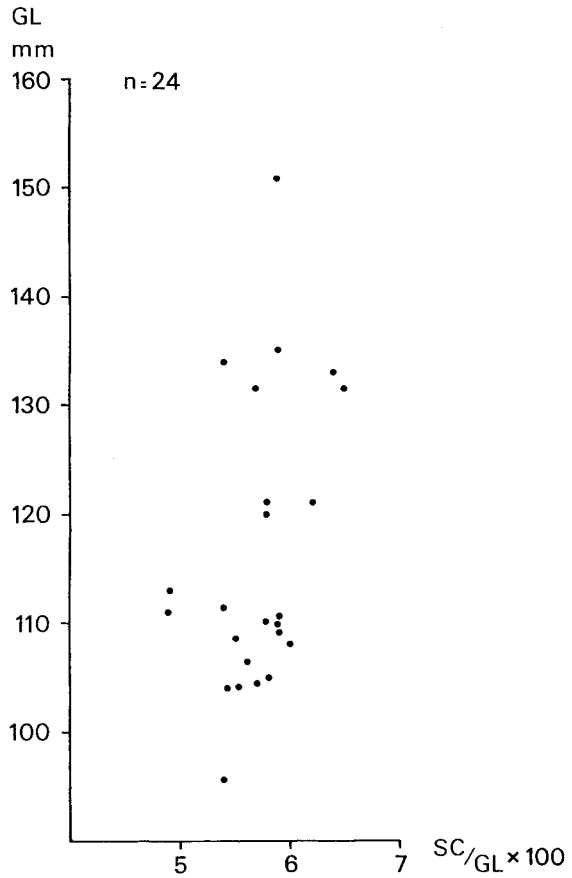

Fig. 228 Animal bone: domestic fowl tibiotarsus from occupation and demolition deposits.

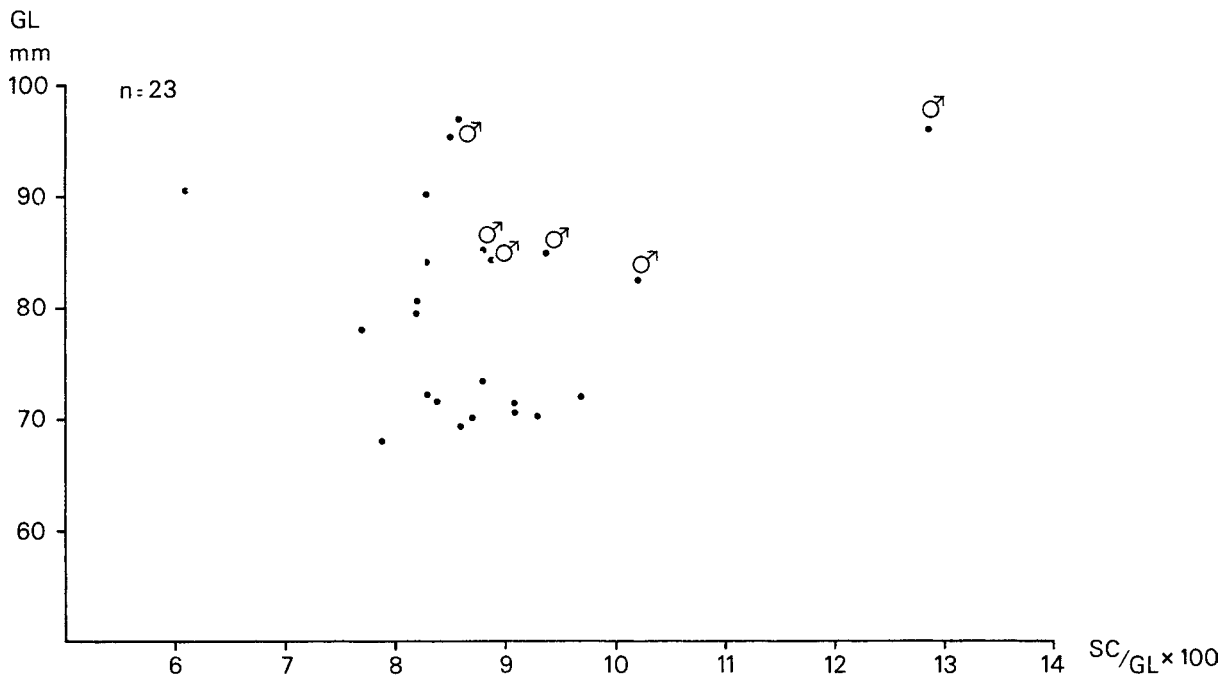

Fig. 229 Animal bone: domestic fowl tarsometatarsus from occupation and demolition deposits.

A study of domestic fowl remains from Wicken Bonhunt, Essex, included some measurements of the fowl collection at the Natural History Museum, Tring, where Darwin had contributed some specimens in the nineteenth century.[34] Compared with the measurements of some of the old breeds, which include the Dorking (said to have been introduced in the Roman period), game fowl, and some bantams, none of the measured Nonsuch material appears small enough to be from a bantam (femur length = 52.0 mm, tarsometatarsus = 49.0 mm), or large enough for the Dorking (femur length = 115.5 mm, tibiotarsus = 160.5 mm, tarsometatarsus = 113.3 mm), the larger of the old breeds. The game fowl (female) in the bottom range of the Nonsuch material. Skull fragments very simialr to this variety of 'medium' fowl, which could have been kept for both eggs and meat in the poultry sheds previously referred to, as well as being purchased from local markets.

x. CONCLUSIONS

The Nonsuch animal bone assemblage is an interesting reflection of the variety of flesh, particularly of birds and fish, that was eaten by people of high status in the seventeenth century. These varieties included luxurious elements that would also have been available to the earlier wealthy Tudor occupants and were evidently still favoured in the seventeenth century. The palace was only about twelve miles from the main London markets and a variety of fresh meats, either live or recently slaughtered, could have been brought down by cart. The movement of goods in the seventeenth century shows an efficient system of land carriage and despite the poor condition of the roads the journey would have only taken a few hours.[34a]

The mainstay of the diet appears to have been mutton, particularly chops as well as joints, some beef, a little pork, domestic poultry (especially domestic fowl) and rabbit. Marine fish, particularly cod, ling, and plaice/flounder, were more important than fresh water fish.

Meat and flesh was also available from the immediate locality. These included deer, mainly fallow, presumably from deer park stocks; a wide variety of wild birds, which appear consistently but in low numbers, and were perhaps caught on th eestate; and freshwater fish, particularly carp. These were typically stocked in ponds, the maintenance of which in the later periods of the palace is however not documented.

Wilson summarises many of the changes in diet seen in the seventeenth century as compared with earlier periods, and the following observations are from her book unless otherwise stated.[35] Visitors to Britain at the end of the century and later remarked on the great quantity of flesh consumed by the English. Much of the meat was spit roasted. Steaks (mutton as well as beef) were broiled and grilled, and hashes and fricassees of chopped meat had also become popular. In the seventeenth and eighteenth centuries pickled meat was popular, and in the middle classes was often served as a side dish with the second course.

As for game, an act of 1671 prohibited the killing of game except by qualified persons, although poached venison and game birds continued to be on sale in London for many years to come.

Dressed carcases of fallow deer from the Little Park, surplus to home consumption, could have generated income for the Berkeleys' Nonsuch estate, but there is no known record of this. Rabbit, as suggested by the assemblage, was still popular for both fur and meat, the absence of the feet in some instances may reflect the product of skinning in which the feet are retained with the fur. Hare occurs regularly but in low numbers and was treated like rabbit; stuffed, roasted, stewed, or put in pies.

34. Macready 1976
34a. Willan 1976
35. Wilson 1973

Consumption of some of the less palatable wild birds declined in this period. These include gulls, crane, and herons, which were considered 'too fishy'. Peacock, previously popular, was now regarded as too tough. Domestic poultry were increasingly important, and the exploitation of so many species of wild bird declined. Many birds were still stuffed with exotic forcemeats, particularly domestic fowl. Rich stews and pies were made with both small and large birds.

With the end of compulsory fish days after the Reformation and with increasing supplied of meat and fresh marine fish, freshwater fish lost popularity. Some of these were still kept on estates in stews (ponds) bur during the eighteenth century many landowners changed the use of these ponds to ornamental. The fork became a more commonly used table implement in the seventeenth century, and was particularly useful for eating the fish stews which had become popular.

Marine fish could have been delivered fresh every day at this distance, but would also have been salted, dried, smoked or pickled. Salmon pickled in beer, 'Newcastle salmon', was caught in the River Tweed, pickled in Shields, and exporrted to southern ports. Flatfishes were fried ad pickled in white wine vinegar, sides of slamon, sturgeon, pike, and conger eel were split, rolled, and soused like brawn. Potted fish also became popular in the seventeenth century: eels, lamprey, salmon, smelt, mackerel, and many other fish were used, often forming the second course of th meals of the wealthy. The absence of small species, particularly herring which is often the most numerous species in a fish assemblage, may be attributable to the mesh size used for screening. Therefore no significance should be attached to the absence of herring oe to low numbers of eel bones.

There was thus a great variety of food available in the seventeenth century, particularly among the better off. Pepys' visits to the Exchequer at Nonsuch are well documented in his diaries, but the Exchequer's brief occupation of the palace in 1665–6 appears not to be the source of the bone assemblage.[35a] There is no known documentary evidence for the meals of the Berkeleys at Nonsuch, but Pepys' accounts of the fine dinners he ate in London in the 1660s may give some idea of what was considered a good meal at the time. In 1660 he gave a dinner party for eleven people, which he enjoyed so much he included the menu in his diary: a dish of marrow bones, a leg of mutton, a loin of veal, a dish of fowl, three pullets, two dozen larks all in a dish, a great tart, a neat's tongue, a dish of anchovies (which ahd become very popular), and a dish of prawns and cheese.[36] In 1663 for eight guests, he gave oysters to start, then a hash of rabbits, a lamb, a chine of rare beef, a great dish of roasted fowl, a tart, and then fruit and cheese. Most of Pepys' dinners included lamb as well as mutton and a chine of beef.[37]

The bone assembalge, althoough apparently from the later seventeenth cenutry, suggests general contonuity from the Tudor period in the range of species eaten in high status meals. There is a strong representation of the domestic mammals, deer, and rabbit, and a great variety particularly of birds but also of fish. This concurs with Mennell's view of the Star Chamber banquets of the seventeenth century as remaining 'occasions for fairly unsophisticated quantative display and for prodigious feasts of meat eating'[38] Thus, although there were some changes, as described above, the main feature of 'haute cuisine' at this time continued to be centred around large quantities of meat, whether flesh or fowl, with fish very much in a secondary role. Mennell considers the break with medieval cookery in England, with the emphasis on quantity changing to 'qualitative elaboration' in court cuisine, to have lagged behind courts in Renaissance Italy and seventeenth and even eighteenth century France.[39] Although it is not possible to assess the volume of meat it represents, the range of the Nonsuch bone assemblage seem svery much in the Tudor tradition.

35a. See above pp 58, 64–5
36. Hope 1990, 68
37. Ibid.
38. Mennell 1996, 62
39. Ibid. 33

Table 80. Animal bone: total numbers of identifiable bones from the occupation (Phase 4) and demolition (Phase 5) contexts in all parts of the palace.

		Mammals	Birds	Fish	Totals
Outer Court occupation	(Phase 4) (Tables 31–3)	2184	621	270	3075
Outer Court demolition	(Phase 5) (Tables 42–4, 46–8)	3307	527	367	4201
Outer Court Totals		5491	1148	637	7276
Kitchen Court occupation	(Phase 4) (Tables 35–9)	472	87	51	610
Kitchen Court demolition	(Phase 5) (Tables 49–54)	2013	174	41	2228
Kitchen Court Totals		2485	261	92	2838
Inner Court occupation	(Phase 4) (Tables 40–1)	313	42	–	355
Inner Court demolition	(Phase 5) (Tables 55–64)	769	298	16	1083
Inner Court Totals		1082	340	16	1438
Totals		9058	1749	745	11552

Table 81. Animal bone: totals and percentages of identifiable bones from the occupation (Phase 4) and demolition (Phase 5) contexts in all parts of the palace.

	Occupation contexts (Phase 4)		Demolition contexts (Phase 5)		Occupation (Phase 4) and demolition (Phase 5) contexts combined		Occupation contexts (Phase 4) **plus** demolition contexts in garderobes		Demolition contexts (Phase 5) **less** demolition contexts in garderobes	
	Totals	**Percentage**	**Totals**	**Percentage**	**Totals**	**Percentage**	**Totals**	**Percentage**	**Totals**	**Percentage**
Outer Court	3075	76%	4201	56%	7276	63%	5727	81%	1549	34%
Kitchen Court	601	15%	2228	30%	2838	25%	746	11%	2092	46%
Inner Court	355	9%	1083	14%	1438	12%	557	8%	881	19%
All courts[1]	4040	[35%]	7512	[65%]	11552		7030	[61%]	4522	[39%]

[1] Figures in [ ] are line percentages of 11552

22

MOLLUSCA

by June Chatfield

The excavation of the palace and Banqueting House at Nonsuch produced shells of both marine and terrestrial molluscs. Most were marine shellfish which would have been brought to the site as food. On the palace site these comprised: *Mytilis edulis* L. – the Common Edible Mussell; *Ostrea edulis* L. – European or Flat Oyster; *Cerastoderma edule* (L.) – Common Edible Cockle; *Haliotis tuberculata* L. – the Ormer; *Littorine littorea* (L.) – Common or Edible Winkle and *Buccinum undatum* L. – the Edible Whelk. With the exception of the Ormer these are all common and widely distributed British marine species and were very probably equally common in the sixteenth and seventeenth centuries.

At the time of the excavation of Nonsuch Palace in 1959 and the original writing of the reports on the finds, shells and other biological material (other than bone) were little regarded in the archaeology of post-prehistoric periods. No scientific soil samples were taken and the material available for study of the mollusca was the content of the excavation finds trays. Interest in using land and freshwater shells to interpret environments of the past was pioneered by post-glacial geologists in the first half of the twentieth century, leading to quantative work from about 1950 onwards. This approach was brought into archaeology by John G. Evans of University College, Cardiff, in 1972, long after the excavtion of Nonsuch Palace.[1]

i. The Palace

Oysters accounted for the bulk of shells here. These were found in all areas, and could have been scattered during the demolition of the palace in 1682–8, and by subsequent ploughing. Oysters have been used as food since, and probably before, the Roman occupation of Britain, though oyster cultivation was not generally practised until the nineteenth century, as adequate supplies came from natural, self-perpetuating oyster beds, such as have existed for centuries in the Thames estuary at Whitstable (Kent) and Colchester (Essex). In Tudor times, when oysters were popular, harvesting aws restricted to certain times of year (the closed season being Easter to Lammas) and to certain groups of fishermen. In teh seventeenth century the harvesting of undersized oysters, 'smaller than a half crown piece'[2] was restricted.

Most of the oyster shells from Nonsuch Palace measure 63mm from umbone to ventral margin, the two largest measuring 89mm, but there were a few shells of 76mm or more. Several

1. Evans 1972

2. Yonge 1960

juvenile specimens of 19–38mm were found, normally attached to shells of larger oysters and taken inadvertently.

The single shell of the Ormer *Haliotis tuberculata* was used as a palette and filled with a red (?cosmetic) pigment. The interior of the shell is of mother-of-pearl. Ormer shells are often used for decorative purposes today. The animal itself can be eaten after being beaten to render the foot tender. This is unlikely in the present instance, as only one Ormer shell was recovered.

Shells of several land snails were found, but with the possible exception of *Helix aspersa*, it is doubtful whether any of these had culinary significance. They probably occured naturally. The land snail shells were found in most levels, but it was noted that the shells of those of greater antiquity were thicker than those from the topsoil.

The following land snails were recorded from the palace: *Helix aspersa* Müller – Common Garden Snail; *Cepaea nemoralis* (L.) – Brown-lipped or Grove Snail; *C. hortensis* (Müller) – White-lipped or Garden Snail; *Arianta arbustorum* (L.) – the Orchard or Copse Snail; *Monacha cantiana* (Montagu) – the Kentish Snail; *Oxychilus draparnaldi* (Beck) – Draparnaud's Glass Snail and *Cochlicopa lubrica* (Müller) – Slippery Moss Snail. Land shells were found in most soil levels from Tudor to present day.

With the exception of *Arianta arbustorum* (only represented by one shell), all of these species of snail commonly occur in Nonsuch Park today,[3] and would have been part of the contemporary fauna.[4]

Helix aspersa was common in palace contexts. This is the second largest British land snail, and is sometimes eaten. The species is first known in Romano-British contexts, and is widespread in the south, often in places disturbed by man, or near human habitation.

Striped shells of the two *Cepaea* species were frequently found, *C. nemoralis* being the more common of the two. *Arianta arbustorum* is a snail of damp habitats, not occuring in Nonsuch Park today. A few shells of *Monacha cantiana*, another species introduced in the Roman era, were recovered. These occur commonly in the south east. The smaller glass snail was represented by only a few shells. However, these thin shells do not preserve well. This is another species characteristic of gardens and other places near human habitation. The small cylindrical *Cochlicopa lubrica* only occured in the topsoil.

ii. THE BANQUETING HOUSE

As at the palace, the majority of shells were oysters – *Ostrea edulis* – which were of culinary significance. The largest measured 89mm, whilst the average shell measured 63mm. A few juveniles of 25mm were found, sometimes with both valves together, indicating that these small oysters were probably thrown away unopened. A few cockle shells – *Cerastoderma edule* – were also found.

Few land snail shells were preserved during the Banqueting House excavation, the only species recorded being *Helix aspersa* and *Cepaea nemoralis*. Both were found across much of the site, at most levels, suggesting these land snails were of natural occurrence.

3. Chatfield 1994

4. Kerney 1999

23

THE ARCHAEOLOGY OF A BERKELEY HOUSEHOLD

by Martin Biddle

When the palace was excavated in 1959, and in the interim report of 1961, the mass of domestic material from the Great Cellar and from some of the garderobe (latrine) pits lining the outside walls, in the thickness of interior walls, and beneath some of the towers and turrets, was believed to be derived from the last known occupation of the palace by the offices of the Exchequer in 1665–6.[1] A great deal of older material was clearly present, but this was put down either to long-continued use of the garderobes unemptied or to the use or re-use of vessels found on the palace shelves or brought in by the officers of the Exchequer for their own use. Why some of the garderobe pits, especially those in the gatehouses and eastern half of the Outer Court, were full while others (the majority) were found clean and empty was not seen as a problem demanding explanation. Nor was the limited spatial distribution of the full as opposed to the empty pits (as demonstrated on Fig. 27) seen as particularly significant.

The idea that the deposits dated from the use of the palace by the Exchequer in 1665–6 did not long survive the results of further research into the written sources. Especially important was the evidence for its use by the family of the last keeper, George Lord Berkeley, in the latter years of his keepership, from 1670 to 1688. Sparse as the Berkeley evidence is, it shows that the palace was at least partially in use after 1665–6 and explains Berkeley's reluctance to yield up his rights as keeper in face of the Duchess of Cleveland's determination to demolish the palace and dispark the estate.[2]

The concentrated distribution of the full garderobe pits in the north-east quarter of the palace could not be explained in terms of the Exchequer occupation which appears to have extended over most of the building (Fig. 27).[3] The demonstration that all the various categories of finds were also concentrated on the eastern half of the Outer Court proved vital (Figs 28–33). Although most of these finds came from the garderobe pits and Great Cellar, many came from layers resulting from the demolition of the palace, first of the Inner and afterwards of the Outer and Kitchen Courts, in the years 1682–90. The result was an almost dramatic demonstration of the significance of archaeological patterning in the study of the recent past. It was impossible to explain this pattern in terms of the Exchequer occupation of 1665–6: had the palace been left uncleaned after that occupation, full garderobes would have been found throughout the building. Nor did there seem to be any reason why, in what appears otherwise to have been a thorough operation, some pits should have been left unemptied. The simplest explanation was that the

1. Biddle 1961, 14; see above, p. 25, 58, 134.
2. See above, p. 59–62.
3. See above, p. 58.

whole palace had been 'cleansed' or 'scoured' (to use contemporary terms) following the departure of the Exchequer in January 1666 and later partly re-occupied.[4]

The only known later occupation is that by the family of the keeper, George Lord Berkeley, but the evidence is restricted to a few letters.[5] Repairs by the Office of Works both before the Interregnum and after the Restoration showed, however, that the keeper's lodgings were in the Outer Court, adjacent to the Outer Gatehouse.[6] This is the area in which the full garderobes were found (Fig. 27), and the area in which the greater part of all the finds from the demolition layers were concentrated (Figs. 28–33). This is also the part of Nonsuch shown in the painting of the 1670s attributed to Hendrik Danckerts. One copy of this painting is still today at Berkeley Castle in Gloucestershire, but a second (reproduced here, *front and back endpapers*), presumably commissioned by George Berkeley for another of his houses, has also survived.[7] Danckerts' view shows the Outer Court of Nonsuch from the north-east, with the Kitchen Court in the foreground. This domestic angle on so remarkable a building suggests that the northern-eastern part of the palace was of special interest to the Berkeleys; the survival of two versions suggests that the family was sufficiently attached to Nonsuch to want it recorded in at least two of their houses.

It might perhaps be argued that the full garderobe pits had simply been missed when the house was scoured after the Exchequer occupation, possibly because they were in the keeper's part of the building. But the keeper's rooms were also put into repair both for the Exchequer and afterwards and the fact that the distribution of the finds in the garderobes (i.e. those in the full pits) and the distribution of the finds in the demolition deposits coincides suggests that this part of the palace and this part only had continued in use after a general scouring which left the rest of the palace clean and essentially deserted for the remaining fifteen years or so of its life.[8]

A further possibility might be that the full garderobes were incompletely scoured after 1665/6, leaving deposits which were added to during the Berkeley occupation. But the stratification of, and distribution of finds in, the fills of the individual garderobe pits (Figs 15 and 22–3) do not support the idea and poor cleansing in certain areas would contrast with the generally scrupulous cleansing of pits elsewhere in house.

The most economical explanation of the archaeological patterning is that it reflects the continuing occupation of the eastern half of the Outer Court by the Berkeleys: the two gatehouses, the east range and the Kitchen Court, and the Great Cellar. When in 1682 Berkeley finally reached an agreement with the Duchess of Cleveland about the demolition of Nonsuch, the Inner Court was to go first and Berkeley's interest in the Outer Court for a further period of years was specifically recognised.[9] This is also the area which had long been the residence of the keepers, and the area which Danckerts' two paintings show was of lasting attraction for the family. Nonsuch was not their principal residence but the evidence suggests that it was used by the younger members on a occasional basis, perhaps in the winter months.[10]

4. The cleansing would have been the keeper's responsibility and may have taken place immediately after January 1666 in anticipation of subsequent official use (see above, p 64-5). That this was to be a possibility as early as September 1666, when emergency arrangements were made to move the Exchequer back to Nonsuch in case the Great Fire should reach Westminster (see above, p. 1), cannot have been anticipated but a further visitation of the plague may have been
5. See above, p. 60
6. See above, p. 61
7. Possibly for Cranford in Middlesex, demolished in 1939 (see above, p. 60, n. 74); or for Durdans at Epsom, demolished in the 1960s (see above, p. 61, n. 82). The painting reproduced for the first time on the *front and back endpapers* to this volume measures 51 cm by 104 cm (20 by 41 in) within the frame and was presumably an over-mantel or more likely an overdoor (for this version, see above, p. 61, n. 81). The painting at Berkeley Castle measures 68.5 cm by 112 cm (27 by 44 in); it is reproduced in colour in Harris 1996, 28 (cat. no. 3). The two versions are similar in size (the former perhaps cut down at the top) and detail and were presumably painted by Danckerts (if he was the artist) as part of the same commission and working from the same set of drawing and painting notes taken on site.
8. The discovery of deposits in a few isolated garderobe pits, e.g. in G. 19 in the south-west tower and in G. 11 in the east range of the Inner Court, suggests casual use of some of the usually deserted parts of the palace for an occasional picnic, for example in the high prospect room of the south-west tower
9. See above, p. 59, 61–2
10. See below, p. 480–1

There is no evidence to tell us about the management, repair, and cleansing of the house in the years from 1666 to 1682/8, but the Berkeleys are unlikely not to have had the night soil removed from time to time. The deposits found in the pits are most likely therefore to date from the last year or years of their use of the house in the 1680s, before the start of the final demolition of the Outer Court at the latest in 1688.[11]

What are the implications of this explanation? First, as studies of the various categories of artefacts show, a great deal of the material was old when it found its way into the garderobe pits. This material should not be described as 'residual' in archaeological terms, rubbish lying around to be incorporated into later deposits. It is there because it had remained long in use. This is demonstrated by the high quality glass and ceramics (the tin-glazed wares and better stoneware), where it is possible to identify items discarded long after they had been made (Figs 34–5).[12] Understandable in the case of items of quality, Venetian glass, for example, or good 'Delft' dishes (comparable things can be found as 'heirlooms' in many a house today), this concept can scarcely be applied to the kitchen earthenware. The problem is so acute with the Nonsuch material as to suggest that in north-east Surrey the present dating of ordinary earthenwares needs revision (Fig. 71). This may be because of slower changes in style and fabric in the kilns serving the market region upon which Nonsuch drew (Figs 69–70), a situation so far unrecognised because no kilns at work in the area in the later seventeenth century have yet been identified, and few closely datable deposits have been found.

What do the Nonsuch garderobes have to tell us about the life-style of the Berkeley occupation? There are obvious limits to the evidence, in part because some things would not have been thrown into the garderobe pits, in part because some materials would not have survived in the physical and chemical environment of the pits. Metal plate would have survived but was not thrown away, partly because it did not break, essentially because it was too valuable and could be recycled. The pewter dishes from the well in Room 24 are an exception to this rule,[13] as are the 'tin-plate' vessels from Garderobe 1.[14] Pewter and tin-plate from the Berkeley occupation would have survived but was not thrown away. Textiles, parchment, paper, wood did not survive; only a little leather was found and that in the well.[15] This is not to say that the objects found were not valuable, only that once broken they had no value. The deposits contained fine glass of the highest quality, some over a century old,[16] some tin-glazed pieces equally old and as good as could be obtained,[17] and much ordinary and a few good pieces of old stoneware.[18] But an enamelled Venetian cup, however treasured, once broken was irreparable.

There was in general very little trace of anything which might have been reused, an indication perhaps of a well-run household. There was plenty of bottle glass, but only a little of it was found in the garderobe deposits, perhaps because wine was decanted into metal vessels before being served.[19] The seals suggest that the bottles came from the cellars of both taverns and gentlemen,[20] but the recovery of most of the bottle glass from the floor of the Great Cellar and from the demolition deposits may suggest that it came mainly from the kitchens and servants' quarters where the wine was decanted before being served in the family apartments.

11. See above, p. 62.
12. See below, p. 479.
13. See above, p. 328–34 (for the pewter), p. 46 (for its context in the well).
14. See above p. 391–3, Nos. **104–11** (for the vessels), pp. 47, 291 n. 21 (for their context in Garderobe 1).
15. Such leather (p. 428–31) and wood (p. 436, 438, Nos. **17, 18, 21**) as there was came mainly from the well.
16. See above, p. 238 ff., nos. **1–7, 72–4, 181–4**, to give only the clearest examples; many of the other glasses were on current views over fifty years old at the time of deposit (cf. p. 52–3, Figs 35–6).
17. See above, p. 72 ff., nos. **5, 58, 91–6, 103–4, 107–8**, to give again only the clearest examples; many of the other tin-glazed vessels were on current views over fifty years old at the time of deposit (cf. p. 52–3, Figs 34, 36).
18. See above, p. 99 ff., nos. **1–6, 62–9**, to give yet again only the clearest examples; many of the other stoneware vessels were on current views over fifty years old at the time of deposit (cf. p. 52–3, Figs 34, 36).
19. For bottle glass from the garderobe deposits, see Concordance I, *passim*; see also Fig. 29 and p. 285–6, Fig. 136, nos. **1–14**.
20. See above, p. 304-8, Fig. 143, nos. **1–10**.

The animal bones offer a clear impression of the meals prepared in the earthenware vessels and eaten from the fine plates and bowls found in the pits.[21] The assemblage recovered, mainly from the garderobe pits (Phase 4) and from the immediately overlying demolition deposits (Phase 5), was very large, about half of which could be identified to species or group level (Tables 80–1), mammal bones accounting for about 80% of the identifiable sample, bird 14%, and fish 5%.

Mutton was the principal meat consumed, particularly chops, breast, and shoulder (Tables 36, 39, 43, 45, 47, 50–1, 57, 60, 67). Joints or sides of beef were prepared elsewhere before reaching the palace, evidence perhaps of the local meat market. Pork and venison were much less important, the relative scarcity of venison (almost exclusively fallow deer) suggesting either that the Little Park was no longer stocked or that the deer were the property of the Duchess of Cleveland and not normally available to the keeper's household.[22] Rabbit, by contrast, was plentiful. Surprisingly, there was relatively little evidence for dog or cat. Perhaps treasured pets were buried in the gardens?

Only a few of the species of bird were significant as food: fowl was a popular dish; goose, duck, and pigeon were also eaten (Tables 37, 44, 48, 52, 58, 61, 68, 80). Many other species were identified. With the exception of owl, woodpecker, jackdaw, and starling), each was represented by relatively few bones and probably reflects the inhabitants of the roofs, turrets, and chimneys. Other species were perhaps taken by hunting, hawking, or trapping, but even swan, partridge, and grouse were uncommon. Turkey was represented only by single bones. There was no sign of peacock.

Fish bones were recovered in some quantity (Tables 38, 49, 53, 59, 69, 80).[23] Most were marine species, such as cod and ling, probably brought to Nonsuch already headed, and pickled, salted, or dried. The plaice, flounder, turbot, and sole, caught in shallow waters or along the shoreline, were also probably available from local fish markets. Sturgeon, then available in the Thames, was also present, as were other marine species, roker, conger eel, whiting, hake, haddock, gurnard, and mullet. Freshwater species – pike, carp, barbel, and chub – could have been kept in fish ponds, but whether ponds were still maintained on the estate, or were commercially operated in the area is unknown.[24]

To return to manufactured objects, the comparative lack of clay pipes in the garderobes is surprising,[25] and may suggest that in the Berkeley years the keeper's rooms were occupied mainly by women and children. There are other hints which could lead to the same conclusion. Although relatively few domestic objects (other than glass and ceramics) were found during the excavations, several may have been associated with women: these include iron patten rings, a type of overshoe worn by women,[26] some of the thirteen double-sided ivory combs,[27] the jewellery pieces,[28] and the cosmetic items.[29] Although totalling only twenty-five items, they form what seems a significant element among the few domestic objects recovered.

21. The discussion which follows is based on the account of the animal bones given by Alison Locker in Chapter 21, above, p. 439–74. The picture drawn is based on the bones recovered from Phases 4 and 5, excluding the Well in Room 24, the soakaways, and Dump 2. The evidence from these excluded deposits and from Phases 1–3 and 6–8 of the palace and from the Banqueting House is given in full in Chapter 23. For the inclusion of bones from Phase 5 as well as from Phase 4, see above, p. 444, 453.
22. The deer shown in the foreground of the painting of Nonsuch from the north-east in the 1670s need be no more than the artist's fancy (*front and back endpapers*).
23. The recovery rate of bird and fish bones remarked upon by Alison Locker (p. 439) was due to the fact that the director and most of the supervisors were then reading Archaeology and Anthropology at Cambridge under the guidance of Professor J.G.D. Clark (author of the then recent *Prehistoric Europe: the Economic Basis)*, Charles McBurney, and Eric Higgs.
24. For further comment on the results from the study of this exceptional collection of animal bones, see Alison Locker's conclusions, above, p. 472–3.
25. For clay pipes from the garderobe deposits, see Concordance I, *passim*, and Concordance III; see also Fig. 30, and p. 322–7, Figs. 144–5, nos. 9, 15, 18, 19.
26. See above, p. 406–7, nos. **209-15**, Fig. 202.
27. See above, p. 421–4, nos.**8-20**, Figs. 210–12.
28. See above, p. 433–4, nos. **11–12**, Figs. 219–20: but note that no. **12** was found not at the palace but at the Banqueting House.
29. See above, p. 434–6, nos. **13–16**.

The written evidence for the Berkeley occupation in the 1680s concerns Elizabeth, Viscountess Dursley, George Berkeley's daughter-in-law.[30] In the second half of 1681, 'a lady', possibly Elizabeth, was reported as going to Nonsuch 'to continue there the winter'; the following year in October, Elizabeth was said to be returning to Nonsuch; and in May 1686 she was writing from Nonsuch. Elizabeth married Charles Berkeley in 1677, their first child was born in 1679, and three more followed during the 1680s. Nonsuch, it seems, may have been the young family's winter house, the home of Elizabeth and her toddlers while her husband, Charles Berkeley, soon to be ambassador to the States of Holland, was setting out on his career at court.

The life of Nonsuch ends on a domestic note, fittingly for a palace, however flamboyant, built long before to celebrate the birth of a long hoped-for heir to the English throne.

30. See above, p. 60–1.

CONCORDANCE 1

THE CONTENTS OF THE MAJOR GROUPS

by Jane Webster

As described on p 70, a computerised database was set up within key artefact categories to collate the contextual information with the dating suggested by the contributors. This information is summarised below.

The data are grouped by site component (eg garderobes, demolition) and presented in phase order. Within each component, the material is grouped by layer, and is sorted on the 'dateto' field, ie the later of the date terms assigned by the contributor (see the Key, below). Within each phase the material is ordered with the latest first. For further information on the phasing assigned to the various site components, see p 12–13. The major groups are listed here in the order shown in Table 1.

Note that for each of the major closed groups (the garderobes, well, great cellar, dumps and soakaways (see Table 1)), the demolition (Phase 5) and fill (Phase 4) material is presented together. This is because in particular in the garderobes the fall of the demolition rubble (Phase 5) onto the soft fill (Phase 4) caused considerable mixing of the layers, with parts of the same vessels being found in both layers. In some cases deposits of fill lodged high in the garderobe shafts seem to have been dislodged in demolition to fall as discrete deposits within the demolition layers. For these reasons, the demolition material *within* each major group (eg garderobe) is presented here immediately above the fill material. This demolition material is *not* repeated in the general listing of the Phase 5 material (p 505–15).

Key to Database Recording Conventions

COMPONENT

The archaeological component/s from which the find is derived. Listed in the heading for each component. All finds with date ranges assigned by contributors occurring in demolition and earlier contexts are recorded. Post-demolition finds are only recorded if they are fragments of vessels recorded in demolition or earlier contexts (whether fitting or not); vessels and other finds occurring wholly in post-demolition contexts are not recorded.

TRENCH

Defined by reference to the site grids, which are explained above on pp 5–9, and in Fig 6, and shown on Figs 5, 8 and and 10.

LAYER

Layer number. Alpha-numeric layer references (eg Layer 2a, 2b) are recorded numerically using a decimal point (2.1 for 2a; 2.2 for 2b, etc).

FINDTYPE

Eight find categories are recorded: tin-glazed ware, stoneware, earthenware, fine vessel glass, green bottle glass, coins and tokens, clay pipes, and pewter.

FIND CATEGORY	DATABASE TERM
Tin-glazed ware	tin-glaze [plus V, F or FS]
Stoneware	stoneware [plus V, F or FS]
Earthenware	earthenware [plus type eg **earthenware31e**]
Fine vessel glass	fineglass [plus glass lot number, eg **fineglass150**]
Green bottle glass	bottle [plus type (I, I/II, II, etc), number of fragments, and glass lot number, eg **bottle II 7 2010**]
Coins and tokens	coin [identified, or plus Jetton or Token where relevant]
Clay pipes	claypipe [plus type,eg **claypipe15**]
Pewter	pewter [plus small find no]

V: Vessel
F: Fragment, fragments, but in a single context
FS: Related fragments in a number of contexts. These are recognised by their shared code number (see CODE, below)

CODE

The means by which to relate database material to the text. Where possible, the number given is the final catalogue number assigned in the relevant report. MULTIPLE ENTRIES OF THE SAME CATALOGUE NUMBER INDICATE FRAGMENTS OCCURRING IN MORE THAN ONE CONTEXT. Thus tin-glaze Code **136** is entered twice, as fragments occur in T7 III 3 and T7 III 5.

In the case of earthenware and clay pipes, which are catalogued by type, it was impossible to follow this system, as each type may subsume more than one example. 'CODE' in these cases is the earthenware or pipe find number, listed under each type grouping in the relevant report and listed against the type numbers in Concordance II and III. For earthenware, the vessel type is also recorded under FINDTYPE (for which see above).

To enable the computerised sorting of database records, it was necessary to assign numeric codes to vessels catalogued alpha-numerically elsewhere. As a general rule, 1 replaces a, 2 replaces b, and so on. Thus fine glass **86a** is coded as 861, and **86b** as 862. Three anomalies should be noted:

earthenware31a	**4000** (for 4B)
earthenware31b.1	**4001** (for 4A)
fineglass1015	**2699** (for 169j)

Code 0 (zero) indicates an uncatalogued find.

DATEFROM/DATETO

The date range assigned by the contributor. It was necessary to systematise the varied terminology used, and the following conventions apply:

TEXT TERMINOLOGY	DATABASE	TERM
	Datefrom	*Dateto*
Seventeenth century	1600	1700
First half seventeenth century	1600	1650
First quarter seventeenth century	1600	1625
Early seventeenth century	1600	1633
Mid seventeenth century	1633	1666
Late seventeenth century	1666	1700
Later seventeenth century	1666	1700
Late sixteenth to early seventeenth century	1566	1633

In those few cases where a year is known (eg for some coins), the same date is recorded in both fields.

(C) = contamination. Note that for Pre-palace and Construction, where the majority of listed finds represent contamination, this convention has been omitted.

FABRIC

Given only for earthenwares. The fabric codes are explained on pp 134-9.

DATABASE ARCHIVE

A master copy of the Nonsuch database is held on disk in the Archive. The software package used is dBase III. The master copy contains additional fields which are not reproduced here. These are named 'phasefrom' and 'phaseto', and give the phasing assigned to the relevant trench/layer for each find. As the material is ordered below by phase, it was not necessary to reproduce these fields here.

Date ranges could not be suggested for a number of catalogued finds within the above categories. This was particularly the case for the earthenwares. Such finds were recorded in the master database (with 'datefrom' and 'dateto' given as 0), but are not reproduced here.

PRE-PALACE, PHASES 1 AND 2*

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
CH II	9.0	fineglass 1053		190	1550	1633
	9.0	fineglass 1054		188	1550	1633
	9.0	fineglass 1055		189	1550	1633
CH VI	5.0	bottle I or II 2 2323		0	1650	1730
CH XI	11.0	stoneware F		0	1600	1700
	11.0	stoneware F		0	1500	1600
	23.0	stoneware F		0	1600	1700
CUD I	24.0	stoneware F		0	1600	1700
Q5	8.0	earthenware130	CSTN	206	1400	1600
	8.0	earthenware130	CSTN	419	1400	1600
	8.0	earthenware CUD10	CHEA	0	1366	1466
	8.0	earthenware CUD11	CHEA	0	1366	1466
	8.0	earthenware CUD12	CHEA	354	1366	1466
	8.0	coin Jetton		311	1366	1433
	10	earthenware CUD14	CHEA	0	1366	1466
Q10 III	3.0	stoneware F		0	1600	1700

* Contamination in all cases, except Q5 8.

CONSTRUCTION (PHASE 3)*

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
Q2	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				88	1566	1633
Q3	3.0	stoneware F				0	1600	1700
Q5	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	6.0	coin Jetton				19	1533	1566
R3 I	8.0	stoneware F				0	1800	1900
T8	3.0	stoneware F				0	1800	1900
	3.0	bottle I or II	3	2101		0	1650	1730
U1	3.0	stoneware F				0	1800	1900
	3.0	bottle I or II	1	2108		0	1650	1730
	4.0	claypipe 6				411	1675	1685
U2	3.0	bottle IV	1	2109		0	1760	1800
	3.0	bottle I or II	1	2109		0	1650	1730
U8	4.0	stoneware F				0	1800	1900
	4.0	stoneware FS				0	1600	1700
	4.0	stoneware FS				47	1650	1675
	4.0	tin-glaze F				18	1633	1666
	4.0	stoneware FS				25	1625	1650
U12	8.1	stoneware F				0	1600	1700
II/IV	8.1	stoneware F				0	1500	1600
	8.1	stoneware F				0	1500	1600
	8.1	stoneware F				0	1500	1600
V14	3.0	bottle II	1	2277		0	1680	1730
	3.0	tin-glaze FS				80	1645	1670
W9	4.0	fineglass 1047				1411	1633	1666
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
W10	3.0	claypipe 6				14	1675	1685
X6	4.0	bottle I or II	10	2194		0	1650	1730
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	claypipe 20–22				230	1670	1690
X9	8.0	earthenware109			BORDG	426	1633	1700

*Contamination in all cases, except Q5 6.

OCCUPATION (PHASE 4)

All occupation material on database derives from sealed (eg garderobe) contexts listed below.

GARDEROBE 1

DEMOLITION GARDEROBE 1 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
U1	6.0	bottle IV	2	2000		0	1750	1800
	6.0	tin-glaze FS				24	1625	1650

FILL GARDEROBE 1 (Phase 4)

No fill

GARDEROBE 2

DEMOLITION GARDEROBE 2 (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W1	5.0	earthenware22a.1	NONA	119	1550	1633
	5.0	fineglass 1012		1485	1550	1633
	5.2	earthenware116c	BORDY	90	1600	1633
	5.2	fineglass 1104		186	1566	1633
	5.2	claypipe 2		21	1615	1625
	5.2	fineglass 1011		98	1500	1600
	5.3	fineglass 1019		1697	1500	1666
	5.3	fineglass 1101		168	1500	1666
	5.3	fineglass 1105		150	1500	1666
	5.3	fineglass 1106		175	1500	1666
	5.3	fineglass 1107		162	1500	1666
	5.3	fineglass 1113		179	1500	1666
	5.3	fineglass 1114		0	1500	1666
	5.3	fineglass 1124		1696	1500	1666
	5.3	fineglass		15	1600	1650
	5.3	fineglass 1110		173	1500	1650
	5.3	tin-glaze		114	1600	1633
	5.3	fineglass 1109		1486	1550	1633
	5.3	fineglass 1108		97	1500	1600

FILL GARDEROBE 2 (Phase 4)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W1	5.1	earthenware99	BORDG	61	1666	1700
	5.1	earthenware99	BORDG	68	1666	1700
	5.1	fineglass		15	1600	1700
	5.1	fineglass 1097		1412	1633	1666
	5.1	fineglass 1089		157	1500	1666
	5.1	fineglass 1095		0	1500	1666
	5.1	fineglass 1109		0	1500	1666
	5.1	fineglass 1090		83	1550	1650
	5.1	fineglass 1103		153	1500	1650
	5.1	fineglass 118		48	1566	1633
	5.1	earthenware22a.1	NONA	119	1550	1633
	5.1	fineglass 1088		144	1550	1633
	5.1	fineglass 1092		144	1550	1633
	5.1	fineglass 1112		1482	1550	1633
	5.1	fineglass 1322		144	1550	1633
	5.1	earthenware72a	NONA	158	1500	1633
	5.1	earthenware72a	NONA	161	1500	1633
	5.1	stoneware FS		8	1550	1600
	5.1	earthenware15a	NOT REC	22	1550	1600

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W1 (cont.)	5.1	stoneware FS		2	1550	1575
	5.4	fineglass 1118		861	1550	1650
	5.4	earthenware22a.1	NONA	119	1550	1633
	5.4	earthenware22c	TUDB	26	1550	1633
	5.4	stoneware FS		7	1550	1600
	5.4	stoneware FS		8	1550	1600
	5.4	stoneware FS		2	1550	1575

GARDEROBE 3

DEMOLITION GARDEROBE 3 (Phase 5)

No fill

FILL GARDEROBE 3 (Phase 4)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W2	5.2	fineglass 1119		199	1600	1700
	5.2	tin-glaze FS		31	1635	1675
	5.2	earthenware51	RBOR	41	1625	1650
	5.2	earthenware116a	BORDY	108	1533	1600
	5.3	tin-glaze FS		6	1650	1700
	5.3	tin-glaze V		83	1650	1700
	5.3	claypipe 15		127	1660	1680
	5.3	claypipe 18		203	1660	1680
	5.3	stoneware F		42	1633	1666
	5.3	earthenware51	RBOR	41	1625	1650
	5.3	fineglass 9430		25	1600	1650
	5.3	earthenware123a	BORDY	69	1600	1633
	5.3	fineglass 115		48	1566	1633
	5.3	fineglass 149		35	1566	1633
	5.3	earthenware116a	BORDY	108	1533	1600
	5.4	tin-glaze V		116	1600	1633
	5.4	fineglass 114		8	1566	1633
	5.4	fineglass 1120		91	1550	1625
	5.4	earthenware116a	BORDY	108	1533	1600

GARDEROBE 4

DEMOLITION GARDEROBE 4 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W4	2.0	bottle II	1	2185		0	1680	1730
II/IV	2.0	bottle I or II	2	2185		0	1650	1730
	2.0	tin-glaze F				88	1650	1700
	2.0	tin-glaze FS				85	1650	1700
	2.0	claypipe 15				129	1660	1680
	2.0	earthenware86a			cfSTBU	57	1650	1675
	2.0	earthenware112a			BORDY	139	1633	1666
	2.0	fineglass 272				21	1600	1650
	2.0	earthenware123b				301	1600	1633
	2.0	tin-glaze FS				111	1600	1633
	2.0	tin-glaze FS				118	1600	1633
	2.0	earthenware23			NONB/PMFR	247	1500	1633
	2.0	stoneware FS				15	1600	1625
	2.0	stoneware FS				16	1600	1625
	3.0	tin-glaze FS				87	1650	1700
	3.0	earthenware86a			cfSTBU	57	1650	1675
	3.0	earthenware112a			BORDY	139	1633	1666
	3.0	fineglass 1022				118	1633	1666
	3.0	fineglass 1024				1698	1500	1666

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
	3.0	fineglass 1021				192	1600	1650
	3.0	tin-glaze FS				111	1600	1633

FILL GARDEROBE 4 (Phase 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W4	3.1	bottle II	1	2003		0	1680	1730
II/IV	3.1	tin-glaze F				86	1650	1700
	3.1	earthenware16a			PMFR	148	1600	1650
	3.1	fineglass 173				59	1600	1650
	3.1	fineglass 59				57	1600	1650
	3.1	tin-glaze FS				111	1600	1633
	4.0	bottle II	1	2007		0	1680	1730
	4.0	earthenware50c			NOT SEEN	439	1700	1720
	4.0	earthenware115			BORDY	140	1633	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	bottle I/II	1	2008		13	1665	1685
	4.0	claypipe 15				130	1660	1680
	4.0	earthenware86a			cfSTBU	57	1650	1675
	4.0	fineglass 1190				140	1650	1675
	4.0	fineglass 1215				126	1650	1675
	4.0	earthenware112a			BORDY	139	1633	1666
	4.0	fineglass 1222				135	1633	1666
	4.0	fineglass 1226				142	1633	1666
	4.0	fineglass 1228				137	1633	1666
	4.0	fineglass 1031				0	1500	1666
	4.0	fineglass 1183				171	1500	1666
	4.0	fineglass 1188				0	1500	1666
	4.0	fineglass 1191				172	1500	1666
	4.0	fineglass 1192				176	1500	1666
	4.0	fineglass 1196				156	1500	1666
	4.0	fineglass 1201				167	1500	1666
	4.0	fineglass 1204				163	1500	1666
	4.0	fineglass 1205				174	1500	1666
	4.0	fineglass 1216				166	1500	1666
	4.0	fineglass 1218				0	1500	1666
	4.0	fineglass 1225				0	1500	1666
	4.0	fineglass 1230				1693	1500	1666
	4.0	fineglass 1231				1692	1500	1666
	4.0	earthenware16a			PMFR	148	1600	1650
	4.0	earthenware32			TUDB	62	1600	1650
	4.0	fineglass 1182				106	1550	1650
	4.0	fineglass 1187				84	1550	1650
	4.0	fineglass 1187				862	1550	1650
	4.0	fineglass 1194				82	1550	1650
	4.0	fineglass 1210				863	1550	1650
	4.0	fineglass 1211				866	1550	1650
	4.0	fineglass 1212				88	1550	1650
	4.0	fineglass 1213				87	1550	1650
	4.0	fineglass 1232				864	1550	1650
	4.0	earthenware15b			TUDB?	1	1566	1633
	4.0	earthenware22a.1			TUDB	2	1550	1633
	4.0	earthenware22a.1			TUDB	11	1550	1633
	4.0	earthenware22a.1			TUDB/CHER	52	1550	1633
	4.0	earthenware22a.2			TUDB/NONA	49	1550	1633
	4.0	earthenware22b			TUDB	15	1550	1633
	4.0	earthenware72a			NOT REC	61	1500	1633
	4.0	earthenware100			BORDG	10	1600	1633
	4.0	fineglass 1193				149	1566	1633
	4.0	fineglass 1199				197	1566	1633
	4.0	fineglass 1221				185	1566	1633
	4.0	fineglass 174				196	1566	1633
	4.0	tin-glaze FS				111	1600	1633
	4.0	tin-glaze FS				118	1600	1633
	4.0	fineglass 1028				99	1550	1633
	4.0	fineglass 1185				100	1550	1633

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W4	4.0	fineglass 1223				1483	1550	1633
II/IV (cont.)	4.0	fineglass 176				187	1550	1633
	4.0	stoneware FS				15	1600	1625
	4.0	earthenware117			BORDY	66	1566	1600
	4.0	earthenware97			BORDY	67	1566	1600
	4.0	fineglass 179				73	1566	1600
	4.0	stoneware FS				3	1550	1575
	4.0	stoneware V				5	1550	1575
	4.0	stoneware V				6	1550	1575
	4.0	earthenware104			BORDG	190	1533	1566
	4.0	fineglass 172				191	1533	1566
	4.0	stoneware V				62	1525	1550
	4.1	claypipe 18				204	1660	1680
	4.1	earthenware22a.1			TUDB/CHER	52	1550	1633
	4.1	earthenware72b			NONA	145	1500	1633
	4.1	earthenware100			BORDG	10	1600	1633
	4.1	stoneware FS				17	1600	1625
	4.1	stoneware FS				1	1550	1575
	4.2	bottle II	1	2005		10	1680	1730
	4.2	earthenware115			BORDY	140	1633	1700
	4.2	claypipe 20–22				225	1670	1690
	4.2	bottle I	1	2006		0	1650	1680
	4.2	earthenware112a			BORDY	139	1633	1666
	4.2	earthenware16a			PMFR	148	1600	1650
	4.2	earthenware72b			NONA	145	1500	1633
	4.3	earthenware112a			BORDY	139	1633	1666
	4.3	fineglass 1027				133	1633	1666
	4.3	fineglass 155				63	1600	1650
	4.3	fineglass 1029				85	1550	1650
	4.3	earthenware22a.2			TUDB/NONA	49	1550	1633
	4.3	tin-glaze V				58	1550	1600
	6.0	fineglass 1227				145	1550	1633

GARDEROBE 5

DEMOLITION GARDEROBE 5 (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W5ext	2.2	tin-glaze FS		146	1666	1733
	2.2	tin-glaze FS		8	1600	1700
	2.2	tin-glaze FS		70	1645	1670

FILL GARDEROBE 5 (Phase 4)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W5ext	0.0	earthenware79	TUDB/CHER	177	1500	1633
	2.3	stoneware F		0	1600	1700
	2.3	earthenware37d	PMFR	175	1660	1680
	2.3	fineglass 1016		177	1500	1666
	2.3	fineglass 1135		160	1500	1666
	2.3	fineglass 157		60	1566	1650
	2.3	fineglass 161		52	1566	1633
	2.4	stoneware V		4	1550	1575
	2.4	earthenware99	BORDG	71	1666	1700
	2.4	fineglass 1140		39	1566	1700
	2.4	stoneware F		0	1600	1700
	2.4	stoneware F		0	1600	1700
	2.4	earthenware37c	PMFR	116	1660	1680
	2.4	earthenware37d	PMFR	175	1660	1680

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W5ext	2.4	bottle case	1	2013		731	1600	1675
(cont.)	2.4	fineglass 1138				154	1500	1666
	2.4	fineglass 1143				0	1500	1666
	2.4	fineglass 1144				178	1500	1666
	2.4	fineglass 1144				1801	1500	1666
	2.4	fineglass 1148				1694	1500	1666
	2.4	fineglass 1149				1802	1500	1666
	2.4	fineglass 155				37	1600	1650
	2.4	earthenware22a.1			GUYS	114	1550	1633
	2.4	fineglass 156				36	1600	1633
	2.4	fineglass 162				39	1566	1633
	2.4	fineglass 1142				93	1550	1625
	2.4	fineglass 1143				92	1550	1625
	2.4	earthenware25			RBOR?	75	1566	1600
	2.4	fineglass 4				4	1566	1600
	2.4	earthenware108			BORDG	180	1533	1566
	2.4	tin-glaze FS				108	1533	1566
	2.4	fineglass 162				3	1500	1533
	3.0	earthenware37d			PMFR	175	1660	1680
	3.0	earthenware38b			PMCR	178	1660	1680
	3.0	fineglass 9409				3	1500	1533
	5.0	tin-glaze F				65	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	fineglass 9410				2	1500	1533

GARDEROBE 6

DEMOLITION GARDEROBE 6 (Phase 5)

No finds on Database

FILL GARDEROBE 6 (Phase 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W8	3.0	bottle I	3	2013		0	1680	1730
	3.0	bottle I or II	37	2014		0	1650	1730
	3.0	bottle I or II	37	2016		0	1650	1730
	3.0	bottle II	1	2015		9	1680	1730
	3.0	bottle II	1	2015		11	1680	1730
	3.0	bottle II	1	2015		12	1680	1730
	3.0	bottle II	1	2017		0	1680	1730
	3.0	bottle II	1	2018		0	1680	1730
	3.0	bottle II	2	2020		0	1680	1730
	3.0	bottle II	7	2015		0	1680	1730
	3.0	fineglass 1165				101	1500	1700
	3.0	fineglass 1170				102	1500	1700
	3.0	bottle I/II	1	2015		2	1665	1685
	3.0	bottle I/II	1	2015		7	1665	1685
	3.0	bottle I/II	1	2015		14	1665	1685
	3.0	bottle I/II	1	2016		5	1665	1685
	3.0	bottle I	1	2016		0	1650	1680
	3.0	bottle case	1	2015		732	1600	1675
	3.0	fineglass 1161				0	1500	1666
	3.0	fineglass 1162				164	1500	1666
	3.0	fineglass 1163				1806	1500	1666
	3.0	fineglass 1166				1413	1633	1666
	3.0	fineglass 1169				0	1500	1666
	3.0	fineglass 1168				904	1550	1650
	3.0	earthenware79			NOT SEEN	160	1500	1633
	5.0	earthenware37c			PMFR	116	1660	1680

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W8 (cont.)	6.0	fineglass 1173		105	1500	1700
	6.0	fineglass 1171		152	1500	1666
	6.0	earthenware79	NOT SEEN	160	1500	1633
	11.0	fineglass 1175		104	1500	1633

*FILL GARDEROBE 6/7 (Phase 4)**

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
	3.0	claypipe 20–22		226	1670	1690
	6.0	fineglass 1172		1803	1500	1666
	6.0	fineglass 1174		1695	1500	1666

*Due to recording error, these finds could be from the fill of either Garderobe 6 or 7.

GARDEROBE 7

DEMOLITION GARDEROBE 7 (Phase 5)

No finds on Database

FILL GARDEROBE 7 (Phase 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W8	2.0	bottle I or II	2	2021		0	1650	1730
	3.0	earthenware37c			PMFR	116	1660	1680
	5.0	earthenware99			BORDG	48	1666	1700
	5.0	fineglass 1181				0	1500	1666
	5.0	fineglass 1176				81	1550	1650
	5.0	fineglass 1178				901	1550	1650
	5.0	coin Jetton				17	1533	1559

GARDEROBE 8

DEMOLITION GARDEROBE 8 (Phase 5)

No finds on Database

FILL GARDEROBE 8 (Phase 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
V7	6.1	bottle I or II	31	2011		0	1650	1730
	6.1	bottle I or II	7	2010		0	1650	1730
	6.1	earthenware112c			BORDY	74	1633	1700
	6.1	stoneware F				0	1600	1700
	6.1	earthenware25			RBOR?	75	1566	1600

GARDEROBE 9

DEMOLITION GARDEROBE 9 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
U7	2.0	stoneware F				0	1800	1900 (C)
	2.0	stoneware F				0	1700	1800 (C)
	2.0	bottle I or II	51	2114		0	1650	1730
	2.0	bottle II	1	2114		0	1680	1730
	2.0	bottle II	4	2114		0	1680	1730
	2.0	fineglass 1071				200	1600	1700
	2.0	tin-glaze FS				32	1650	1700
	2.0	bottle I/II	1	2114		31	1665	1685
	2.0	bottle I/II	1	2115		30	1665	1685
	2.0	bottle I/II	1	2116		28	1665	1685
	2.0	bottle I/II	1	2117		29	1665	1685
	2.0	claypipe 13				57	1666	1685

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
U7 (cont.)	2.0	claypipe 13		60	1666	1685
	2.0	claypipe 15		109	1660	1680
	2.0	claypipe 15		110	1660	1680
	2.0	claypipe 15		111	1660	1680
	2.0	claypipe 15		112	1660	1680
	2.0	fineglass 1069		122	1650	1675
	2.0	fineglass 1070		158	1500	1666
	2.0	fineglass 1319		116	1566	1666
	2.0	tin-glaze FS		18	1633	1666
	2.0	claypipe 9		33	1655	1665
	2.0	claypipe 13		56	1640	1660
	2.0	claypipe 13		58	1640	1660
	2.0	claypipe 13		59	1640	1660
	2.0	claypipe cf 18		74	1650	1660
	2.0	claypipe 10/11		21	1640	1650
	2.0	claypipe 10/11		23	1640	1650
	2.0	fineglass 138		51	1600	1650
	2.0	fineglass 141		65	1600	1650
	2.0	earthenware86b	PMCR	455	1600	1633
	2.0	fineglass 135		10	1566	1633

FILL GARDEROBE 9 (Phase 4)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
U7	8.0	earthenware98	BORDG	458	1666	1733
	8.0	stoneware F		0	1600	1700
	8.0	tin-glaze F		32	1650	1700
	8.0	bottle I/II 1 2001		3	1665	1685
	8.0	claypipe 6		8	1675	1685
	8.0	claypipe 15		113	1660	1680
	8.0	claypipe 15		114	1660	1680
	8.0	earthenware44b.1	PMFR	134	1660	1680
	8.0	earthenware44b.2	NOT SEEN	437	1660	1680
	8.0	earthenware44b.2	PMFR	138	1660	1680
	8.0	earthenware74	PMFR	91	1660	1680
	8.0	bottle case 1 2001		733	1600	1675
	8.0	earthenware86a	NOT REC	93	1650	1675
	8.0	earthenware46b	PMBL?	135	1633	1666
	8.0	fineglass 1085		117	1566	1666
	8.0	fineglass 1086		1691	1500	1666
	8.0	tin-glaze FS		18	1633	1666
	8.0	claypipe 9		34	1655	1665
	8.0	claypipe 9		35	1655	1665
	8.0	claypipe 9		36	1655	1665
	8.0	claypipe 9		37	1655	1665
	8.0	claypipe cf 18		75	1650	1660
	8.0	claypipe cf 18		76	1650	1660
	8.0	claypipe 10/11		22	1640	1650
	8.0	claypipe 10/11		24	1640	1650
	8.0	fineglass 1082		902	1550	1650
	8.0	tin-glaze FS		124	1600	1650
	8.0	tin-glaze V		123	1625	1650
	8.0	fineglass 1077		198	1566	1633
	8.0	fineglass 136		10	1566	1633
	8.0	fineglass 139		40	1566	1633
	8.0	fineglass 140		40	1566	1633

GARDEROBE 10

No finds on Database

GARDEROBE 11

DEMOLITION GARDEROBE 11 (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W12/13	7.0	earthenware86a	RBOR	170	1650	1675
	7.0	earthenware121	BORDY	271	1600	1633

FILL GARDEROBE 11 (Phase 4)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W12/13	8.0	tin-glaze V		139	1666	1733
	8.0	bottle I or II 2 2022		0	1650	1730
	8.0	earthenware50a	PMCR?	171	1700	1720
	8.0	stoneware F		0	1600	1700
	8.0	stoneware F		0	1600	1700
	8.0	stoneware F		0	1600	1700
	8.0	stoneware F		0	1600	1700
	8.0	claypipe 15		136	1660	1680
	8.0	earthenware86a	RBOR	170	1650	1675
	8.0	fineglass 1259		121	1650	1675
	8.0	fineglass 1256		170	1500	1666
	8.0	fineglass 1257		161	1500	1666
	8.0	fineglass 1260		0	1500	1666
	8.0	fineglass 1261		114	1566	1666
	8.0	fineglass 1263		0	1500	1666
	8.0	claypipe 9		40	1655	1665
	8.0	claypipe 9		41	1655	1665
	8.0	claypipe 9		42	1655	1665
	8.0	earthenware15a	TUDB	129	1550	1600
	8.0	pewter 312		3	1566	1600

GARDEROBE 12

DEMOLITION GARDEROBE 12 (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
X15	3.0	pewter 90		12	1590	1610
	3.0	tin-glaze FS		103	1550	1600
	8.0	earthenware116d	BORDY	465	1600	1666
	8.0	tin-glaze FS		103	1550	1600
	8.0	earthenware82	NOT REC	213	1500	1633

FILL GARDEROBE 12 (Phase 4)

No fill

GARDEROBES 13 and 14

No finds on Database

GARDEROBE 15

DEMOLITION GARDEROBE 15 (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
U14	8.0	stonewareF		0	1800	1900 (C)
	8.0	earthenware72a	TUDB	81	1500	1633

FILL GARDEROBE 15 (Phase 4)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
U14	9.0	earthenware72a	TUDB	81	1500	1633

GARDEROBE 16

Not excavated

GARDEROBE 17

DEMOLITION GARDEROBE 17 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
S14	4.0	stoneware F				0	1600	1700
III	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700

FILL GARDEROBE 17 (Phase 4)

No fill

GARDEROBE 18

DEMOLITION GARDEROBE 18 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
R14 II/IV	4.0	stoneware F				0	1600	1700

FILL GARDEROBE 18 (Phase 4)

No fill

GARDEROBE 19

DEMOLITION GARDEROBE 19 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
P/Q 15/16	15.0	stoneware FS				0	1600	1700

FILL GARDEROBE 19 (Phase 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
P/Q	16.0	bottle I or II	4	2032		0	1650	1730
15/16	16.0	stoneware F				0	1600	1700
	16.0	stoneware F				0	1600	1700
	16.0	stoneware F				0	1600	1700
	16.0	stoneware F				0	1600	1700
	16.0	stoneware F				0	1600	1700
	16.0	stoneware F				0	1600	1700
	16.0	stoneware F				0	1600	1700
	16.0	bottle I/II	1	2032		6	1665	1685
	16.0	claypipe 13				53	1666	1685
	16.0	claypipe 6				6	1675	1685
	16.0	bottle I	1	4		4	1650	1680
	16.0	bottle I	1	2032		0	1650	1680
	16.0	earthenware116d			BORDY	163	1600	1666
	16.0	fineglass 1251				112	1566	1666
	16.0	stoneware F				43	1633	1666
	16.0	claypipe 9				27	1655	1665
	16.0	fineglass 1249				89	1550	1650
	16.0	fineglass 181				16	1600	1650
	16.0	fineglass 183				38	1600	1650
	16.0	fineglass 230				17	1600	1650
	16.0	stoneware V				18	1600	1650
	16.0	tin-glaze V				122	1625	1650
	16.0	fineglass 185				75	1566	1633
	16.0	fineglass 186				33	1566	1633

GARDEROBE 20 (PHASE 5)

DEMOLITION GARDEROBE 20 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
Q13 I	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1500	1600

FILL GARDEROBE 20 (Phase 4)

No fill

GARDEROBE 21

DEMOLITION GARDEROBE 21 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
Q10 III	4.0	stoneware F				0	1600	1700

FILL GARDEROBE 21 (Phase 4)

No fill

GARDEROBES 22–24

No finds on Database

GARDEROBE 25

Robbed out

GARDEROBE 26

DEMOLTION GARDEROBE 26 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
T7 III	2.0	earthenware118			BORDY	276	1633	1700
	2.0	bottle case	2	2096		73	1600	1700
	2.0	claypipe 9				31	1655	1665

FILL GARDEROBE 26 (Phase 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
T7 III	3.0	bottle IV	3	2353		0	1760	1800
	3.0	earthenware98			BORDG	29	1666	1733
	3.0	earthenware98			BORDG	30	1666	1733
	3.0	earthenware98			BORDG	31	1666	1733
	3.0	tin-glaze FS				136	1666	1733
	3.0	tin-glaze V				137	1666	1733
	3.0	tin-glaze FS				47	1660	1730
	3.0	earthenware105			BORDG	235	1600	1700
	3.0	earthenware118			BORDY	276	1633	1700
	3.0	tin-glaze F				130	1650	1700
	3.0	claypipe 13				54	1666	1685
	3.0	bottle I	1	2353		0	1650	1680
	3.0	bottle I	1	2353		1	1650	1680
	3.0	bottle case	1	2030		73	1600	1675
	3.0	tin-glaze V				46	1660	1670
	3.0	fineglass 151				68	1633	1666
	3.0	tin-glaze FS				36	1633	1666
	3.0	claypipe 9				32	1655	1665

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
T7 III	3.0	tin-glaze FS				38	1630	1660
(cont.)	3.0	tin-glaze FS				1	1650	1650
	3.0	earthenware54			PMFR	101	1625	1650
	3.0	fineglass 149				41	1625	1650
	3.0	fineglass 152				67	1625	1650
	3.0	earthenware116c			BORDY	99	1600	1633
	3.0	fineglass 150				66	1566	1633
	3.0	fineglass 1067				1481	1550	1633
	3.0	tin-glaze FS				110	1600	1633
	3.0	fineglass 148				11	1590	1610
	4.0	tin-glaze FS				110	1600	1633
	5.0	tin-glaze FS				136	1666	1733
	5.0	earthenware71			NONA	182	1500	1633

GARDEROBES 27–30

Robbed out

GARDEROBE 31

DEMOLITION GARDEROBE 31 (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
S1	11.0	tin-glaze V				134	1666	1733
	11.0	bottle II	1	2082		58	1680	1730
	11.0	bottle II	2	2082		0	1680	1730
	11.0	bottle I or II	9	2082		0	1650	1730
	11.0	earthenware50b			PMFR	107	1700	1720
	11.0	earthenware68			RBOR	299	1633	1700
	11.0	earthenware101			BORDG	400	1600	1700
	11.0	bottle I/II	1	2082		57	1665	1685
	11.0	bottle I/II	1	2082		66	1665	1685
	11.0	claypipe 15				107	1660	1680
	11.0	earthenware44a			PMFR	97	1660	1680
	11.0	fineglass 1062				138	1650	1675
	11.0	stoneware F				44	1650	1675
	11.0	earthenware55			RBOR	293	1625	1650
	11.0	stoneware FS				22	1625	1650
	11.0	tin-glaze FS				133	1625	1650

FILL GARDEROBE 31 (Phase 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
S1	12.0	bottle II	1	2026		0	1680	1730
	12.0	earthenware50b			PMFR	107	1700	1720
	12.0	earthenware68			RBOR	187	1633	1700
	12.0	stoneware FS				0	1600	1700
	12.0	claypipe 15				106	1660	1680
	12.0	claypipe 15				108	1660	1680
	12.0	earthenware38c			PMFR	270	1660	1680
	12.0	stoneware FS				44	1650	1675
	12.0	earthenware7			METS	236	1671	1671
	12.0	claypipe 9				28	1655	1665
	12.0	earthenware55			RBOR	293	1625	1650
	12.0	stoneware FS				22	1625	1650
	12.0	tin-glaze FS				133	1625	1650
	12.0	tin-glaze FS				109	1566	1633
	12.0	earthenware116c			BORDY	102	1600	1633
	12.0	earthenware24			NONB/PMFR	133	1500	1633
	13.0	bottle II	1	2025		0	1680	1730

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
S1 (cont.)	13.0	earthenware101	BORDG	400	1600	1700
	13.0	earthenware38c	PMFR	270	1660	1680
	13.0	earthenware86c	NOT REC	344	1650	1675
	13.0	stoneware FS		44	1650	1675
	13.0	earthenware7	METS	236	1671	1671
	13.0	claypipe 9		29	1655	1665
	13.0	fineglass 1095		0	1500	1666
	13.0	fineglass 130		151	1500	1666
	13.0	stoneware FS		22	1625	1650
	13.0	tin-glaze FS		133	1625	1650
	13.0	earthenware116c	BORDY	102	1600	1633
	13.0	fineglass 132		53	1566	1633
	13.0	tin-glaze FS		109	1566	1633
	13.0	fineglass 131		72	1500	1533
	14.0	bottle I or II 12 2027		0	1650	1730
	14.0	earthenware68	RBOR	187	1633	1700
	14.0	tin-glaze FS		3	1685	1695
	14.0	tin-glaze FS		21	1675	1690
	14.0	earthenware38c	PMFR	270	1660	1680
	14.0	fineglass 133		46	1660	1680
	14.0	earthenware7	METS	236	1671	1671
	14.0	tin-glaze F		42	1633	1666
	14.0	fineglass 239		50	1600	1650
	14.0	earthenware116c	BORDY	102	1600	1633

WELL IN ROOM 24

DEMOLITION WELL (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
Y4	27.0	stoneware F		0	1600	1700
	27.0	earthenware129.1	CTSN	401	1400	1600
	29.0	bottle II 1 2237		0	1680	1730
	29.0	claypipe 15		193	1660	1680
	29.0	claypipe 15		194	1660	1680
	30.0	bottle I or II 2 2228		0	1650	1730
	31.0	bottle I 1 2229		0	1650	1680
	31.0	earthenware86c	NOT REC	238	1650	1675

FILL WELL (Phase 4)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
Y4	32.0	bottle I or II 47 2023		0	1650	1730
	32.0	bottle II 2 2023		0	1680	1730
	32.0	earthenware66	RBOR	243	1633	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700
	32.0	stoneware F		0	1600	1700

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
Y4 (cont.)	32.0	stoneware F				0	1600	1700
	32.0	stoneware F				0	1600	1700
	32.0	stoneware F				0	1600	1700
	32.0	stoneware F				0	1600	1700
	32.0	stoneware F				0	1600	1700
	32.0	bottle I/II	1	2023		8	1665	1685
	32.0	earthenware16a			PMFR	148	1600	1650
	32.0	stoneware FS				23	1625	1650
	32.0	stoneware FS				24	1625	1650
	32.0	stoneware FS				26	1625	1650
	32.0	stoneware F				67	1550	1575
	32.0	stoneware F				68	1550	1575
	33.0	earthenware46a.2			PMBL	86	1600	1666
	33.0	pewter 315				5	1580	1625
	33.0	pewter 319				9	1566	1609
	33.0	pewter 317				7	1566	1600
	33.0	pewter 320				10	1566	1586
	34.0	stoneware F				0	1600	1700
	34.0	claypipe 6				18	1675	1685
	34.0	fineglass 166				193	1625	1675
	34.0	earthenware46a.1			PMBL	85	1600	1666
	34.0	earthenware46a.2			PMBL	86	1600	1666
	34.0	fineglass 169				22	1600	1650
	34.0	fineglass 165				9	1566	1633
	34.0	fineglass 1236				183	1550	1600
	34.0	fineglass 1239				184	1550	1600
	34.0	pewter 314				2	1566	1600
	34.0	pewter 321				1	1566	1579
	34.0	fineglass 1235				181	1533	1566
	34.0	fineglass 1240				181	1533	1566
	35.0	fineglass 1242				194	1625	1675
	35.0	fineglass 1245				195	1625	1675
	35.0	fineglass 1248				193	1625	1675
	35.0	earthenware46a.1			PMBL	85	1600	1666
	35.0	pewter 313				4	1566	1633
	35.0	pewter 318				8	1566	1609
	35.0	fineglass 1236				183	1550	1600
	35.0	fineglass 1237				182	1550	1600
	35.0	fineglass 1246				184	1550	1600
	35.0	pewter 316				6	1566	1600
	35.0	fineglass 1241				181	1533	1566
	35.0	fineglass 1243				181	1533	1566
	35.0	fineglass 1247				181	1533	1566
	36.0	pewter 395				11	1500	1550

GREAT CELLAR (ROOM 34)

DEMOLITION GREAT CELLAR (Phase 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
U8	2.0	bottle I or II	1	2124		0	1650	1730
II/IV	2.0	claypipe 20–22				217	1670	1690
	2.0	earthenware86b			PMFR	453	1600	1633
	2.1	stoneware F				0	1800	1900 (C)
	2.1	bottle I or II	14	2126		0	1650	1730
	2.1	bottle I or II	24	2125		0	1650	1730
	2.1	bottle II	1	2126		33	1680	1730
	2.1	bottle II	4	2126		0	1680	1730
	2.1	stoneware F				0	1600	1700
	2.1	stoneware F				0	1600	1700
	2.1	stoneware F				0	1600	1700
	2.1	tin-glaze FS				33	1650	1700

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
U8	2.1	claypipe 20–22				218	1670	1690
II/IV	2.1	claypipe 20–22				219	1670	1690
(cont.)	2.1	claypipe 15				115	1660	1680
	2.1	claypipe 15				116	1660	1680
	2.1	claypipe 15				117	1660	1680
	2.1	claypipe 15				118	1660	1680
	2.1	earthenware116d			BORDY	465	1600	1666
	2.1	earthenware16a			PMFR	148	1600	1650
	2.1	coin Jetton				18	1533	1566
V8	3.0	bottle I or II	20	2142		0	1650	1730
	3.0	bottle II	1	2142		32	1680	1730
	3.0	bottle II	1	2142		34	1680	1730
	3.0	bottle II	7	2142		0	1680	1730
	3.0	claypipe 20				221	1670	1690
	3.0	claypipe 20				222	1670	1690
	3.0	claypipe 20				223	1670	1690
	3.0	stoneware FS				25	1625	1650
	5.0	fineglass 1060				155	1500	1666
	5.0	earthenware38b			PMCR	208	1600	1650
	5.0	fineglass 1059				867	1550	1650
	5.1	earthenware38b			PMCR	178	1660	1680
	5.1	earthenware46a.1			PMBL	207	1600	1666
	5.1	earthenware38b			PMCR	208	1600	1650
	5.1	tin-glaze FS				108	1533	1566
W8	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	claypipe 15				134	1660	1680
	3.0	claypipe 15				138	1660	1680
	3.0	stoneware F				32	1625	1675
	3.0	stoneware F				33	1625	1675
	3.0	stoneware FS				48	1650	1675
	3.0	stoneware V				49	1650	1675
	3.0	claypipe 9				38	1655	1665
	3.0	earthenware16a			PMFR	148	1600	1650
	3.0	stoneware FS				25	1625	1650
	3.0	stoneware FS				26	1625	1650
	3.0	coin Jetton				20	1580	1590
	3.0	stoneware F				65	1550	1575

FILL GREAT CELLAR (Phase 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
U8	2.2	bottle I or II	92	2127		0	1650	1730
	2.2	bottle II	7	2127		0	1680	1730
	2.2	stoneware F				0	1600	1700
	2.2	stoneware F				0	1600	1700
	3.0	bottle I or II	14	2036		0	1650	1730
	3.0	bottle I or II	72	2128		0	1650	1730
	3.0	bottle II	1	2036		22	1680	1730

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
U8 (cont.)	3.0	bottle II	1	2038		0	1680	1730
	3.0	bottle II	1	2936		25	1680	1730
	3.0	bottle II	3	2036		0	1680	1730
	3.0	bottle II	6	2128		0	1680	1730
	3.0	bottle II	7	2037		0	1680	1730
	3.0	tin-glaze F				50	1660	1730
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	tin-glaze FS				33	1650	1700
	3.0	bottle I/II	1	2037		16	1665	1685
	3.0	bottle I/II	1	2037		20	1665	1685
	3.0	claypipe 6				9	1675	1685
	3.0	claypipe 6				10	1675	1685
	3.0	bottle I	2	2037		0	1650	1680
	3.0	claypipe 15				119	1660	1680
	3.0	fineglass 102				42	1533	1666
	3.0	coin Token				35	1665	1665
	3.0	fineglass 104				56	1600	1650
	3.0	stoneware FS				23	1625	1650
	3.0	stoneware FS				24	1625	1650
	3.0	fineglass 101				47	1566	1633
	3.0	stoneware FS				14	1600	1625
	3.0	stoneware FS				1	1550	1575
	3.0	coin Roman				24	175	200
V8	4.0	bottle I or II	1	2040		0	1650	1730
	4.0	bottle I or II	21	2035		0	1650	1730
	4.0	bottle II	1	2035		21	1680	1730
	4.0	bottle II	9	2035		0	1680	1730
	4.0	claypipe 20–22				224	1670	1690
	4.0	claypipe 15				126	1660	1680
	6.0	bottle I or II	7	2042		0	1650	1730
W8	7.0	bottle II	1	15		26	1680	1730
	7.0	bottle II	1	18		24	1680	1730
	7.0	earthenware116b			BORDY	173	1633	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W8 (cont.)	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700
	7.0	stoneware F		0	1600	1700

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W8 (cont.)	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				59	1600	1700
	7.0	bottle I/II	1	13		15	1665	1685
	7.0	bottle I/II	1	13		19	1665	1685
	7.0	bottle I/II	1	16		18	1665	1685
	7.0	bottle I/II	1	18		17	1665	1685
	7.0	claypipe 6				12	1675	1685
	7.0	claypipe 6				13	1675	1685
	7.0	claypipe 15				135	1660	1680
	7.0	stoneware F				50	1650	1675
	7.0	stoneware F				51	1650	1675
	7.0	stoneware F				52	1650	1675
	7.0	stoneware F				53	1650	1675
	7.0	stoneware F				55	1650	1675
	7.0	stoneware FS				47	1650	1675
	7.0	stoneware FS				48	1650	1675
	7.0	stoneware FS				54	1650	1675
	7.0	fineglass 111				42	1533	1666
	7.0	claypipe 9				39	1655	1665
	7.0	coin Token				34	1665	1665
	7.0	earthenware16a			PMFR	148	1600	1650
	7.0	fineglass 107				49	1600	1650
	7.0	stoneware F				19	1600	1650
	7.0	stoneware F				20	1600	1650
	7.0	stoneware FS				23	1625	1650
	7.0	stoneware FS				24	1625	1650
	7.0	stoneware FS				26	1625	1650
	7.0	fineglass 108				55	1566	1633
	7.0	stoneware FS				14	1600	1625
	7.0	stoneware F				90	1600	1609
	7.0	stoneware F				0	1500	1600
	7.0	stoneware F				0	1500	1600
	7.0	stoneware F				10	1500	1600
	8.0	bottle I or II	4	2041		0	1650	1730
	8.0	bottle I or II	9	2039		0	1650	1730
	8.0	bottle II	1	2039		23	1680	1730
	8.0	bottle II	2	2039		0	1680	1730
	8.0	stoneware F				0	1600	1700
	8.0	stoneware F				0	1600	1700
	8.0	stoneware F				0	1600	1700
	8.0	stoneware F				0	1600	1700
	8.0	stoneware F				0	1600	1700
	8.0	stoneware F				0	1600	1700
	8.0	stoneware F				0	1600	1700
	8.0	stoneware FS				47	1650	1675

DUMP 1

DEMOLITION DUMP 1 (Phase 5)

TRENCH	LAYER	FINDTYPE		FABRIC	CODE	DATEFROM	DATETO
W5	4.0	fineglass 127			71	1566	1733
	4.0	bottle I or II 1	2012		0	1650	1730
	4.0	earthenware34c		NONA	115	1633	1700
	4.0	stoneware F			0	1600	1700
	4.0	tin-glaze FS			8	1600	1700
	4.0	claypipe 15			133	1660	1680
	4.0	earthenware37d		PMFR	175	1660	1680
	4.0	fineglass 126			44	1660	1680
	4.0	fineglass 1122			128	1650	1675
	4.0	earthenware112d		BORDY	192	1600	1666
	4.0	fineglass 1121			1804	1500	1666
	4.0	fineglass 1123			1699	1500	1666
	4.0	earthenware38b		PMCR	208	1600	1650
	4.0	fineglass 1134			865	1550	1650
	4.0	fineglass 1134			903	1550	1650
	4.0	earthenware79		TUDB/CHER	177	1500	1633
	4.0	fineglass 123			6	1500	1600
	4.0	earthenware108		BORDG	180	1533	1566
	4.0	tin-glaze FS			108	1533	1566
	4.0	fineglass 9411			1	1500	1533
	4.1	earthenware34c		NONA	115	1633	1700
	4.1	earthenware37d		PMFR	175	1660	1680
	4.1	earthenware72a		NONA	294	1500	1633
	4.1	earthenware80		TUDB	375	1500	1633
	4.1	fineglass 1129			146	1550	1633
	4.1	tin-glaze FS			108	1533	1566

FILL DUMP 1 (Phase 4)

Does not exist

DUMP 2

DEMOLITION DUMP 2 (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
X14	4.0	earthenware112b	BORDY	418	1633	1700
	4.0	claypipe 136		5	1666	1685
	4.0	claypipe 151		87	1660	1680
	4.0	earthenware74	NOT REC	358	1660	1680
	4.0	claypipe 10/11		26	1640	1650
	4.1	stoneware F		0	1600	1700
	4.1	stoneware F		0	1600	1700
	4.1	stoneware F		0	1600	1700
	4.1	stoneware F		0	1600	1700
	4.1	stoneware F		0	1600	1700
	4.1	stoneware F		0	1600	1700
	4.1	stoneware F		0	1600	1700
	4.1	stoneware F		0	1600	1700
	4.1	fineglass 9		130	1633	1666
	4.1	stoneware F		21	1600	1650
X15	9.0	stoneware F		0	1600	1700
	10.0	stoneware F		0	1600	1700
	10.0	stoneware F		0	1600	1700
	10.0	stoneware F		0	1600	1700
	10.0	claypipe 20–22		233	1670	1690
	10.0	fineglass 82		12	1566	1633
	10.0	tin-glaze F		101	1600	1633
	10.0	tin-glaze FS		103	1550	1600

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
X15 (cont.)	10.0	tin-glaze FS		5	1525	1550
	10.1	bottle I or II 1 2048		0	1650	1730
	10.1	earthenware110	BORDG	427	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		0	1600	1700
	10.1	stoneware F		35	1625	1675
	10.1	stoneware F		36	1625	1675
	10.1	earthenware48a	PMCR	106	1566	1666
	10.1	stoneware F		21	1600	1650
	10.1	stoneware F		27	1625	1650
	10.1	stoneware F		28	1625	1650
	10.1	coin Charles		I5	1636	1644
	10.2	stoneware F		0	1600	1700
	10.2	stoneware F		0	1600	1700
	10.2	earthenware48a	PMCR	106	1566	1666

FILL DUMP 2 (Phase 4)

Does not exist

SOAKAWAY A

No finds on Database

SOAKAWAY B

DEMOLITION SOAKAWAY B (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W13	8.0	fineglass 85		13	1566	1633
	8.0	tin-glaze F		100	1600	1633

FILL SOAKAWAY B (Phase 4)

No fill

SOAKAWAY C

DEMOLITION SOAKAWAY C (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
W15	5.0	tin-glazeFS		34	1625	1675

FILL SOAKAWAY C (Phase 4)

No fill

SOAKAWAY D

DEMOLITION SOAKAWAY D (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
T15	3.0	tin-glaze FS		84	1650	1700
T15 IV	2.4	tin-glaze FS		84	1650	1700

FILL SOAKAWAY D (Phase 4)

No fill

SOAKAWAY E–F

No finds on database

SOAKAWAY G

DEMOLITION SOAKAWAY G (Phase 5)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
Q14	5.0	tin-glaze F		142	1700	1750 (C)
III	5.0	bottle I or II 3 2256		0	1650	1730
	5.0	tin-glaze F		49	1660	1730
	5.0	earthenware48c	PMCR	126	1650	1720
	5.0	earthenware50c	PMFR	311	1700	1720
	5.0	earthenware50c	PMFR	314	1700	1720
	5.0	earthenware110	BORDG	427	1600	1700
	5.0	tin-glaze F		7	1600	1700
	5.0	tin-glaze F		105	1650	1700
	5.0	earthenware39	STBU	318	1660	1690
	5.0	tin-glaze FS		28	1675	1685
	5.0	tin-glaze FS		60	1650	1685
	5.0	bottle case 1 2256		735	1600	1675
	5.0	earthenware103	BORDG	204	1600	1666
	5.0	fineglass 89		69	1633	1666
	5.0	tin-glaze F		129	1633	1666
	5.0	coin Token		28	1650	1650
	5.0	earthenware35	NOT REC	214	1600	1650
	5.0	fineglass 199		64	1566	1650
	5.0	earthenware119	BORDY	32	1600	1633
	5.0	fineglass 1252		143	1550	1633
	5.0	stoneware FS		98	1600	1610
	5.1	earthenware3	NISG	82	1575	1625

FILL SOAKAWAY G (Phase 4)

No fill

SOAKAWAY H

DEMOLITION SOAKAWAY H (Phase 5)

TRENCH	LAYR	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
Q10	6.0	stoneware F		0	1600	1700
III	6.0	stoneware F		0	1600	1700

FILL SOAKAWAY H (Phase 4)

No fill

DEMOLITION (PHASE 5)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
CH I	3.0	bottle I or II	2	2317		0	1650	1730
CH II	6.0	bottle I or II	10	2320		0	1650	1730
	6.0	bottle II	1	2320		0	1680	1730
CH XVIII	2.0	earthenware118			BORDY	276	1633	1700
	2.0	stoneware F				0	1600	1700
	2.0	tin-glaze FS				136	1666	1673
	2.0	tin-glaze FS				110	1600	1633
P/Q 2/3	2.0	stoneware F				0	1600	1700
	2.0	stoneware F				0	1600	1700
	2.0	stoneware F				0	1600	1700
	2.0	claypipe 15				101	1660	1680
	2.0	fineglass 1001				125	1633	1666
	2.0	earthenware122			BORDY	428	1600	1633
	2.0	stoneware F				0	1500	1600
Q1	3.0	stoneware F				0	1800	1900 (C)
	3.0	tin-glaze F				144	1700	1750
	3.0	bottle I or II	1	2050		0	1650	1730
	3.0	bottle II	2	2050		0	1680	1730
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				45	1650	1670
	3.0	fineglass 14				27	1600	1650
	3.0	claypipe 5/7				3	1630	1640
	3.0	stoneware F				11	1575	1600
	3.0	tin-glaze F				91	1543	1563
Q2 I	3.0	claypipe 20–22				213	1670	1690
Q3 I	3.0	stoneware F				0	1600	1700
	3.0	tin-glaze F				131	1650	1700
Q4 I	2.0	stoneware F				0	1600	1700
Q5	2.0	bottle I or II	1	2051		0	1650	1730
Q5 I	2.0	claypipe 15				103	1660	1680
Q5 III	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	bottle case	1	2064		734	1600	1675
	3.0	fineglass 26				1484	1550	1633
	3.0	stoneware F				9	1550	1600
Q6 II/IV	6.0	fineglass 1200				159	1500	1666
Q8	3.0	bottle I or II	7	2057		0	1650	1730
	3.0	earthenware48b			PMFR?	250	1650	1720
	3.0	earthenware105			BORDG	461	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	claypipe 6				7	1675	1685
	3.0	fineglass 1003				110	1675	1685
	3.0	tin-glaze FS				19	1633	1666

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
Q8 (cont.)	3.0	claypipe 16				49	1655	1665
	3.0	claypipe 10/11				20	1640	1650
	3.0	earthenware86b			PMCR	452	1600	1633
	3.0	fineglass 19				54	1566	1633
	6.0	earthenware48b			PMFR?	250	1650	1720
	6.0	earthenware105			BORDG	463	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	tin-glaze FS				4	1650	1670
	6.0	tin-glaze FS				41	1633	1666
	11.0	earthenware48c			PMCR	349	1650	1720
	11.0	stoneware F				0	1600	1700
	11.0	claypipe 18				202	1660	1680
	11.0	tin-glaze F				79	1645	1670
	11.0	fineglass 3				127	1633	1666
	11.0	tin-glaze FS				41	1633	1666
	17.0	earthenware39			STBU	318	1660	1690
	17.0	earthenware7			METS	236	1671	1671
Q9 I	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				0	1600	1700
	4.0	stoneware F				31	1625	1675
	4.0	claypipe cf 18				73	1650	1660
	4.0	tin-glaze F				102	1550	1650
	4.0	tin-glaze FS				125	1600	1625
Q13 I	4.0	tin-glaze F				89	1650	1675
		stoneware FS				97	1600	1610
R1	7.0	bottle I or II	17	2090		0	1650	1730
R6 I	2.0	claypipe 26–28				246	1766	1800 (C)
R7 III	5.0	bottle I or II	28	2031		0	1650	1730
	5.0	bottle II	1	2031		0	1680	1730
R8	3.0	bottle I or II	112	2091		0	1650	1730
	3.0	bottle I or II	23	2073		0	1650	1730
	3.0	bottle II	1	14		38	1680	1730
	3.0	bottle II	1	14		45	1680	1730
	3.0	bottle II	1	2073		40	1680	1730
	3.0	bottle II	1	2091		39	1680	1730
	3.0	bottle II	1	2091		42	1680	1730
	3.0	bottle II	1	2091		55	1680	1730
	3.0	bottle II	1	3073		44	1680	1730
	3.0	bottle II	14	2091		0	1680	1730
	3.0	bottle II	8	2073		0	1680	1730
	3.0	bottle II	8	2090		0	1680	1730
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1600	1700
	3.0	stoneware F				0	1665	1700
	3.0	stoneware F				0	1665	1700
	3.0	bottle I/II	1	2073		37	1665	1685
	3.0	bottle I/II	1	2073		43	1665	1685
	3.0	bottle I/II	1	2073		48	1665	1685
	3.0	bottle I/II	1	2073		49	1665	1685
	3.0	bottle I/II	1	2073		50	1665	1685
	3.0	bottle I/II	1	2091		52	1665	1685
	3.0	bottle I	5	2073		0	1650	1680
	3.0	fineglass 32				77	1676	1678
	3.0	fineglass 1006				132	1650	1675
	3.0	fineglass 273				24	1566	1633

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
R8 (cont.)	4.0	bottle I or II	3	2074		0	1650	1730
	6.0	fineglass 1007				109	1675	1785
	6.0	bottle I or II	9	2076		0	1650	1730
	6.0	bottle II	1	2076		0	1680	1730
	6.0	tin-glaze F				61	1650	1685
	6.0	earthenware48a			PMCR	106	1566	1666
	7.0	stoneware F				0	1800	1900 (C)
	7.0	bottle I or II	16	2077		0	1650	1730
	7.0	bottle II	9	2077		0	1680	1730
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	claypipe 15				10	1660	1680
	7.0	fineglass 6				66	1566	1633
	10.0	bottle II	1	2078		0	1680	1730
R14 I/II	6.0	claypipe 15				105	1660	1680
R14 II/IV	4.0	stoneware F				0	1600	1700
R15	4.0	tin-glaze F				43	1700	1800 (C)
S2	8.0	bottle I or II	1	2086		0	1650	1730
S8	2.0	bottle IV	1	2089		0	1760	1800 (C)
	2.0	bottle I or II	143	2089		0	1650	1730
	2.0	bottle I or II	85	2088		0	1650	1730
	2.0	bottle II	1	2089		0	1680	1730
	2.0	bottle II	1	2089		41	1680	1730
	2.0	bottle II	1	2089		46	1680	1730
	2.0	bottle II	1	2089		53	1680	1730
	2.0	bottle II	1	2089		54	1680	1730
	2.0	bottle II	1	2089		56	1680	1730
	2.0	bottle II	8	2089		0	1680	1730
	2.0	stoneware F				0	1600	1700
	2.0	stoneware F				0	1600	1700
	2.0	stoneware F				0	1600	1700
	2.0	stoneware F				0	1600	1700
	2.0	stoneware F				0	1600	1700
	2.0	stoneware F				0	1600	1700
	2.0	bottle I/II	1	2073		47	1665	1685
	2.0	bottle I/II	1	2089		35	1665	1685
	2.0	bottle I/II	1	2089		36	1665	1685
	2.0	bottle I/II	1	2089		51	1665	1685
	2.0	bottle I	7	2089		0	1650	1680
	2.0	claypipe 9				30	1655	1665
	2.0	fineglass 26				120	1600	1650
	2.0	claypipe 5/7				4	1630	1640
	2.0	fineglass 34				5	1500	1550
S8 I	4.0	fineglass 523				23	1566	1633
S15	4.0	claypipe 20-22				215	1670	1690
	5.0	tinglaze FS				27	1695	1705
T1	5.0	fineglass 1010				0	1500	1666
T2	2.0	claypipe 25				240	1710	1760 (C)
	3.0	stoneware F				0	1600	1700
T8	2.1	bottle I or II	5	2100		0	1650	1730

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
T14 II	3.0	claypipe 20–22				216	1670	1690
T15 IV	3.0	claypipe 13				55	1665	1685
U2 II/IV	2.0	bottle I or II	2	2111		0	1650	1730
U7	7.0	bottle I or II	2	2120		0	1650	1730
	7.0	stoneware F				0	1500	1600
U14	4.0	stoneware FS				0	1600	1700
	4.0	claypipe 13				61	1666	1685
	4.0	claypipe 6				11	1675	1685
	4.0	earthenware86c			PMFR	414	1650	1675
	5.0	earthenware86c			PMFR	414	1650	1675
	5.0	earthenware46a.1			PMBL	436	1600	1666
	5.0	tin-glaze F				112	1600	1633
	5.0	tin-glaze F				115	1600	1633
	6.0	earthenware86c			PMFR	414	1650	1675
	12.0	earthenware86c			PMFR	414	1650	1675
U14 II/IV	8.0	stoneware F				0	1800	1900
	8.0	earthenware72a			TUDB	81	1500	1633
V2ext	3.0	tin-glaze F				138	1666	1733
V7	3.0	stoneware FS				26	1625	1650
V14	2.0	stoneware F				100	1525	1575
	5.0	bottle II	1	2279		0	1680	1730
	5.0	fineglass 1253				9	1550	1625
W2	5.1	tin-glaze FS				2	1675	1690
	5.1	earthenware37b			PMCR	83	1660	1680
	5.1	tin-glaze F				11	1650	1675
	5.1	earthenware86b			NONB	189	1600	1633
	5.1	fineglass 1094				96	1550	1625
	5.1	coin Eliz I				2	1583	1601
W3	3.0	claypipe 15				128	1660	1680
W4	3.0	tin-glaze FS				85	1650	1700
	3.0	claypipe 20–22				228	1670	1690
	3.0	fineglass 1013				129	1650	1675
	4.0	tin-glaze F				126	1600	1650
W4 I/II	2.0	claypipe 15				138	1660	1680
	2.0	tin-glaze F				72	1645	1670
	2.0	tin-glaze F				72	1645	1670
	2.0	fineglass 1033				80	1466	1600
	4.0	tin-glaze F				127	1600	1650
W4 I/IV	2.0	tin-glaze F				117	1600	1633
	4.0	stoneware F				0	1600	1700
W4 III/IV	3.1	earthenware86a			cfSTBU	57	1650	1675
	3.1	fineglass 1025				1805	1500	1666
W5	2.1	earthenware37b			PMCR	83	1660	1680

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W5 (cont.)	2.1	tin-glaze F				81	1645	1670
	2.1	fineglass 1130				0	1500	1666
	2.1	earthenware38b			PMCR	208	1600	1650
	2.2	tin-glaze FS				145	1666	1733
	2.2	earthenware112d			BORDY	192	1600	1666
	4.2	tin-glaze FS				8	1600	1700
	6.0	claypipe 25				241	1710	1760
	6.0	earthenware68			RBOR	292	1633	1700
	6.0	tin-glaze FS				23	1675	1690
	6.0	earthenware38b			PMCR	178	1660	1680
	6.0	earthenware112d			BORDY	192	1600	1666
	6.0	claypipe cf 18				77	1650	1660
	6.0	earthenware86b			PMCR	451	1600	1633
	6.0	claypipe 5/7				5	1615	1625
	8.0	bottle I or II	2	2167		0	1650	1730
	8.0	fineglass 1018				136	1650	1675
	8.0	earthenware112d			BORDY	192	1600	1666
	8.0	fineglass 5				115	1566	1666
	8.0	earthenware116c			BORDY	124	1600	1633
W5ext	2.0	bottle I or II	5	2165		0	1650	1730
	2.0	tin-glaze F				48	1660	1730
	2.0	stoneware F				0	1600	1700
	2.0	tin-glaze FS				8	1600	1700
	2.0	claypipe 15				131	1660	1680
	2.0	earthenware38b			PMCR	178	1660	1680
	2.0	tin-glaze FS				70	1645	1670
	2.0	fineglass 1015				2699	1500	1666
	2.0	earthenware55			NOT SEEN	442	1625	1650
	2.1	bottle I or II	10	2166		0	1650	1730
	2.1	bottle II	1	2166		0	1680	1730
	2.1	stoneware F				0	1600	1700
	2.1	tin-glaze F				64	1600	1700
	2.1	tin-glaze F				66	1600	1700
	2.1	tin-glaze F				67	1600	1700
	2.1	tin-glaze FS				8	1600	1700
	2.1	tin-glaze FS				23	1675	1690
	2.1	claypipe 15				132	1660	1680
	2.1	earthenware37c			PMFR	116	1660	1680
	2.1	earthenware38b			PMCR	178	1660	1680
	2.1	tin-glaze FS				70	1645	1670
	2.1	fineglass 1072				0	1500	1666
	2.1	fineglass 2166				0	1500	1666
	2.1	earthenware38b			PMCR	208	1600	1650
	2.1	earthenware86b			NOT SEEN	454	1600	1633
	2.1	tin-glaze FS				104	1550	1600
	2.1	stoneware F				64	1550	1575
	2.1	tin-glaze FS				108	1533	1566
W6	2.0	bottle I or II	3	2169		0	1650	1730
	2.0	stoneware F				0	1600	1700
	2.0	stoneware F				0	1600	1700
	2.1	stoneware F				0	1600	1700
	2.2	bottle I or II	1	2171		0	1650	1730
W6ext	2.0	bottle I or II	2	2175		0	1650	1730
	2.0	bottle I or II	4	2175		0	1650	1730
	2.0	bottle II	1	12		71	1680	1730
	2.0	bottle II	1	12		72	1680	1730
	2.0	bottle II	1	2182		60	1680	1730

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
W6 ext	2.0	bottle II	1	2182		61	1680	1730
(cont.)	2.0	bottle II	1	2182		62	1680	1730
	2.0	bottle II	1	2182		63	1680	1730
	2.0	bottle II	1	2182		64	1680	1730
	2.0	bottle II	1	2182		65	1680	1730
	2.0	bottle I/II	1	10		67	1665	1685
	2.0	bottle I/II	1	10		68	1665	1685
	2.0	bottle I/II	1	10		69	1665	1685
	2.0	bottle I/II	1	10		70	1665	1685
W8	1.1	tin-glaze FS				32	1650	1700
W12	6.0	fineglass 2293				113	1566	1666
	6.0	claypipe 9				40	1655	1665
	6.0	earthenware121			BORDY	271	1600	1633
	9.0	tin-glaze F				99	1600	1633
	9.0	tin-glaze F				93	1543	1563
W12/13	6.0	earthenware121			BORDY	271	1600	1633
X4	3.0	stoneware F				0	1600	1700
	3.0	stoneware FS				16	1600	1625
	4.0	stoneware F				0	1600	1700
	4.0	earthenware72a			NONA	310	1500	1633
	4.0	fineglass 1034				192	1600	1650
	4.0	stoneware FS				16	1600	1625
	8.0	fineglass 1035				134	1650	1675
	11.0	stoneware F				0	1600	1700
	11.0	stoneware F				0	1600	1700
	11.0	stoneware F				0	1600	1700
	11.0	stoneware F				0	1600	1700
	11.0	stoneware F				0	1600	1700
	11.0	stoneware F				29	1500	1700
	11.0	fineglass 1036				1414	1633	1666
	11.0	earthenware104			BORDG	460	1533	1566
	11.1	earthenware71			GUYS	156	1500	1633
	11.1	earthenware81			GUYS	331	1500	1633
X4 I/III	3.0	claypipe 20–22				229	1670	1690
X5 I/II	2.0	bottle I or II	1	2213		0	1650	1730
	5.0	bottle I or II	1	2214		0	1650	1730
	5.0	bottle II	1	2214		0	1680	1730
	5.0	stoneware F				0	1600	1700
	7.0	bottle I or II	1	2215		0	1650	1730
X5 II/IV	5.0	stoneware FS				0	1600	1700
	5.0	stoneware FS				0	1600	1700
X5 III/IV	3.0	claypipe 25				242	1710	1760
	3.0	bottle I or II	3	2217		0	1650	1730
	5.0	stoneware F				0	1600	1700
	5.0	stoneware F				0	1600	1700
	5.0	tin-glaze F				82	1645	1670
	6.0	bottle I or II	2	2218		0	1650	1730
	6.0	bottle II	1	2218		0	1680	1730
	6.0	tin-glaze F				90	1600	1700

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
X5 III/IV (cont.)	6.0	earthenware86b			NOT SEEN	454	1600	1633
	6.1	tin-glaze F				140	1666	1733
	6.1	bottle I or II	1	2219		0	1650	1730
	8.0	stoneware F				0	1600	1700
	8.0	stoneware F				66	1550	1575
	10.0	tin-glaze F				73	1645	1670
	19.0	bottle I or II	1	2220		0	1650	1730
	19.0	fineglass 58				78	1675	1685
X6	3.0	bottle I or II	1	2193		0	1650	1730
	6.0	stoneware F				0	1600	1700
	13.0	bottle II	1	2195		0	1680	1730
X7	2.0	stoneware F				0	1800	1900
	2.0	tin-glaze FS				33	1650	1700
	2.0	stoneware FS				23	1625	1650
	3.0	bottle I or II	7	2197		0	1650	1730
	3.0	bottle II	1	2197		0	1680	1730
	3.0	claypipe 15				143	1660	1680
	3.0	claypipe cf 18				80	1650	1660
	4.0	tin-glaze FS				33	1650	1700
	5.0	bottle I or II	20	2198		0	1650	1730
	5.0	tin-glaze F				9	1600	1700
	5.0	tin-glaze F				10	1600	1700
	5.0	tin-glaze FS				33	1650	1700
	5.0	tin-glaze F				12	1650	1675
	5.0	tin-glaze F				13	1650	1675
	5.0	tin-glaze F				14	1650	1675
	5.0	tin-glaze F				22	1650	1675
	6.0	stoneware F				0	1800	1900
	6.0	bottle I or II	19	2199		0	1650	1730
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware F				0	1600	1700
	6.0	stoneware FS				0	1600	1700
	6.0	tin-glaze FS				33	1650	1700
	6.0	tin-glaze FS				3	1685	1695
	6.0	tin-glaze FS				23	1675	1690
	6.0	claypipe 13				62	1666	1685
	6.0	tin-glaze FS				25	1675	1685
	6.0	bottle I	1	2199		0	1650	1680
	6.0	claypipe 15				144	1660	1680
	6.0	claypipe 15				145	1660	1680
	6.0	claypipe 15				146	1660	1680
	6.0	claypipe 15				148	1660	1680
	6.0	claypipe 15				149	1660	1680
	6.0	claypipe 15				150	1660	1680

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
X7 (cont.)	6.0	claypipe 15				151	1660	1680
	6.0	claypipe 15				152	1660	1680
	6.0	claypipe 15				153	1660	1680
	6.0	claypipe 15				154	1660	1680
	6.0	claypipe 15				155	1660	1680
	6.0	claypipe 15				156	1660	1680
	6.0	claypipe 15				157	1660	1680
	6.0	claypipe 15				158	1660	1680
	6.0	claypipe 15				159	1660	1680
	6.0	claypipe 15				160	1660	1680
	6.0	claypipe 15				161	1660	1680
	6.0	claypipe 15				162	1660	1680
	6.0	claypipe 15				163	1660	1680
	6.0	claypipe 18				206	1660	1680
	6.0	claypipe 18				207	1660	1680
	6.0	claypipe 18				208	1660	1680
	6.0	earthenware44b.1			PMFR	134	1660	1680
	6.0	earthenware86c			NOT SEEN	456	1650	1675
	6.0	tin-glaze F				15	1650	1675
	6.0	earthenware120			BORDY	304	1600	1666
	6.0	tin-glaze FS				18	1633	1666
	6.0	claypipe cf 18				81	1650	1660
	6.0	claypipe cf 18				82	1650	1660
	6.0	claypipe cf 18				83	1650	1660
	6.0	claypipe cf 18				84	1660	1660
	6.0	claypipe cf 18				85	1650	1660
	6.0	claypipe cf 18				86	1650	1660
	6.0	claypipe cf 18				87	1650	1660
	6.0	claypipe cf 18				88	1650	1660
	6.0	claypipe cf 18				147	1650	1660
	6.0	stoneware FS				23	1625	1650
	6.0	tin-glaze FS				25	1625	1650
	6.0	claypipe 5/7				25	1630	1640
	6.0	earthenware17.1			PMBL/PMFR	317	1600	1633
	6.0	earthenware86b			PMCR	450	1600	1633
	6.0	earthenware128			CSTN	303	1400	1600
	7.0	bottle I or II	1	2221		0	1650	1730
	7.0	bottle I or II	7	2200		0	1650	1730
	7.0	bottle II	4	2200		0	1680	1730
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	stoneware F				0	1600	1700
	7.0	tin-glaze FS				32	1650	1700
	7.0	tin-glaze FS				33	1650	1700
	7.0	tin-glaze FS				55	1670	1690
	7.0	claypipe 15				63	1666	1685
	7.0	claypipe 15				164	1660	1680
	7.0	claypipe 15				165	1660	1680
	7.0	claypipe 15				166	1660	1680
	7.0	claypipe 15				167	1660	1680
	7.0	claypipe 15				168	1660	1680
	7.0	claypipe 15				169	1660	1680
	7.0	claypipe 15				170	1660	1680
	7.0	claypipe 15				171	1660	1680
	7.0	claypipe 15				172	1660	1680
	7.0	claypipe 15				173	1660	1680
	7.0	claypipe 15				174	1660	1680
	7.0	claypipe 15				175	1660	1680
	7.0	claypipe 15				176	1660	1680
	7.0	claypipe 15				177	1660	1680
	7.0	claypipe 15				178	1660	1680
	7.0	claypipe 18				209	1660	1680
	7.0	claypipe 18				210	1660	1680
	7.0	earthenware42			PMCR	425	1660	1680
	7.0	stoneware F				34	1650	1675

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
X7 (cont.)	7.0	earthenware120	BORDY	304	1600	1666
	7.0	claypipe cf 18		89	1650	1660
	7.0	claypipe cf 18		90	1650	1660
	7.0	claypipe cf 18		91	1650	1660
	7.0	claypipe cf 18		92	1650	1660
	7.0	coin Token		30	1653	1656
	7.0	earthenware17.1	PMBL/PMFR	317	1600	1633
	7.0	earthenware128	CSTN	303	1400	1600
	9.0	stoneware FS		0	1600	1700
X8	2.0	stoneware F		0	1800	1900 (C)
	2.0	bottle I or II 40 2202		0	1650	1730
	2.0	earthenware48b	PMFR?	250	1650	1720
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	stoneware F		0	1600	1700
	2.0	tin-glaze FS		26	1675	1685
	2.0	tin-glaze FS		69	1650	1685
	2.0	claypipe		93	1650	1680
	2.0	claypipe 15		181	1660	1680
	2.0	claypipe 15		182	1660	1680
	2.0	claypipe 15		183	1660	1680
	2.0	claypipe 18		211	1660	1680
	2.0	tin-glaze F		74	1645	1670
	2.0	tin-glaze FS		37	1633	1666
	2.0	claypipe 18		212	1660	1660
	2.0	earthenware32	TUDB	62	1600	1650
	2.0	tin-glaze F		128	1600	1650
	2.0	tin-glaze F		113	1600	1633
	2.1	stoneware F		0	1600	1700
	3.0	bottle I or II 4 2203		0	1650	1730
	3.0	fineglass 1038		130	1650	1675
	3.0	tin-glaze F		16	1650	1675
	3.0	fineglass 35		58	1600	1650
	4.0	claypipe 25		243	1710	1760
	4.0	tin-glaze V		141	1666	1733
	4.0	bottle I or II 6 2204		0	1650	1730
	4.0	stoneware F		0	1600	1700
	4.0	stoneware F		61	1600	1700
	4.0	claypipe 20–22		231	1670	1690
	4.0	claypipe 15		184	1660	1680
	4.0	claypipe 9		44	1655	1665
	4.0	claypipe 9		45	1655	1665
	4.0	claypipe 9		46	1655	1665
	4.0	claypipe 9		47	1655	1665
	4.0	claypipe 13		64	1640	1660
	4.0	claypipe cf 18		94	1650	1660
	4.0	earthenware55	NOT SEEN	440	1625	1650
	4.0	earthenware55	NOT SEEN	441	1625	1650
	4.0	stoneware F		99	1550	1600
	5.0	stoneware F		0	1800	1900 (C)
X9	4.0	stoneware F		0	1800	1900 (C)
	9.0	claypipe 26–28		249	1785	1795

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
X9 (cont.)	9.0	claypipe 26–28				250	1785	1795
	9.0	claypipe 20–22				232	1670	1690
X11 I/II	5.0	claypipe 15				186	1660	1680
X14	5.0	tin-glaze F				52	1660	1730
	5.0	tin-glaze F				53	1660	1730
	5.0	earthenware112b			BORDY	418	1633	1700
	5.0	claypipe 13				66	1660	1685
	5.0	claypipe 13				67	1660	1685
	5.0	claypipe 13				68	1660	1685
	5.0	claypipe 13				69	1660	1685
	5.0	claypipe 13				70	1660	1685
	5.0	claypipe 15				188	1660	1680
	5.0	claypipe 15				189	1660	1680
	5.0	claypipe 15				190	1660	1680
	5.0	claypipe 15				191	1660	1680
	5.0	fineglass 315				29	1600	1650
	5.0	tin-glaze F				92	1543	1563
	6.0	earthenware112b			BORDY	418	1633	1700
X15	5.0	earthenware74			NOT REC	358	1660	1680
X15 IV	5.1	tin-glaze FS				103	1550	1600
Y1	14.0	stoneware FS				0	1600	1700
Y4	2.0	stoneware F				0	1600	1700
	2.0	claypipe 20–22				234	1670	1690
	2.0	claypipe 6				16	1675	1685
	2.0	earthenware116c			BORDY	205	1600	1633
	4.0	claypipe cf 18				95	1650	1660
	4.1	bottle I or II	5	2222		0	1650	1730
	4.1	stoneware F				0	1600	1700
	4.1	stoneware F				0	1600	1700
	4.1	claypipe 6				17	1675	1685
	12.1	earthenware129.2			CTSN	242	1400	1600
	14.0	bottle I or II	6	2226		0	1650	1730
	14.0	claypipe 20–22				235	1670	1690
	14.0	bottle I/II	1	2226		59	1665	1685
	19.0	bottle I or II	1	2236		0	1650	1730
Y4 III/IV	4.0	stoneware F				0	1600	1700
Y5	6.0	tin-glaze F				29	1675	1685
Y5 III/IV	4.0	claypipe 2				2	1630	1640
Y7	2.0	claypipe 15				201	1660	1680
	2.0	stoneware F				37	1625	1675
	3.0	bottle I or II	4	2242		0	1650	1730
	4.0	bottle I or II	6	2242		0	1650	1730
	4.0	bottle II	1	2242		0	1680	1730
	4.0	stoneware F				0	1600	1700

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
Y7 (cont.)	4.0	stoneware F		0	1600	1700
	6.0	claypipe 6		19	1675	1685
	7.0	bottle I or II 3 2244		0	1650	1730
	8.0	stoneware F		0	1600	1700
	8.0	stoneware F		0	1600	1700
	8.0	earthenware49a	NOT REC	128	1400	1600
	11.0	stoneware F		0	1600	1700

POST-DEMOLITION (PHASE 6)

TRENCH	LAYER	FINDTYPE	FABRIC	CODE	DATEFROM	DATETO
P/Q 15/16	12.0	tin-glaze FS		4	1650	1670
Q8	2.0	tin-glaze FS		19	1633	1666
	2.0	earthenware86b	PMCR	452	1600	1633
	2.0	tin-glaze FS		125	1600	1625
Q14 III	2.0	earthenware48c	PMCR	126	1650	1720
T8	2.0	tin-glaze FS		32	1650	1700
	2.0	tin-glaze F		18	1633	1666
	2.0	tin-glaze FS		124	1600	1650
U7	3.0	earthenware86c	NOT SEEN	456	1650	1675
U14	2.0	earthenware86c	PMFR	414	1650	1675
V1	4.0	coin James I		3	1613	1615
W4 I	2.0	earthenware15b	TUDB?	1	1566	1633
W4 I/ X4 I	2.0	tin-glaze FS		118	1600	1633
W5	2.0	fineglass 1014		0	1500	1666
W8	4.0	stoneware F		48	1550	1600
X4	2.0	earthenware72a	NONA	310	1500	1633
	2.0	fineglass 175		63	1600	1650
X4 I	2.0	earthenware35	TUDB/PMCR	407	1600	1650
X5 II/IV	2.0	tin-glaze FS		18	1633	1666
X6	2.0	earthenware42	PMCR	425	1660	1680
X14	3.0	earthenware112b	BORDY	418	1633	1700

BANQUETING HOUSE

BANQUETING HOUSE DEMOLITION (BH PHASE 4)

TRENCH	LAYER	FINDTYPE			FABRIC	CODE	DATEFROM	DATETO
C7 III	1.0	stoneware F				0	1600	1700
D4 IV	7.0	claypipe 18				257	1660	1680
D5	3.0	stoneware F				0	1600	1800
	3.0	stoneware F				0	1600	1700
D5 II	4.0	bottle I or II	4	2506		0	1650	1730
	4.0	claypipe 15				269	1660	1680
	4.0	claypipe 15				270	1660	1680
	4.0	claypipe 15				277	1660	1680
	4.0	stoneware F				57	1650	1675
D5 II	5.0	bottle I or II	2	2508		0	1650	1730
	5.0	stoneware F				0	1600	1700
	5.0	stoneware F				0	1800	1900
	5.0	stoneware F				0	1700	1800
	5.0	stoneware F				0	1600	1800
	5.0	stoneware F				0	1600	1700
	5.0	stoneware F				0	1600	1700
	5.0	stoneware F				0	1600	1700
	5.0	claypipe 18				287	1660	1680
	5.0	claypipe 18				288	1660	1680
	5.0	tin-glaze F				94	1645	1670
D5 N/Sblk	3.0	bottle I or II	7	2503		0	1650	1730
D5/6 blk	3.0	bottle I or II	1	2518		0	1650	1730
	3.0	bottle case	1	2518		737	1600	1675
	3.0	coin Token				31	1650	1660
D6 IV	7.0	stoneware F				0	1600	1700
E5 III	7.0	stoneware F				0	1600	1700
E6	3.0	claypipe 9				388	1655	1665
E6 I	4.0	claypipe 15				348	1660	1680
E6 I/IV	3.0	stoneware F				0	1600	1700
E6 II	5.0	claypipe 15				360	1660	1680
	5.0	coin Token				33	1650	1660

CONCORDANCE 2

EARTHENWARE VESSEL NUMBERS AND TYPES

by Martin Biddle

The vessel numbers are those given on site to all complete or nearly complete vessels and significant sherds, whether of tin-glazed, stoneware, or earthenware fabrics. Only the earthenwares are included in this concordance, hence the gaps in the series. An asterisk (*) indicates that the vessel is illustrated under its type in Figs 74–103.

VESSEL NUMBER	TYPE
* 1	15b
* 2	22a.1
3	31b.2
* 4A	31b.1
* 4B	31a
10	100
* 12	34b
* 13	19a
* 14	28a
* 15	22b
* 16	45
* 17a	1a.2
17b	12
* 18	9d
19	34d
* 20	14
21	1a
* 22	15a
* 23	34d
24	10
* 26	22c
* 27	10
28	126
29	98
30	98
31	98
32	119
34	38a
* 35	19b.1
36	83
* 37	9c
* 38	33a
41	51
42	14
43	12
* 46	28b.1
* 47	1b
* 48	99
* 49	22a.2

VESSEL NUMBER	TYPE
* 50	31c
* 51	31e
52	22a.1
* 53	30b
54	34a
* 56	31b.2
57	86a
* 58	9a
* 59	27a
60	33a
61	72a
* 62	32
63	11c
64	52
66	117
67	97
68	99
69	123a
70	21b
72	73
* 73	11b
74	112c
* 75	25
* 76	28b.2
77	62a
* 78	19c
* 79	38a
81	72a
* 82	3
* 83	37b
* 85	46a.1
* 86	46a.2
87	56
88	31a
90	116c
91	74
91	102
93	86a
* 94	33b

VESSEL NUMBER	TYPE
* 95	27b
* 96	30c
* 97	44a
* 98	28c
99	116c
* 100	31d
101	54
102	116c
* 103	31f
104	113
* 106	48a
* 107	50b
108	116a
* 109	46X
110	67
111	9B
112	14
* 113	19b.2
114	22a.1
* 115	34c
* 116	37c
* 117	30a
* 118	20
119	22a.1
* 120	36a
121	74
124	116c
125	62b
* 126	48c
* 127	6
* 128	49a
129	15a
* 132	11a
* 133	24
* 134	44b.1
* 135	46b
* 136	8a
137	96
* 138	44b.2

VESSEL NUMBER	TYPE
139	112a
140	115
141	19
145	72b
146	35
* 147-8	16a
152	31d
* 154	19b.3
* 155	47
156	71
158	72a
160	79
161	72a
163	116d
* 164	26
165	62a
170	86a
* 171	50a
172	63
173	116b
* 174	36b
* 175	37d
177	79
* 178	38b
179	32
180	108
181	31b.1
182	71
* 183	34a
184	34a
* 185	1a.1
* 186	18
187	68
188	64
189	86b
190	104
* 191	1a.4
192	112d
193	107

VESSEL NUMBER	TYPE
194	88
196	27a
199	28a
* 200	4
201	62d
202	62c
204	103
205	116c
206	130
207	46a.1
208	38b
212	127
213	82
214	35
217	70
223	62a
225	127
226	69
* 227	1a.3
228	35
* 229	41
* 232	49b
234	10
235	105
* 236	7
* 237	37a
238	86b
239	62a
240	62a
242	129.2
243	66
* 247	23
248	62b
249	65
* 250	48b
* 253	12
254	12
* 255	21b
* 256	21a
258	21a
259	21b
262	93
268	38b

VESSEL NUMBER	TYPE
* 270	38c
271	121
276	118
278	33a
281	83
282	83
283	84
284	85
285	83
286	85
287	83
290	83
292	68
293	55
294	72a
299	68
300	114
301	123b
* 302	17.2
303	128
304	120
310	72a
311	50c
* 314	50c
315	57
* 317	17.1
* 318	39
* 321	16b
329	62a
331	81
334	127
339	53
344	86b
* 345	35
346	58
347	78
348	60
349	48c
350	59
351	76
* 352	43
353	89
355	53

VESSEL NUMBER	TYPE
358	74
364	40
* 365	9b
366	87
375	80
377	127
* 380	40
383	124
385	99
* 386	5
387	72a
* 388	13
389	43
390	95
391	77
392	40
394	7
400	101
401	129.1
402	92
407	35
408	94a
409	91
412	126
* 413	2
414	86b
416	1a.1
417	94b
418	112b
419	130
420	90
421	82
422	75
* 423	29
424	61
* 425	42
426	109
427	110
428	122
429	111
430	106
* 431	8
432	17.2

VESSEL NUMBER	TYPE
433	17.2
434	40
435	40
436	46a.1
437	44b.2
438	50a
439	50c
440	55
441	55
442	55
443	56
444	81
445	83/4
446	83/4
447	83/4
448	86a
449	86a
450	86b
451	86b
452	86b
453	86b
454	86b
455	86b
456	86c
457	89
458	98
460	104
461	105
462	105
463	105
464	107
465	116d
466	116d
467	116d
468	123
469	127
470	130?
471	42
472	71
473	125

CONCORDANCE 3

CLAY PIPES

by MARTIN BIDDLE

The pipes which could be typed are listed in phase order, within Atkinson and Oswald (1969) types. Pipe numbers missing from this series are those of pipe fragments which could not be typed. Catalogue numbers, garderobe numbers, and other group names are in **bold**. The catalogued pipes are all illustrated (Figs 144–6, **1–28**)

A/O TYPE	PIPE NO.	CAT NO.	PHASE	TRENCH/LAYER
2	1	**1**	Phase 5	W1 5b
2	2	**2**	Phase 5	Y5 III/IV 4
5/7	25	**3**	Phase 5	X7 6
5/7	255		BH Phase 7	D4 IV 1
5/7	444		BH unphased	BV VIIext 2
5/7	3	**4**	Phase 5	Q1 3
5/7	4	**5**	Phase 5	S8 2
5/7	5	**6**	Phase 5	W5 6
6	14		Phase 3 (contam)	W10 3
6	7		Phase 5	Q8 3
6	8		Phase 4 **G9**	U7 8
6	6		Phase 4 **G19**	P/Q 15/16 16
6	9		Phase 4 **Great cellar**	U8 3
6	10		Phase 4 **Great cellar**	U8 3
6	12		Phase 4 **Great cellar**	W8 7
6	13		Phase 4 **Great cellar**	W8 7
6	18		Phase 4 **Well**	Y4 34
6	411		Phase 5	U1 4
6	11		Phase 5	U14 4
6	16	**7**	Phase 5	Y4 2
6	17		Phase 5	Y4 4a
6	19		Phase 5	Y7 6
6	15		Phase 6	X14 5
6	402		BH phase uncertain	G5 II 1
9	34		Phase 4 **G9**	U7 8
9	35		Phase 4 **G9**	U7 8
9	36		Phase 4 **G9**	U7 8
9	37		Phase 4 **G9**	U7 8
9	41		Phase 4 **G11**	W12/13 8

A/O TYPE	PIPE NO.	CAT NO.	PHASE	TRENCH/LAYER
9	42		Phase 4 **G11**	W12/13 8
9	43		Phase 4 **G11**	W12/13 8
9	27		Phase 4 **G19**	P/Q 15/16 16
9	32		Phase 4 **G26**	T7 III 3
9	28		Phase 4 **G31**	S1 12
9	29		Phase 4 **G31**	S1 13
9	39		Phase 4 **Great cellar**	W8 7
9	30		Phase 5	S8 2
9	31		Phase 5	T3 III 2
9	33		Phase 5	U7 2
9	38		Phase 5	W8 3
9	40	**8**	Phase 5	W12 6
9	44		Phase 5	X8 4
9	45		Phase 5	X8 4
9	46		Phase 5	X8 4
9	47		Phase 5	X8 4
9	48		Phase 6	Z5 I/II 2
9	311		BH Phase 5	D6 IV 6
9	337		BH Phase 4	E4 III 2
9	388		BH Phase 4	E6 3
9	393		BH Phase 5	F/G6 2a
9	398		BH Phase 5	G3 2
9	451		Phase 8	PGW I 1
10/11	20		Phase 5	Q8 3
10/11	22	**9**	Phase 4 **G9**	U7 8
10/11	24		Phase 4 **G9**	U7 8
10/11	21		Phase 5	U7 2
10/11	23		Phase 5	U7 2
10/11	26		Phase 5	X14 4
12	72	**10**	Phase 5	X14 5
13	53		Phase 4 **G19**	P/Q 15/16 16
13	54		Phase 4 **G26**	T7 III 3
13	71		Phase 4 **Well**	Y4 34
13	55		Phase 5	T15 IV 3
13	56		Phase 5	U7 2
13	57		Phase 5	U7 2
13	58		Phase 5	U7 2
13	59		Phase 5	U7 2
13	60		Phase 5	U7 2
13	61		Phase 5	U14 4
13	62		Phase 5	X7 6
13	63		Phase 5	X7 7
13	64		Phase 5	X8 4
13	65		Phase 5	X14 4
13	66		Phase 5	X14 5
13	67		Phase 5	X14 5
13	68		Phase 5	X14 5
13	69		Phase 5	X14 5
13	70	**11**	Phase 5	X14 5
13	290		BH Phase 5	D5 IV 5
13	324		BH Phase 5	D6 IV 6
13	328		BH Phase 3?	D6 IV oven

A/O TYPE	PIPE NO.	CAT NO.	PHASE	TRENCH/LAYER
15	127		Phase 4 **G3**	W2 5c
15	130		Phase 4 **G4**	W4 II/IV 4
15	113		Phase 4 **G9**	U7 8
15	114		Phase 4 **G9**	U7 8
15	136		Phase 4 **G11**	W12/13 8
15	106		Phase 4 **G31**	S1 12
15	108		Phase 4 **G31**	S1 12
15	119		Phase 4 **Great cellar**	U8 3
15	126		Phase 4 **Great cellar**	V8 4
15	135		Phase 4 **Great cellar**	W8 7
15	101		Phase 5	P/Q 2/3 2
15	103		Phase 5	Q5 I 2
15	104		Phase 5	R8 7
15	105		Phase 5	R14 I/II 6
15	107		Phase 5	S1 11
15	109		Phase 5	U7 2
15	110		Phase 5	U7 2
15	111		Phase 5	U7 2
15	112		Phase 5	U7 2
15	115		Phase 5	U8 2a
15	116		Phase 5	U8 2a
15	117		Phase 5	U8 2a
15	118		Phase 5	U8 2a
15	120		Phase 5	U8 2
15	128		Phase 5	W3 3
15	129		Phase 5	W4 II/IV 2
15	131		Phase 5	W5ext 2
15	132		Phase 5	W5ext 2a
15	133		Phase 5	W5 4
15	134		Phase 5	W8 3
15	138		Phase 5	X4 I/III / W4 I/II 2
15	143		Phase 5	X7 3
15	144		Phase 5	X7 6
15	145		Phase 5	X7 6
15	146		Phase 5	X7 6
15	148		Phase 5	X7 6
15	149		Phase 5	X7 6
15	150		Phase 5	X7 6
15	151		Phase 5	X7 6
15	152		Phase 5	X7 6
15	153		Phase 5	X7 6
15	154		Phase 5	X7 6
15	155		Phase 5	X7 6
15	156		Phase 5	X7 6
15	157		Phase 5	X7 6
15	158		Phase 5	X7 6
15	159		Phase 5	X7 6
15	160		Phase 5	X7 6
15	161		Phase 5	X7 6
15	162		Phase 5	X7 6
15	163		Phase 5	X7 6
15	164		Phase 5	X7 7
15	165		Phase 5	X7 7
15	166		Phase 5	X7 7
15	167		Phase 5	X7 7
15	168		Phase 5	X7 7
15	169		Phase 5	X7 7

A/O TYPE	PIPE NO.	CAT NO.	PHASE	TRENCH/LAYER
15	170		Phase 5	X7 7
15	171		Phase 5	X7 7
15	172		Phase 5	X7 7
15	173		Phase 5	X7 7
15	174		Phase 5	X7 7
15	175		Phase 5	X7 7
15	176		Phase 5	X7 7
15	177		Phase 5	X7 7
15	178		Phase 5	X7 7
15	181		Phase 5	X8 2
15	182		Phase 5	X8 2
15	183		Phase 5	X8 2
15	184		Phase 5	X8 4
15	186		Phase 5	X11 I/II 5
15	187		Phase 5	X14 4
15	193		Phase 5	Y4 29
15	194		Phase 5	Y4 29
15	201		Phase 5	Y7 2
15	121		Phase 6	V7 2
15	122		Phase 6	V7 3
15	123		Phase 6	V7 3
15	124		Phase 6	V7 3
15	137		Phase 6	W13 3
15	188		Phase 6	X14 5
15	189		Phase 6	X14 5
15	190		Phase 6	X14 5
15	191		Phase 6	X14 5
15	195		Phase 6	Y6 3
15	196		Phase 6	Y6 3
15	197		Phase 6	Y6 3
15	198		Phase 6	Y6 3
15	199		Phase 6	Y6 3
15	200	**12**	Phase 6	Y6 8
15	139		Phase 8	X7 1
15	140		Phase 8	X7 1
15	141		Phase 8	X7 1
15	142		Phase 8	X7 1
15	179		Phase 8	X8 1
15	180		Phase 8	X8 1
15	192		Phase 8	Y4 1
15	99		?	?8 II/IV 2
15	100		?	P/Q 2/3 ?
15	102		?	P/Q 2/3 ?
15	125		?	V8 2b
15	185		?	X8 7
15	269		BH Phase 4	D5 II 4
15	270		BH Phase 4	D5 II 4
15	277		BH Phase 4	D5 II 4
15	348		BH Phase 4	E6 I 4
15	360		BH Phase 4	E6 II 5
15	313		BH Phase 5	D6 IV 6
15	333		BH Phase 4	D6baulk 3
15	418		BH not phasable	BV IVext 2
15	423		BH not phasable	BV Vext 2
15	424		BH Phase 7	BV VIext 1
15	435		BH not phasable	BV VII 2
15	438		BH Phase 7	BV VIIextI 1

A/O TYPE	PIPE NO.	CAT NO.	PHASE	TRENCH/LAYER
15	443		BH not phasable	BV VIIext 2
15	445		BH not phasable	BV VIIext2
16	49	**13b**	Phase 5	Q8 3
16	50	**13a**	Phase 6	X14 3
16	51		Phase 6	X14 5
16	52		Phase 6	X14 5
18	203	**15**	Phase 4 **G3**	W2 5c
18	204		Phase 4 **G4**	W4 II/IV 4a
18	147		Phase 5	X7 6
18	202	**14**	Phase 5	Q8 11
18	206		Phase 5	X7 6
18	207		Phase 5	X7 6
18	208		Phase 5	X7 6
18	209		Phase 5	X7 7
18	210		Phase 5	X7 7
18	211		Phase 5	X8 2
18	212		Phase 5	X8 2
18	205		Phase 8	X7 1
18	257		BH Phase 4	D4 IV 7
18	287		BH Phase 4	D5 IV 5
18	288		BH Phase 4	D5 IV 5
18	325		BH Phase 3	D6 IV 12
18	372		BH Phase 5	E6 IV 2
The following are similar to Type 18 pipes				
–	75		Phase 4 **G9**	U7 8
–	76		Phase 4 **G9**	U7 8
–	73		Phase 4 **G22**	Q9 I 4
–	74		Phase 5	U7 2
–	77		Phase 5	W5 6
–	80		Phase 5	X7 3
–	81		Phase 5	X7 6
–	82		Phase 5	X7 6
–	83		Phase 5	X7 6
–	84		Phase 5	X7 6
–	85		Phase 5	X7 6
–	86	**16**	Phase 5	X7 6
–	87		Phase 5	X7 6
–	88		Phase 5	X7 6
–	89		Phase 5	X7 7
–	90		Phase 5	X7 7
–	91		Phase 5	X7 7
–	92		Phase 5	X7 7
–	93		Phase 5	X8 2
–	94		Phase 5	X8 4
–	95		Phase 5	Y4 4
–	96		Phase 6	Y6 3
–	97		Phase 6	Y6 3
–	98		Phase 6	Y6 3
–	78		Phase 8	X7 1
–	79		Phase 8	X7 1
20	230		Phase 3	X6 4
20	225	**19**	Phase 4 **G4**	W4 II/IV 4b

A/O TYPE	PIPE NO.	CAT NO.	PHASE	TRENCH/LAYER
20	226	**18**	Phase 4 **G6/7**	W8 3
20	224		Phase 4 **cellar**	V8 4
20	213		Phase 5	Q2 I 3
20	215		Phase 5	S15 4
20	216		Phase 5	T14 II 3
20	217		Phase 5	U8 II/IV 2
20	218		Phase 5	U8 II/IV 2a
20	219		Phase 5	U8 2a
20	228		Phase 5	W4 3
20	229		Phase 5	X4 I/III 3
20	231	**17**	Phase 5	X8 4
20	232		Phase 5	X9 9
20	233		Phase 5	X15 10
20	234	**20**	Phase 5	Y4 2
20	235		Phase 5	Y4 14
20	214		Phase 6	Q7 2
20	220		Phase 6	V7 2
20	221		Phase 6	V8 3
20	222		Phase 6	V8 3
20	223		Phase 6	V8 3
20	227		Phase 6	W10 4
20	434		BH unphased	BV.VII 2
20	442	**21**	BH Phase 7	BV.VIIext I 1
240	25		Phase 5	T2 2
241	25		Phase 5	W5 6
242	25	**22**	Phase 5	X5 III/IV 3
243	25		Phase 5	X8 4
238	25	**23**	Phase 6	T1 2
239	25	**25**	Phase 6	X10 III 2
236	25		Phase 8	CH.VII 1
237	25	**24**	Phase 8	CH.XI 1
244	25		unstrat	
452	25		Phase 6	PGW II 2
246	26–8		Phase 5	R6 I 2
248	26–8		Phase 5	X5 III/IV 1
249	26–8		Phase 5	X9 9
250	26–8		Phase 5	X9 9
247	26–8		Phase 8	X5 III/IV 1
251	26–8		Phase 8	X15 1
245	26–8	**26**	Phase 8	CH.XI 1
252	26–8		unstrat	
253	26–8		unstrat	
453	26–8	**27**	Phase 5/6	PGW II 2
254	30	**28**	Phase 8	CH.VII 1 2

LIST OF REFERENCES

Abbreviations

DNB *Dictionary of National Biography*

HMC Historical Manuscripts Commission, followed by the Report number, or preceded by the standard short title of the manuscript collection concerned

IGI *International Genealogical Index*, Church of the Latter Day Saints, Salt Lake City, Utah, microfiche, latest edition 1993

OED *Oxford English Dictionary*

PRO Public Record Office, Kew, followed by the call numbers of the documents concerned

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