Settling the Ebbsfleet Valley

High Speed 1 Excavations at Springhead and Northfleet, Kent
The Late Iron Age, Roman, Saxon, and Medieval Landscape

Volume 2: Late Iron Age to Roman Finds Reports

By Edward Biddulph, Rachael Seager Smith, and Jörn Schuster

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Preface

by Paul Booth and Phil Andrews

This volume presents specialist reports and illustrations, on the Late Iron Age and Roman artefacts recovered during archaeological investigations in the Ebbsfleet valley, near Gravesend, Kent. It is part of a four volume publication on investigations at Springhead and Northfleet, undertaken in connection with engineering works for Section 2 of the Channel Tunnel Rail Link (CTRL), now High Speed 1 (HS1). The archaeological discoveries made during HS1 Section 2, which range in date from the Late Iron Age to the medieval period, are reported in Volume 1. Specialist reports on the Iron Age and Roman human bone, faunal and environmental remains are reported in Volume 3, while those on the Saxon and medieval artefacts, human bone, and faunal and environmental remains are reported in Volume 4; additional data is available via the website (http://owarch.co.uk/hs1/springhead-northfleet/). These reports have been prepared by the Oxford Wessex Archaeology Joint Venture in conjunction with Rail Link Engineering for Union Railways (North) Limited (URN).

High Speed 1 is the new high-speed railway linking London mainline stations to the Channel Tunnel. Section 1 of HS1, running from the tunnel portal at Folkestone, passes through Kent to Pepper Hill near Gravesend, whilst Section 2 continues the line under the Thames at Swanscombe, and then runs through Essex and East London to London St Pancras.

The massive engineering and construction project necessitated one of the largest programmes of archaeological works ever undertaken in Britain. Desk-based assessment was followed by extensive evaluation, comprising field-walking, trial trenching, test-pitting, and borehole investigation. This allowed HS1's impact on the finite archaeological resources along the route to be assessed and mitigated. Where archaeological sites could not be bypassed, or preserved *in situ*, excavations were undertaken in advance of construction. The principal archaeological work for Section 1 took place in 1998–2001, while that for Section 2, commissioned by URN, took place between September 2000 and March 2003.

Construction work relating to Section 2 in the Ebbsfleet valley included HS1 itself, Ebbsfleet International Station and associated access roads, and a connecting line to the existing North Kent Line. Oxford Archaeology undertook detailed excavation and a watching brief on land south of Northfleet, centred on NGR 516413 174196, towards the north end of the valley, while Wessex Archaeology undertook detailed excavation, strip, map and sample excavation, evaluation and a watching brief on various sites around the south end of the valley, at Springhead, centred on NGR 618000 727500. Following completion of the HS1 programme of work in 2003, there have been further, sometimes extensive, investigations within and adjacent to the Ebbsfleet valley, in advance of infrastructure works and housing and commercial developments. Although these have revealed Palaeolithic and other early prehistoric remains, as well as further discoveries of Late Iron Age, Roman, and Saxon date, it is not anticipated that any major revisions will be required to what is presented in this publication.

The four volumes of this publication comprise one of two separate archaeological studies reporting on the HS1 Section 2 excavations in the Ebbsfleet valley. The other publication, *Prehistoric Ebbsfleet*, focuses on Palaeolithic, Mesolithic, Neolithic, Bronze Age, and earlier Iron Age activity. The present publication, *Springhead and Northfleet*, concentrates on Roman and later activity, but also takes into account the late prehistoric origins of the Roman occupation of the area. The overlap with the *Prehistoric Ebbsfleet* study, however, is slight as the most important later prehistoric remains – the Late Iron Age ritual or ceremonial activity near the Ebbsfleet spring at Springhead – are outside the period covered by the *Prehistoric Ebbsfleet* study.

The *Springhead and Northfleet* publication reports on three major excavations, as well as on minor excavations, evaluations, and other investigations, both HS1 and non-HS1. The principal discoveries comprise late prehistoric, Roman, and Saxon features at Springhead, including a sanctuary complex within the Roman town of *Vagniacis*, and two Middle Saxon cemeteries to its east (site code: ARC SPH00); the Roman Roadside Settlement at Springhead Nursery (site codes: ARC SHN02 and WA 51724); and late prehistoric, Roman, and Saxon features at Northfleet, where a Middle Saxon watermill was discovered immediately adjacent to the Northfleet Roman villa (site code: ARC EBB01). Investigations were also undertaken on the site of a Roman high status walled cemetery south-east of Springhead, first investigated between 1799 and 1802 (site codes ARC WCY02 and WA 52379). This publication also consider the results of earlier (as well as ongoing) investigations and excavations undertaken by a variety of groups at both Springhead and Northfleet Roman villa.

The detailed specialist reports in this volume of the *Springhead and Northfleet* publication cover all the Late Iron Age and Roman artefacts recovered during the

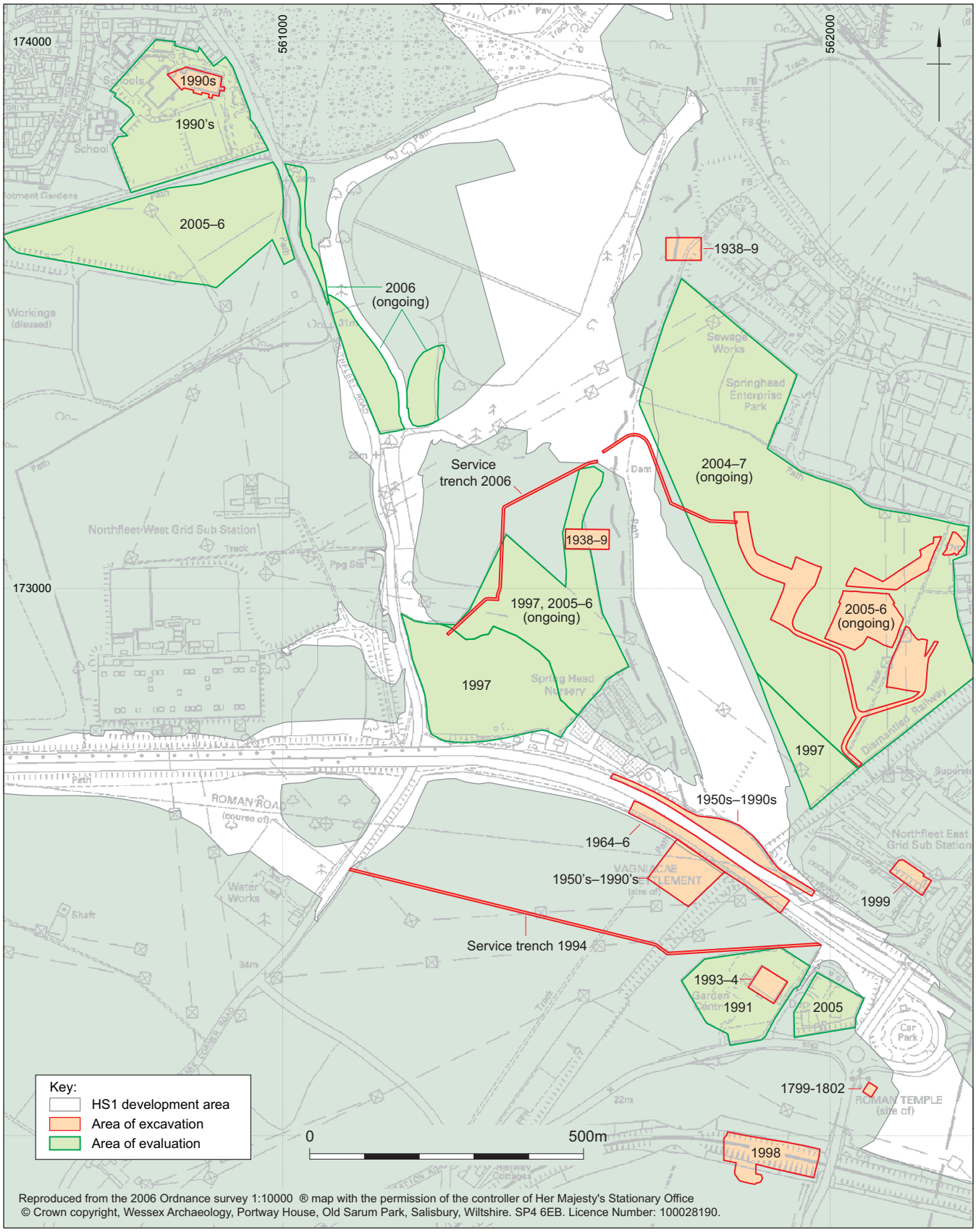
reported excavations. These include the analysis of approximately 2158 kg of pottery, dated from the pre-Conquest, earlier 1st century AD until possibly the early 5th century, although most of it is of mid-1st to early/mid-3rd century AD date. In addition, 1756 coins and tokens were recovered, and over 2600 other metal small finds, as well as some 3000 nails. Many of the metal finds comprise items of personal adornment and dress, and various fittings, but others include household utensils and furniture, objects for weighing and measuring, pieces of toilet or medical equipment, tools associated with manufacture and agriculture, military equipment, and votive and religious pieces.

Slag was recovered from a probable smithy in the Roadside Settlement, and from another to the east, pre-dating the Sanctuary complex; while virtually all of it derives from forging/smithing, a small component indicates iron smelting. The ceramic building material was associated with a range of structures, including those in the Sanctuary complex, and the temple within the Roadside Settlement, as well as with crop drying or malting kilns, ovens, and hearths. Almost 400 pieces of wall plaster were recorded, mostly from the Roadside Settlement, including a small area of *in situ* plaster, recorded but not lifted, in one of the rooms of the temple structure.

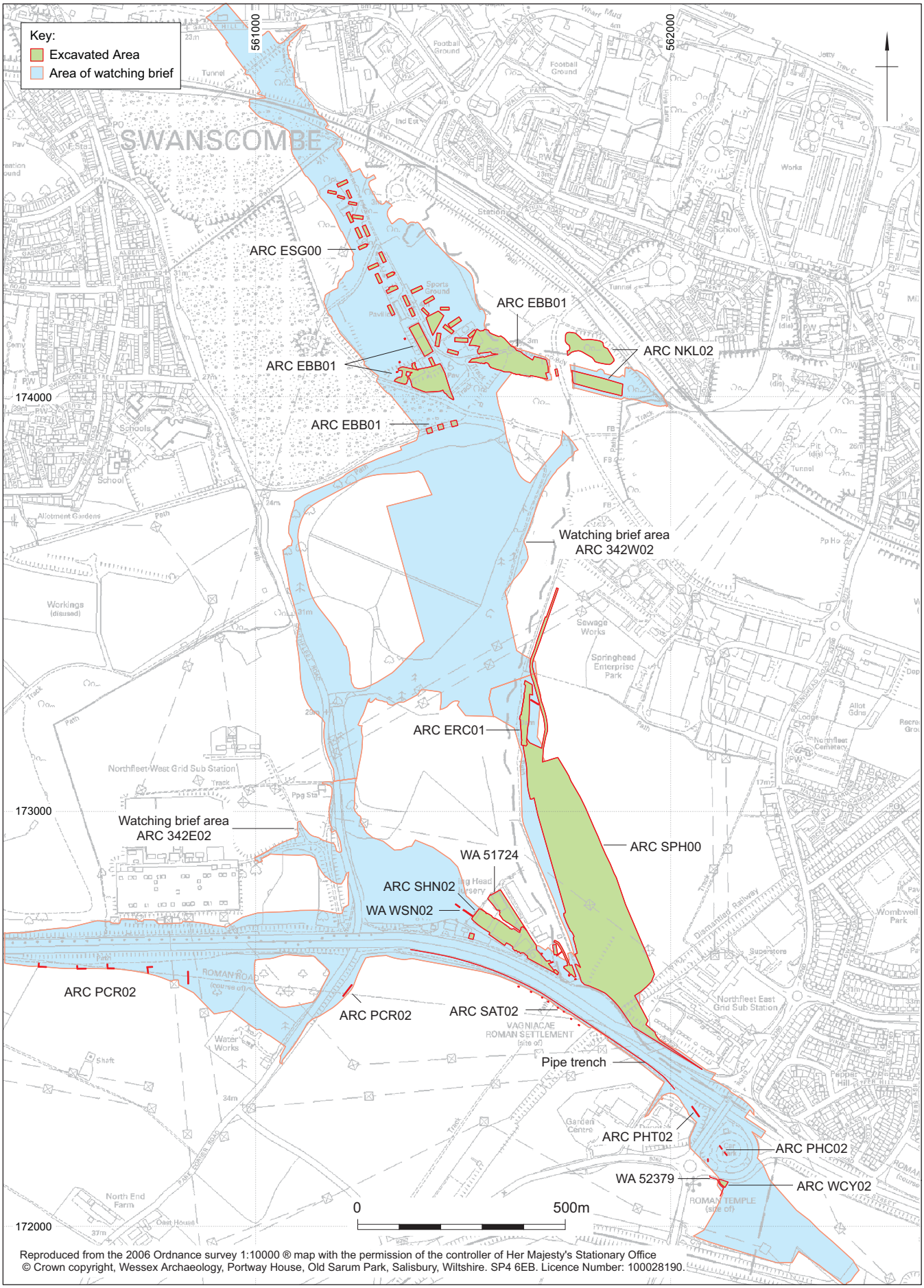
The report on Roman woodwork, which comprised elements of riverbank revetments and well/cistern and pit linings, as well as pieces of fine woven basketry, considers raw materials and woodworking technology. The worked stone report examines some 95 rotary querns and eight millstones, and well as grinding stones and whetstones, and small quantities of structural and decorative stone including two *tessarae*. Other object found include shale armlets and spindlewhorls, two jet beads, and fragments of at least two pipeclay Venus figurines, along with glass, leather shoes, and objects of bone, including pins and needles, bracelet fragments and a comb.

For ease of reference, the site and trench location figures from Volume 1 (Figs 1.1–1.3) are repeated here. For all other relevant archaeological plans, sections and photos, the reader should refer to Volume 1.

HS1 Sections 1 and 2, and map of the Ebbsfleet Valley and surrounding area showing HS1 development area at Springhead and Northfleet



Map of Springhead and surrounding area showing non-HS1 Section 2 archaeological investigations



Map of the Ebbsfleet Valley showing HS1 and non-HS1 archaeological investigations (with site codes)

Chapter 1
Late Iron Age and Roman Pottery

by Rachael Seager Smith, Kayt Marter Brown, J M Mills, and Edward Biddulph

The Pottery from Springhead

by Rachael Seager Smith, Kayt Marter Brown, and J M Mills

The late Iron Age and Roman assemblage amounted to 121,564 sherds, weighing approximately 2158 kg. The pottery predominantly dates from the middle of the 1st century to the early/mid-3rd century AD with far smaller quantities of pre-Conquest, earlier 1st century AD, and late Roman sherds, dating from the late 3rd or 4th centuries, possibly extending into the early 5th century.

Overall, the condition of the pottery is extremely good. The mean sherd weight of 18 g for the assemblage as a whole is relatively high (most Roman assemblages from southern England fall within a range of 9–20 g). Most pieces survive in a crisp, fresh condition, enabling many refits to be made. Sherds showing any significant degree of edge damage or surface abrasion are very much the exception and tend to derive from predictable contexts – open yard surfaces or roads and trackways, for example. Other traces of surface ware or erosion are more commonly associated with heavy or prolonged use rather than aggressive burial conditions, permitting comments to be made on the ways in which pottery containers were used. Some context groups have also been subjected to burning, presumably post-usage.

Methodology

It was recognised at a very early stage that full analysis of this very large assemblage would never be practical or even, given its perceived character, desirable. Overall, the assemblage is relatively restricted in date (spanning little more than 150 years) and largely made up from a repetitive range of coarsewares which are not closely datable, although the samian and other finewares offer some chronological potential. As a reflection of this, the samian was examined in its entirety (see Mills below) but, with the impossibility of full analysis in mind and in order to provide a basic ceramic archive (Darling 1994, 3–5), it was decided that all other fabrics would be subjected to only a detailed scan. This was aimed at characterising the entire assemblage, providing an indication of chronology, basic quantified fabric, and vessel form data and highlighting unusual or interesting features of the assemblage (such as evidence of use or repair) as a foundation for future research.

All sherds were examined on a context by context basis and divided into fabric groups or broad ware categories, for example 'shelly wares', 'sandy fabrics', 'Thameside/Upchurch greywares'. Where appropriate, usually for imported or regionally traded wares, more specific fabric identifications were used: '*Verulamium* region greyware', 'Rhodian amphora', 'ring-and-dot beaker fabric', for example. Detailed fabric analysis (based on a combination of source, predominant inclusion type, and size) was not undertaken, it being clear from a very early stage that, within the major fabric types (north Kent/south Essex shelly wares and the grog-tempered wares, for example, as well as, although perhaps to a lesser extent, within the sandy Thameside fabrics), wide variation was present, even within a single vessel. Sherds were then quantified by number and weight (in grammes) within these fabric groups. This information is summarised in Table 1 and the wares are discussed in six broad family groups: imported finewares, amphora, mortaria, British finewares, oxidised wares and other coarsewares. The discrepancy in the total quantities of samian shown in Tables 1 and 2 is caused by different methods of counting (every individual sherd was included in Table 1, but during the samian analysis two or more pieces from the same vessel from the same context were counted as one) and the use of different sets of scales.

Standard type series (such as Hawkes and Hull 1947; Marsh 1978; Tyres and Marsh 1979; Thompson 1982; Going 1987; Monaghan 1987) were used to describe the range of vessel forms present in each fabric, quantified by the number of rims, although occasionally other highly distinctive elements (strainer bases, *patera*, and cauldron handles, for example) were also included. The individual form codes used are listed, together with an indication of their frequency, in the archive. Additional information, such as the condition of the sherds if exceptional, the presence of graffiti, stamps, and residues, pre- or post-firing perforations, or other evidence of use or repair, and suitability for illustration, was noted in a free-text comments field. In addition, a subjective assessment of the intrinsic ceramic interest and perceived stratigraphic integrity of the context group (on a Yes/No basis) was made to highlight contexts potentially suitable for illustration and further analysis. Spot-dates were recorded for each fabric and for the

Table 1 Springhead pottery: quantification (No sherds/weight in g) of all late Iron Age and Roman sherds by phase and fabric

Ware	M/L Bronze Age	Late Iron Age	Early Roman	Mid-Roman	Late Roman	Saxon	Medieval	Modern	Unphased	Total
Imported finewares:										
Samian	5/46	3/71	1598/17,948	2185/29,120	124/2421	30/226	26/182	60/767	160/1694	3389/50,957
Terra rubra		4/19	12/77	2/18					2/67	20/181
Terra nigra		3/12	19/144	8/61			1/4		2/23	33/244
Central Gaulish lead glazed			8/28							8/28
Pompeian red ware			4/43	1/5						5/48
Lyons ware			1/1							1/1
Central Gaulish colour-coat		1/18	26/439	62/487	1/1	1/8	1/5		1/13	93/971
Cologne colour-coat			19/115	48/303	29/382				5/12	101/812
Argonne colour-coated ware			8/24	20/87						28/111
Central Gaulish black-slipped				50/162						50/162
Moselkeramik			1/3	7/60	2/2					10/65
North Gaulish grey ware			7/125							7/125
subtotal:	5/46	11/120	1703/18,947	2383/30,303	156/2806	31/234	28/191	60/767	170/1809	4547/55,223
Amphorae:										
Dressel 20 amphora		1/17	431/37,218	709/54,768	15/2422		1/2	5/711	26/2995	1188/98,133
Gallic amphora			30/1086	42/2954					3/155	75/4195
Dressel 2–4: micaceous			8/759	3/216					1/240	12/1215
Dressel 2–4: 'black sand'			1/18							1/18
Dressel 2–4: feldspathic				1/125						1/125
Dressel 2–4: south Italian			1/33	1/40						2/73
London 555 amphora			2/45	15/1973						17/2018
Cadiz amphorae			14/1728	5/429						19/2157
Rhodian amphorae			4/1729	4/622						8/2351
Unassigned amphora			11/903	17/714						28/1617
subtotal:		1/17	502/43,519	797/61,841	15/2422		1/ 2	5/711	30/3390	1351/ 111,902

Table 1 Springhead pottery: quantification (No sherds/weight in g) of all late Iron Age and Roman sherds by phase and fabric (continued)

Ware	M/L Bronze Age	Late Iron Age	Early Roman	Mid-Roman	Late Roman	Saxon	Medieval	Modern	Unphased	Total
Mortaria:										
North Gaulish mortaria			32/3230	63/5166	4/154					99/8550
Massif Central mortaria			1/194	3/160		1/20	1/143			6/517
Rhineland mortaria			1/224	9/749						10/973
Verulamium whiteware			152/16,395	82/7196	1/126				2/460	237/24,177
Colchester mortaria			19/2273	99/8827	3/175				7/591	128/11,866
Wiggonholt mortaria			4/152	1/67						5/219
unassigned mortaria			17/1374	57/3848	5/235	1/103	1/47	1/239	9/556	91/6402
Oxon white-slipped red ware					1/29					1/29
Oxon whiteware mortaria	1/96	1/26		11/344	12/1137		1/16	1/14		27/1633
Oxon colour-coated ware			1 /2	3/63	5/183		1/3	2/64		12/315
Hadham oxidised ware					1/5					1/5
Nene Valley whiteware					1/110					1/110
subtotal:	1/96	1/26	227/23,844	328/26,420	33/2154	2/123	4/209	3/317	18/1607	618/54,796
British finewares:										
Fine Greyware	2/8	24/348	7071/58,410	4636/31,697	90/1029	42/208	59/295	45/400	252/1458	12221/93,853
Local fine oxidised wares		1/7	838/7122	474/4399	20/211	3/12	13/51	10/77	27/177	1386/12,056
Upchurch painted ware			197/1802	42/303						239/2105
Eccles ware		1/53								1/53
Ring and dot beaker fabric			10/80	21/242						31/322
British lead-glazed wares			2/15	5/44	1/12					8/71
London marbled ware			4/15	15/62						19/77
London white egg-shell ware			1/1	2/2						3/3
Stamped London Ware			7/62	10/135						17/197
Mica-dusted wares		1/5	62/819	94/1437	1/60					158/2321
Highgate C ware			59/492	14/210						73/702
Colchester colour-coat			7/26	21/197	19/231				1/10	48/464
Nene Valley colour-coat			7/36	10/195	66/752	2/25	1/3	1/6		87/1017
Oxon colour-coat			3/59	4/28	68/752			4/84		79/923
unassigned colour-coats		2/3	2/73	11/34	4/111	1/4		1/26		21/251
subtotal:	2/8	29/416	8270/69,012	5359/38,985	269/3158	48/249	73/349	61/593	280/1645	14391/ 114,415

Table 1 Springhead pottery: quantification (No sherds/weight in g) of all late Iron Age and Roman sherds by phase and fabric (continued)

Ware	M/L Bronze Age	Late Iron Age	Early Roman	Mid-Roman	Late Roman	Saxon	Medieval	Modern	Unphased	Total
Oxidised wares:										
Hoo ware	5/59	1/23	1720/18,298	1219/13,254	37/549	26/227	16/234	19/171	72/563	3115/33,378
White-slipped red wares	1/12	7/67	1325/12,672	709/8357	54/1177	2/6	17/112	10/87	64/514	2189/23,004
Verulamium whiteware	3/37	51/303	968/16,120	616/12,141	7/121	3/99	13/165		48/858	1709/29,844
Verulamium white-slipped			6/169	5/94						11/263
North Gaulish coarseware			75/1207	30/758						105/1965
Oxfordshire parchment ware					1/8			2/62		3/70
Hadham oxidised ware			1/5		21/251		1/6			23/262
Eifelkeramik				1/17						1/17
Miscellaneous oxidised wares	2/38	14/104	841/10,674	1058/17,608	51/914	6/20	14/195	15/181	42/291	2043/30,025
Miscellaneous whiteware		26/270	206/2936	72/839	5/101	1/12		1/11	5/117	316/4286
subtotal:	11/146	99/767	5142/62,081	3710/53,068	176/3121	38/364	61/712	47/512	231/2343	9515/123,114
Coarsewares										
Thameside/Upchurch greywares	5/242	77/1136	13,564/178,795	23,161/305,836	2904/42798	239/2239	169/1824	294/5207	994/12,084	41,407/550,161
Sandy fabrics	4/21	317/5975	992/13,189	404/4197	4/15	10/139	8/122		21/301	1760/23,959
Greywares		12/265	590/7283	432/6024	123/2384	2/17	18/312	28/462	22/257	1227/17,004
North Kent/South Essex shelly ware	22/299	728/16,900	23,093/551,559	9964/252,428	237/3824	164/2344	145/2097	56/1029	766/14,782	35175/845,262
Grog-tempered ware	15/249	943/16,505	4272/78,750	1263/26,343	43/552	40/460	21/278	8/180	198/3056	6803/126,373
Patchgrove ware		150/3234	1711/54,451	1355/36,025	213/13,268	26/492	4/105	25/1019	82/1714	3566/110,308
Fine shell and grog-tempered		86/2098	197/4294	15/257					2/52	300/6701
Early shelly wares		52/1028	112/2574							164/3602
Flint-tempered ware		57/1289	78/1402	13/224		9/39	1/3		3/51	161/3008
Fine sand with shell and mica		11/81	51/1222	1/22						63/1325
Kent Greensand fabric		39/341	2/7							41/348
Greensand and grog tempered			1/25							1/25
Red surfaced grog-tempered		2/11	16/48						1/ 2	19/61
Calcareous rock-tempered			2/90							2/90
Chalk and sand tempered			2/49							2/49
Coarse, gritty sandy fabric			86/1969	35/808	3/11		2/19	1/9	1/4	128/2820
Verulamium region grey ware			21/403	30/304	2/27	1/19	1/8			55/761
Alice Holt greyware			12/456		16/919					28/1375
SE Dorset black burnished			12/336	16/421	66/994	1/95	1/24		3/25	99/1895
Overwey/Tilford ware					4/76					4/76
S Midlands shell-tempered					9/184					9/184
Hard gritty grog-tempered			1/26		113/2674			4/146	10/257	128/3103
sub-total:	46/ 811	2474/ 488,863	44,815/ 896,928	36,689/ 632,889	3737/ 67,726	492/ 5844	370/ 4792	416/ 8052	2103/ 32585	91,142/ 1,698,490
Overall total:	65/ 1107	2615/ 50,209	60,659/ 1,114,331	49,266/ 843,506	4386/ 81,387	611/ 6814	537/ 6255	593/ 10,952	2832/ 43,379	121,564/ 2,157,940

context group as a whole, all data being stored in a database, linked to the stratigraphic information and other finds types. The Pottery Record Numbers (PRN) in the illustration catalogues presented here refer to the archive database numbers of the individual sherds.

However, when considering the pottery, it must be remembered that the overall site phasing was undertaken at the feature level, rather than on an individual context basis. For example, if a ditch was considered to have been dug during the last 20 years of the 1st century AD, it and all its fills were assigned to the early Roman phase, even if the uppermost layers were not deposited until the Saxon period. Such extreme examples are fortunately very rare but the principle applies even within the Roman period itself; the mid-Roman features and deposits include sherds current during that period (*c* AD 120/130–early 3rd century) as well as residual, early Roman material and, potentially at least, later sherds from the uppermost levels, and so on. This explains the minor aberrations in the phasing shown on Table 1 (late fabrics in early phases) and in the illustrations of the ceramic groups, but also means that the ceramics from the various phases presented here cannot be treated as discrete chronological groups, thus limiting the appropriateness of detailed discussion of the assemblage by phase.

Imported Finewares

The imported fineware fabrics formed a minor component of the ceramic assemblage, accounting for only 4% of the sherds (3% of the weight). Samian was overwhelmingly dominant among this group, all the other imported fabrics amounting to just 356 sherds, 2748 g.

Samian

by J M Mills

Abbreviations:

Vessel forms:		*Fabric codes:*		*Reference works:*
Déch	Déchelette	SG	South Gaul	O&P Oswald and Price 1920
Lud	Ludowici	CG	Central Gaul	Vernhet Vernhet 1976
Ritt	Ritterling	EG	Gaul	S&S Stanfield and Simpson 1990
				Rogers Rogers 1974

Where vessel forms are referred to as 'form' by number, or are followed by a number, relate to the Dragendorff series.

The assemblage

The assemblage represents a maximum of 3389 vessels and is drawn from most of the samian producing areas of Gaul. The date range extends from the early 1st century AD through to the middle of the 3rd century, although two 'Arretine' ware sherds are of Augustan or Tiberian date. The assemblage profile is similar to that of the collections from the previous excavations at Springhead (J Bird pers comm) but, as with most British assemblages, the samian levels are not constant through time, mirroring the usual, well-documented fluctuations of supply to Britain (Marsh 1981, fig 11.15). The detailed quantities of sherds, weight and vessel numbers are shown in Table 2, and can be expressed in basic terms (based on vessel numbers) as follows: 44% from La Graufesenque (South Gaul) ; 3% from Les Martres-de-Veyre (Central Gaul); 48% from Lezoux (Central Gaul); 5% from East Gaul (seven centres identified); 1% from other centres ('Arretine'-type wares, 1st century micaceous Lezoux wares, Montans, and British samian).

In these simplistic terms, minor differences are discernible between the material from the Roadside settlement (ARC SHN02) and the Sanctuary site (ARC SPH00). Around 50% of the vessels from the Roadside settlement are from La Graufesenque whilst only 35% of the samian from the Sanctuary site is South Gaulish, despite its earlier start date. In this area, a slight bias towards the Hadrianic and Antonine wares was noted, with *c* 54% of the vessels being from Lezoux, compared with 41% of those from the Roadside settlement. The Sanctuary site, however, produced some of the earliest South Gaulish pottery while East Gaulish samian vessels were almost twice as common here than in the Roadside settlement, although more than 2% are from the Argonne kilns, which are generally of Antonine date and contemporary with the pots from Lezoux.

The majority of samian survives in very good condition with no surface erosion from aggressive soil conditions. A few sherds have a fairly stubborn accretion of a 'cessy' nature on one or both surfaces, while the complete vessels from the graves 6347 and 6608 have limescale on some surfaces. This is very dense on the external surface of the form 27g cup, as if it had been standing in water. Very little, if any, post-depositional abrasion was observed, suggesting comparatively little re-working of the soils. This was corroborated by evidence from sherd size; the average sherd weight for the samian being 13 g (personal observations by the author suggest a weight of 6–7 g is more typical of material from heavily worked soils).

A small quantity of sherds are burnt. This ranges from slight scorching, perhaps affecting only one edge, to the heavy burning and blackening of entire sherds. More burnt sherds were recorded on the Sanctuary site (176 sherds, 3115 g) than in the Roadside settlement (110 sherds, 2262 g), the burnt sherds amounting to *c* 10% and 5% of the site assemblages respectively. The early 'bakery' complex in the sanctuary area produced 27% of the burnt sherds (48 sherds), and the portico building *c* 14% (25 sherds), whilst within the Roadside settlement properties 10 (13%: 14 sherds), 11 (17%: 19 sherds), and 12 (13%: 15 sherds) had the greatest concentrations.

'Arretine' ware

Each excavation area produced one sherd from a vessel identified as 'Arretine-type' ware rather than Gaulish samian. A stamped cup base (Fig 1, 1; Stamp Cat No 1) similar to Conspectus form 22, found residually in

Table 2 Quantities of samian by site and production centre (fabric)

Fabric	SPH00 Vessels (max No)	SHN Vessels (max no)	ALL Vessels (max no)	SPH00 Sherds (no)	SHN Sherds (no)	ALL Sherds (no)	SPH00 Wt (g)	SHN Wt (g)	ALL Wt (g)	SPH00 Av size (g)	SHN Av size (g)	ALL Av size (g)	ALL Vessels % of total
'Arretine'	1	1	2	1	1	2	4	3	7	4	3	3.5	0.05
SG (La Grauf)	555	923	1478	644	1056	1700	6258	11315	17573	10	11	10.5	43.5
Montans	5	10	15	10	10	20	113	94	207	11.5	9.5	10.5	0.5
C1st Lezoux	10	4	14	10	6	15	100	106	206	10	17.5	13.5	0.5
Les Martres	50	52	102	55	60	115	809	846	1655	14.5	14	14.5	3
Pulborough	0	1	1	0	1	1	0	22	22	0	22	22	0.05
CG (Lezoux)	864	743	1607	982	840	1822	13271	12872	26143	13.5	15.5	14.5	47.5
Argonne	37	6	43	51	6	57	789	88	877	15.5	14.5	15.5	1
Blickweiler	1	0	1	5	0	5	133	0	133	26.5		26.5	0.05
Chemery Faulquemont	1	0	1	1	0	1	21	0	21	21		21	0.05
Heiligenberg	0	2	2	0	2	2	0	38	38	0	19	19	0.05
La Madelaine	2	0	2	2	0	2	72	0	72	36		36	0.05
Rheinzabern	11	14	25	22	25	47	427	461	888	19.5	18.5	19	1
Trier	12	20	32	19	21	40	310	822	1132	16.5	39	28.5	1
EG	34	19	53	37	25	62	1102	625	1727	30	25	28	1.5
All EG	1583	1795	159	137	79	216	2854	2034	4888	22.5	33.5	22.5	5
?Toulon-sur-Allier	0	2	2	0	2	2	0	61	61	0	30.5	30.5	0.05
CG or EG	4	5	9	4	11	15	40	155	195	10	14	13	0.5
all	1587	1802	3389	1843	2066	3909	23449	27508	50957	12.5	13.5	13	

SPH00 = Sanctuary site SHN = roadside settlement

Table 10 Springhead pottery: decorated samian forms – nos by fabric and site (and % of total for each that are dec forms)

Form	SG		C1st Lezoux		Montans		Les Martres		Lezoux CG		Argonne		Trier		Rheinz		EG	
	SPH	SHN	SPH	SHN	SPH	SHN	SPH	SHN	SPH	SHN	SPH	SHN	SPH	SHN	SPH	SHN	SPH	SHN
29	43	71	1	1														
30	13	8				1		2	9	8								
37	22	28	1	0	0	1	8	9	100	99	10	2	6	4	3	3	4	1
30 or 37	1	2							1	7								
78	0	1																
Total	79	110	2	1	0	2	8	11	110	114	10	2	6	4	3	3	4	1
Total vessels	555	923	10	4	5	10	50	52	864	743	37	6	12	20	11	14	34	18
% decorated	14%	12%	20%	25%		20%	16%	21%	13%	15%	27%	33%	50%	25%	27%	21%	12%	5%

sunken-featured building (SFB) 400120 on property 12 (context 11909), dates to the Augustan era (P Kenrick, pers comm), while G Dannell identified a rim sherd (Fig 1, 2) as 'probably Arretine of Conspectus form 18, Augusto–Tiberian in date'. The latter came from a possible later prehistoric deposit (context 5082) at the head of the Ebbsfleet apparently associated with the use of the springs at this time. These are the earliest fineware vessels from the site, their occurrence suggesting that activity centred around the springs began prior to the Conquest.

South Gaul: La Graufesenque

The kilns at La Graufesenque were by far the most prolific samian kilns operating in the 1st century AD. Although a few vessels from Montans were identified, none of the other small South Gaulish kiln sites is represented at Springhead. South Gaulish samian amount to approximately 44% of the entire assemblage (1700 sherds, 17.5 kg and a maximum of 1478 vessels). *Table 3* gives the number of vessels by excavation area. A wide range of forms was identified but 112 sherds (257 g), usually small, plain bodies, were not assigned to particular forms. The earliest South Gaulish wares date from the Conquest or slightly before, but most belong to the Neronian and Flavian periods. The latest vessels date from *c* AD 80–110, but these are not numerous.

Approximately 60% of the South Gaulish vessels came from the Roadside settlement and 40% from the Sanctuary site; in general the split between the two sites for each vessel form follows the same ratio. However, the Roadside settlement yielded more forms 18R (70%:30%), 33 (80:20), 36 (70:30), Curle 11 (80:20), and Curle 15 (75:25), whilst the ratios are reversed for form 30 where 60% of the examples are from the Sanctuary site. Although the figures are less statistically viable for the uncommon forms, it is notable that the only closed vessel forms (three Déch 67s) were found on the Sanctuary site, while the only mould decorated cup, Knorr 78 (Fig 1, 3; Dec Cat No 3), and the two Ritt 13 inkwells are from the Roadside settlement. A small group of cups and plates (forms 42 and 46; eg, Fig 1, 4–6), a total of 11 vessels, may have a special importance on 'ritual' sites and are discussed more fully below.

Around 60 of the vessels are pre-Flavian forms (Hermet 5 (Fig 3, 20), forms 11 (Fig 3, 17), 16, 22, 24/25, Ritterling forms 1, 8, 9, and 12). The pre- to early-Flavian element of the assemblage also includes form 29 bowls, some of the form 18 dishes and form 27 cups, and most of the 90 or more form 15/17 or 15/17R platters. The precise quantification of this last form is difficult because the footrings cannot be distinguished from those of the form 18 platters; the forms only become identifiable once the base angle (and/or rim) survives. Flavian introductions include the cup and bowl sets identified by Alain Vernhet (1976, fig 1); recorded here are forms 35 and 36, 46 and Curle 15, and cups and dishes of form 42. Curle 11 and the decorated bowl form 37 were also introduced around AD 70. The earlier moulded bowls (form 29) outnumber those of form 37 by 2:1 at Springhead, emphasising the importance of pre- to early- Flavian activity.

Decorated forms account for approximately 13% of all the vessels from La Graufesenque, a percentage which, even for South Gaulish wares, is low (see below). Comparatively few decorated vessels were attributed to a particular potter or group of potters because most are too small with insufficient decoration surviving (around half of them weigh less than 10 g). Ten attributed vessels come from the Cluzel 15 group (Haalebos 1979), while other form 29s have links with bowls stamped by potters such as Cabiatus, Calvus, Crestio, Iucundus ii, Melianus, Niger, and Volus.

Even fewer of the form 37s were attributed to potters, but those identified span the entire Flavian and Flavian–Trajanic production period and include C V Albanus, Amandus iii/CCingius Senovir, Crucuro, M Crestio, Mercator, and Vitalis ii. Potters' stamps were recorded on 51 vessels, with two on form 29 bowl bases, but these have no surviving decoration; the rest are on plain ware vessels. Thirty-eight of the stamps are identifiable (see Dickinson and Mills below and *Table 4*) in addition to a form 46 var cup with a rosette stamp (Fig 1, 6). A few of the vessels from La Graufesenque appear to be variations of standard forms, the Knorr 78 cup (Fig 1, 3) for example and variations of forms 33, 42 and 46 are noteworthy and are discussed further below.

South Gaul: Montans

A maximum of 15 vessels come from the lesser South Gaulish centre at Montans. Production began in the early decades of the 1st century AD, continuing until *c* AD 145. The earliest vessel is a Neronian form 15/17 platter; other 1st century wares include single examples of forms 18R, 30, handled cup form 42 (Vernhet E1; Fig 1, 10), 33a, and two unidentifiable cups. The late 1st–early 2nd century forms include two form 27 cups and another unidentified cup. Three other form 27s, two with stamps of Q V_ C_ (Stamp Cat Nos 85, 86), and a form 36 bowl with barbotine decoration in white slip, are of Hadrianic–early Antonine date. The only decorated forms are a 2nd century form 37 bowl, carelessly made so that the ovolo was trimmed off (Fig 6, 36), and a late 1st century form 30, both from the Roadside settlement.

The presence of these few vessels shows that Montans products were available at Springhead for around 100 years from the middle of the 1st century AD. These must have been especially important during the late 1st and early 2nd centuries, when the supply from La Graufesenque was in decline and only relatively small quantities of Central Gaulish samian were available.

Central Gaul: micaceous, 1st century AD Lezoux

During the 1st century AD, before the potters at Lezoux had mastered the production of samian, a softer, more micaceous ware was made, often with a thin, orangey slip. This was not exported to Britain in any quantity and much of it may have come to Britain with the army

(B Dickinson pers comm). A maximum of 14 vessels (16 sherds, 206 g) was identified. Ten were found on the Sanctuary site, where forms 18 (5), 27 (1), 29 (1), 37 (1), Ritt 12 (1), and another bowl fragment were identified, all of Neronian to mid-Flavian date. Flavian vessels (forms 27 (2), 35 (1), and 29 (1)) were found in the Roadside settlement. Most sherds in this fabric occurred residually, together with other sherds of demonstrably later date, and many are burnt. One large fragment from a form 29 bowl (Fig 4, 24) from property 11 may, however, be contemporary with the structure.

Central Gaul: Les Martres-de-Veyre

The Les Martres-de-Veyre kilns were short-lived, but the products imported to Britain during the first quarter of the 2nd century were important as the supply from La Graufesenque declined and eventually dried up around AD 110. However, Les Martres never produced the quantities of pots that La Graufesenque did, the early 2nd century drop in the quantity of samian seen at Springhead matching that observed on nearly all British sites (Marsh 1981). A maximum of 102 vessels, approximately 3% of the assemblage (115 sherds, 1655 g), reached Springhead. Compared with La Graufesenque, the range of vessels is restricted: cup forms 27 (12), 33 (6), 33a (2), 35 (4), 46 (1), O&P LV, 13 (1), and bowl forms 18/31 (38), 18/31R (3), 30 (2), 36 (5), 37 (17), Curle 11 (1), and Curle 15 (1), with additional scraps from six unidentified plain ware vessels and two closed forms noted. Potters' stamps (Stamp Cat Nos 1, 8, 15, 63, 87, 117) were recorded on six plain vessels (five on form 18/31s and a rosette stamp on the form 46 cup), but two are very incomplete. The potters are Agedillus, Balbinus, Butturrus, and Reginus ii; the bowl with the Butturrus stamp being one of only two Les Martres vessels dated to *c* AD 135–60, the bulk dating *c* AD 100–125. Of the 18 decorated bowls (Dec Cat Nos 120–37), four are attributed to Drusus I (X-3), four to Potter X-13, two each to Potter X-12, and the Rosette potter and single examples to X-2 and X-8.

Central Gaul: Lezoux

Lezoux samian reached Britain from Hadrianic times until the close of the 2nd century. Overall, 48% of the samian from Springhead is from Lezoux; *c* 54% of the assemblage from the Sanctuary site and 41% from the Roadside settlement. A maximum of 1607 vessels (*Table 5*, 1822 sherds, 13,271 g) was recorded; of these, around 150 sherds (less than 500 g) were not identified to form and a further 206 were identified only to generic form type, such as 'bowl'.

It is routine practice in samian studies to compare the ratios of cup forms 27 and 33, bowl forms 18/31 and 31, and their rouletted versions with one another to give an indication of the period of greatest activity. Forms 27, 18/31, and 18/31R are all thought to have gone out of production by *c* AD 160 while bowl form 31 first appeared during the Antonine period (*c* 140–190), its rouletted version emerging around AD 165. Although form 33 cups were made throughout the life of the predominantly earlier form 27 vessels, the 33 form continued right through until the end of the samian industry. At Springhead, these vessels occurred in the following proportions: Form 27:33 (whole site) 1:4; Form 18/31R:31R (whole site) 2:3; Form 18/31:31 (sanctuary) 4:1; Form 18/31:31 (settlement) 3:2.

Taking the bowl ratios alone, one might conclude that activity during the later 2nd century was not significantly greater than during the Hadrianic and early Antonine period. However, evidence from the decorated and stamped vessels suggests that samian consumption took off in the 2nd quarter of the 2nd century, peaking in the 3rd quarter before falling back slightly towards the end of the century as imports from Lezoux declined. The presence of nine stamps and 38 decorated vessels dating to *c* AD 160–90, along with forms 31R, 32, 40, 45, and Walters 79/80, all of which were introduced in the latter part of the 2nd century, indicate that samian use continued to the end of the century. This accords well with the predominance of form 33 cups, which leaves us querying evidence provided by the bowls, especially those from the Sanctuary site, where form 18/31 out-numbers form 31. Factors of chronology may be at work here, for activity within the Roadside settlement clearly continued into the late Roman period while the Sanctuary site was largely out of use by the end of the 2nd/early 3rd centuries, although the generic ('bowl', 'dish') catagorisation of many of the small pieces might be responsible for the under-representation of the 18/31 and 31 form series. The overall number of form 33 cups is also higher than usual at Springhead; vessels from the pit alignment (300073) in the Sanctuary complex, in particular, have a very high incidence of this form, which represent 16 out of the 50 Lezoux vessels present.

The overall range of forms is unremarkable, with most of the standard cup and bowl forms present. There are very few fragments of closed vessels and none with decoration of any kind surviving, a point also noted for the South Gaulish wares. Closed forms were never especially common in Britain, so their paucity may not be significant. Of the seven samian mortaria from Lezoux, six were found within the settlement.

Decorated wares form only 14% of all the Lezoux vessels, a low total for any but the most rural of sites in Britain (see discussion below). Approximately one-third of the recorded bowls of forms 30 (17) and 37 (199) are attributable to potter (*Table 6*). Most of the potters are represented by only one or two vessels with the mid–late Antonine vessels of the prolific Cinnamus group and, to a lesser extent, Paternus II and his contemporaries, dominating the assemblage. This domination of the British samian market by the firms of Cinnamus and Paternus II was illustrated in London where a quarter of the Lezoux ware has been attributed to Cinnamus (Marsh 1981, 184) and only slightly less to Paternus II. Two of the decorated bowls have large 'advertisement' stamps of these firms within the decoration (Fig 7, 44 and Stamp Cat No 54/Dec Cat No 171, not illus) while 31 plain ware vessels have readable potters'

stamps (*Table 7*). These closely dated vessels (decorated and stamped) peak in the middle Antonine years (*c* AD 160–80), coinciding with the peak of production at Lezoux.

Central Gaul: Toulon-sur-Allier

Sherds from two mortaria from mid-Roman deposits on property 4 (context 16861) were made in a hard-fired, dark orange-red fabric with few inclusions, tentatively identified as being from this, or at least one of the smaller, Central Gaulish centres (B Dickinson, pers comm). They were associated with late Antonine Lezoux wares and late 2nd and early 3rd century East Gaulish vessels. The larger sherd (Fig 2, 13) has a slightly inward curving wall and both bowls are smaller than many of the mortaria made at Lezoux. Samian mortaria were introduced around AD 170, so these vessels must be of late 2nd century date.

East Gaul

Some 5% of the Springhead assemblage is of East Gaulish origin. Several small samian production centres were established in the Argonne and the Mosel and Rhine valleys of Eastern Gaul during the reign of Hadrian although few of these products ever reached Britain. By the end of the 2nd century most of the East Gaulish samian found in Britain was from Rheinzabern and, to a lesser extent, Trier, the two factories with the greatest output. Within the province as a whole, south and eastern England and the northern military zone received most of the East Gaulish imports.

The Hadrianic and Antonine East Gaulish ware found at Springhead came from Blickweiler (1 vessel), Chémery Faulquemont (1), La Madeleine (2), Heiligenberg (2), the Argonne group (37, including several from Lavoye), Rheinzabern (2), and Trier (7), with another 9 vessels which cannot be assigned to a specific centre. Most are standard cup and bowl forms (*Table 8*), but one hybrid of form Ludowici Sa and Curle 23 is most like a bowl from Pudding Pan Rock (O&P, pl xlvii, 2) but with a flat base (Fig 2, 14). A cup with a flat rim, made in an Argonne fabric (Fig 2, 15), may be compared with Stanfield 1929, fig 10, 47, but lacks the barbotine of that cup (see also O&P 1920, pl lv, 20, 22, 23). A single Argonne form 46 cup was recovered from the Sanctuary site. The quantity of Argonne vessels from this area is noteworthy, with over 30 examples, mostly of Antonine date. An apparent concentration occurred in the early 'bakery' complex (400039–41) area, with 11 coming from the overlying abandonment horizon. This group also includes four bowls in the style of Gesatus (Cesatus ii) of Lavoye (Fig 10, 50–4) and one in the style of Tribunus of Lavoye (Fig 10, 49). Gesatus's bowls are not particularly common in Britain. Also of note is a sherd with a finely-modelled boar (Fig 10, 55); the fabric is Argonne, but a parallel has not been found.

Of the six decorated vessels from Trier (five form 37 and one form 30), five find parallels with material from Werkstatt II (Huld-Zetsche, 1993) while the sixth may be attributed to either Censor or Dexter. The decorated bowl from Rheinzabern is probably the work of Janus I. Potters' stamps were recorded on five East Gaulish vessels. Two form 31 bowls are stamped by Lossa, another by Decmus iv of Lavoye, while a form 18/31 in an unusual yellowish fabric from Blickweiler is stamped by Caprasius, and a form 18/31R from Rheinzabern by Avitus viii.

The end of the 2nd century saw the demise of the Central Gaulish samian industry and, by this time, almost all samian coming to Britain was from Rheinzabern and Trier. The 97 late 2nd century and later vessels from Springhead include six from the Argonne group, and 23 and 25 respectively from Rheinzabern and Trier. The other 43 were not assigned to specific production sites but it is likely that they too are from the larger centres. In Britain, the majority of late 2nd century and later samian was from Rheinzabern but at Springhead the frequency of Trier wares is higher than normal (*Table 9*). Most of the vessels are bowls (79); 28 of Ludovici form Sa or Sb, 19 mortaria, and 15 form 37 decorated bowls. Few of the later decorated bowls are attributable to potter, but examples of the work of Rheinzabern potters Comitialis IV (2 vessels; Fig 11, 57), Lucianus I, Avernicus-Lutaevus, and Attoni or Cerialis I were all identified, while the 3rd century potter Primanus, who worked at Trier, was also recorded. Two of the Lud Sa bowls are stamped, but neither is identifiable. Although uncommon in Britain, two form 43 mortaria, one from Trier and one, of which 11 sherds survived, from Rheinzabern, were also found.

British samian: Aldgate-Pulborough Ware

One vessel, a form 18/31 bowl found on property 5, is probably the work of this potter and, like so much of this ware, is over-fired. The source of this fabric is now thought to have been close to Pulborough (Webster 1974, 144; 1975). Three 18/31 bowls were found in the Pepper Hill cemetery (J Bird, pers comm) and a fourth recorded from the small cemetery enclosure at Springhead (Bird 1995, 27). Interestingly, none of the decorated wares produced at this centre has been identified at Springhead and the presence of solely form 18/31 bowls indicates that a small, restricted consignment made its way from Sussex to this part of Kent, but whether directly or via London can only be guessed at.

Decorated forms

Altogether, 470 decorated forms were recorded (Table 10); those with sufficient surviving decoration are listed and described in the catalogue of decorated wares. A selection has been illustrated (Figs 3–11) with graphite rubbings to show the character of the assemblage, including the work of lesser known potters, signed and stamped bowls, and bowls with motifs previously unrecorded for the potter.

Overall, these decorated wares account for just 14% of the vessels identified. Comparison with urban sites shows this to be an unusually low proportion. Decorated

wares formed 20–25% of the South and Central Gaulish assemblage from the Wroxeter baths, for example, an amount considered by the authors to be 'an acceptable figure for a major Romanised site in Britain' (Dickinson 2000, 284) while, at Greyhound Yard in Dorchester, Dorset, decorated wares comprised as much as 28% of the samian vessels (Pengelly 1993, table 24). The proportions recorded for roadside settlement sites make better comparisons; the 1997–2000 excavations at Wilcote, Oxfordshire yielded 19% decorated samian (Mills 2004, tables 2 and 3), while another settlement on Akeman Street at Asthall had as little as 11% (Mills 1997, table 5.9), and Torthill East in Cambridgeshire, on Ermine Street, produced an assemblage of which 13% was decorated (Mills 1998, table 21).

Two of the decorated vessels from Springhead have signatures below the decoration, scratched into the mould before firing (Fig 6, 34 and Fig 8, 42). Close inspection of the Cerialis bowl shows that the mould was cracked when this vessel was made and it is therefore possible that this was one of the last bowls to be made from that mould.

Seconds, non-standard and unusual vessel forms

Samian assemblages occasionally contain vessels which seem not to have achieved the usual high standards of production, being uneven or irregular in some way. Vessels selected to accompany burials, for instance, are sometimes so irregular that they might be viewed as 'seconds'. Examples of this have been noted locally, at Pepper Hill (J Bird, pers comm) and further afield (eg, Dickinson *et al* 2004, 346). The only low quality vessels noted here, however, are a stamped form 18/31 (Stamp Cat No 4) with a dunting crack in the base and the Cerialis bowl made in the cracked mould noted above. The only other workshop errors noted at Springhead are four cups (forms 27 and 33, two from South and two from Central Gaul) which do not have stamps; both these forms were usually stamped during the 1st and 2nd centuries. A fifth unstamped cup is from Rheinzabern but the lack of potters' stamps is a known feature of 3rd century vessels.

More noteworthy are the vessels of unusual form or those less commonly encountered on British excavations. At Springhead, these comprise three decorated forms and 17 plain vessels, as well as the Arretine-type vessels which pre-date the Roman Conquest by at least two decades. The unusual decorated forms are all from La Graufesenque and comprise a poorly-moulded Knorr 78 with a 'pulled-up' rim, the style of which is more typical of form 30 bowls than form 78s (Fig 1, 3), and two uncommon forms, a Hermet 5 bowl of Neronian date, (Fig 1, 4; Vernhet 1986, 97) and a Claudian form 11 crater (Fig 3, 17).

The plain wares include a stamped form 33/33a cup with the external groove of form 33a vessels but no internal step (Stamp Cat No 95), and a cup with a rosette stamp (Fig 1, 6) representing a variant of form 46 akin to Vernhet's cup form F1 (1976, fig 1). There are also four form 42 cups (*ibid*, D1, 10803, 12206, 16218 – 2 examples) from La Graufesenque, and three barbotine decorated handled plates, one from La Graufesenque and two in early Lezoux fabrics, of Trajanic or Hadrianic date. One of these vessels (contexts 5841/5860) has elaborate barbotine decoration, including small blobs as well as leaves. Two handled cups (Vernhet E1) were recovered, one from Montans (Fig 1, 10) and one of Trajanic date from from Lezoux found in mid-Roman layer 2675 (group 400043) on the Sanctuary site. The handled cup and dish set, known as form 42, was first introduced into the repertoire of the La Graufesenque potters around AD 65–70 (Vernhet 1976) and was made for a period of about 60 years, into the Trajanic or Hadrianic period. Two of the dishes (both of Vernhet's form D2) from Springhead, however, represent further variants; one, lacking the smooth profile typical of the form, has a marked base angle instead (Fig 1, 4), while the very large vessel (Fig 1, 5) has a hammerhead rim. Overall, the Vernhet D2 dishes were relatively uncommon in Britain, with the cup forms 42 (D1) and 46 slightly less so, although they were made at most of the kilns exporting to Britain. The final example of this class, a form 46 cup from the Argonne kiln group, is possibly of Antonine date.

Later unusual vessels include the two small mortaria (Fig 2, 13) probably from Toulon-sur-Allier, while East Gaulish vessels of note include the flat-rimmed cup (Fig 2, 15) in an Argonne fabric, the form comparable with Stanfield 1929, figure 10, 47, but it lacked the barbotine (see also O&P, pl lv, 20, 22, 23), and the Lud Sa var bowl (Fig 2, 14). This bowl can be considered a hybrid of forms 31 and Curle 23, most like a Lud Sa (O&P xlvii, 2) but with a flat base. Curiously, it has three bands of abrasion, one on the top and outer surfaces of the rim, a slightly worn band part way down the exterior wall and again on the exterior surface and the bottom of the wall. Two vessels (a form 18 platter and a form 31R bowl, both from the Roadside settlement) have white slips applied below the red.

Another unusual feature of the Springhead samian assemblage is the high frequency of mortaria. A total of 30 gritted vessels (forms 43 and 45) and a single ungritted Curle 21 were identified, representing a rate of 1 mortarium to every 109 other samian vessels. At Greyhound Yard, Dorchester, Dorset (Seager Smith and Davies 1993, 203) only eight out of over 4000 vessels were of form 45, while only 12 form 45s and nine other gritted mortaria were recorded among the 3000 plus Central and 70 Eastern Gaulish vessels from the Wroxeter baths (Dickinson 2000). Similarly, there were only two form 45s out of a total of 192 Central and Eastern Gaulish vessels from the roadside settlement at Asthall (Mills 1997) and only one among more than a thousand vessels from Wilcote (Mills 2004).

The form 45 mortarium is by far the most common at Springhead (Table 11), as throughout Britain as a whole. Form 43 vessels, characterised by an overhanging flange sometimes decorated *en barbotine*, were almost exclusively made in East Gaul and were never common

in Britain. There were, for example, no definite examples amongst the large collection of late wares from St Magnus House, London although 257 form 45s were recorded (Bird 1986, fig 85). The Curle 21 form was clearly related to, and was perhaps the forerunner of, the gritted mortaria, but with only 21 examples from St Magnus House (*ibid*, fig 85), it too was never particularly common. The mortaria from Springhead were drawn from a wide variety of sources (Table 11). In Dover, the latest Argonne vessels were mortaria, the importation of other plain wares having ceased in the late 2nd century (Bird and Marsh 1981, 178–9), and a similar pattern is likely at Springhead. Although paralleled at Reculver, another unusual feature of the Springhead mortaria assemblage is the high frequency of Trier vessels, which outnumber those from Rheinzabern by 11:2, despite the fact that Trier wares were usually much less common than those from Rheinzabern in Britain (J Bird, pers comm).

For the purposes of this study, mortaria have been classed with the rest of the samian as tablewares rather than utilitarian vessels, although the exact nature of their use remains uncertain. Many of those from Springhead show signs of considerable use. They were found distributed across the site, in abandonment layers and late levels on properties 3, 4, and 11 of the Roadside settlement, as well as overlying the early 'bakery' sequence on the Sanctuary site, and in pits/quarries, etc, where they probably represent elements of domestic rubbish disposal.

Table 11 Springhead pottery: mortaria by fabric and excavation area/site

Fabric	Site	Dr 43	Dr 45	Gritted Mortaria	Curle 21	Totals
CG (Lezoux)	SPH00		1			1
	SHN02		6	1	1	8
CG (?Toulon)	SPH00					
	SHN02		2			2
CG/EG	SPH00			1		1
	SHN02					
Argonne	SPH00		1	2		3
	SHN02					
Trier	SPH00		4			4
	SHN02	1	5	1		7
Rheinz	SPH00	1				1
	SHN02		1			1
EG	SPH00		1			1
	SHN02		1	1		2
Form totals		2	22	6	1	31

Use, re-use, repair, and ownership

As an imported ware, it is probable that a high value was placed on samian, sometimes necessitating the alteration of vessels with marks of ownership, while human ingenuity may have been responsible for numerous adaptions to prolong the useful life of vessels, usually in response to breakages. Evidence for the way in which samian vessels had been used at Springhead, predominantly in the form of areas of marked abrasion where the slip had been worn away, was recorded in 107 instances. Similarly, at least 29 vessels show evidence of repair, while parts of 11 other vessels have been adapted for use as other, smaller containers. Graffiti and other marks of ownership were recorded on 32 samian vessels. These aspects of the assemblage are discussed more fully, together with similar evidence from the rest of the ceramic assemblage, in a later section of this report.

Discussion

Overall, the samian dates from the early decades of the 1st century AD until the middle of the 3rd, with the greatest quantities dating between AD 50/60 and the late 2nd century. All the main production sites are represented, together with smaller ones such as Montans, the 1st century Lezoux kilns, and the early kilns of East Gaul. Additionally, two 'Arretine' vessels and a single bowl from the early 2nd century pottery near Pulborough, Sussex were identified. The nature of the site at Springhead, its temples, sacred springs, and attendant buildings, would have attracted not only pilgrims but traders too and its location on Watling Street, linking the coastal sites of Dover and Richborough with London, might suggest that locals and visitors alike had access to a wide variety of traded goods including imported ceramics. However, some of the samian may have arrived among the personal possessions of the travellers. Evidence from the 'Arretine' vessels in particular, indicates that the spring complex was venerated prior to the Conquest.

The earliest post-Conquest samian is mostly from the Sanctuary site, particularly from the vicinity of the springs, and includes five Claudian pots (one form 11, two form 29s, a 15/17, and a 15/17R) and four of Claudian–Neronian date (a form 18, a form 27g, and two form 29s). The earliest vessels from the Roadside settlement are of Claudian–Neronian date (two form 27s, two form 29s, and three form 15/17 or 18 platters). Both sites had over 60 vessels of Neronian date, indicative of an increased level of activity on the site and the start of the major construction phase.

From the Flavian period onwards, the evidence from samian discarded across the site suggests continuous occupation, albeit with the usual fluctuations of supply, especially at the beginning of the 2nd century. Supplies again declined towards the end of the 2nd century with the cessation of imports from Lezoux, ultimately ending around AD 200. However, samian chiefly from the production centres in Rheinzabern and Trier was still available at Springhead until the mid-3rd century. The relatively high amounts of both Antonine Argonne wares and the later Trier products are perhaps best explained by the location of the site.

In general, the samian has the character of a normal domestic assemblage associated with settlement and the buildings servicing the travellers and pilgrims attracted to the springs and temples. Even the infilling of ritual

shaft 2856 is unremarkable in samian terms, but the presence of several form 42 and 46 vessels may just hint at more 'specialised' functions for at least part of the assemblage. Although far larger (because greater areas were excavated), its composition, especially the frequency of decorated wares, compares well with assemblages from other roadside settlements such as Asthall (Mills 1997) and Wilcote (Mills 1998). The range of samian sources is perhaps wider than on many sites in Roman Britain, but the location of Springhead in south-east England on a major road, as well as the large size of the assemblage, will both have contributed to this. The sacred status of the site, too, would have attracted pilgrims, as well as traders, whose presence could explain the comparatively high numbers of vessels from sources such as the 1st century kilns at Lezoux, which were probably not formally exported to Britain, as well as the British samian vessels and some from the smaller East Gaulish potteries. The fluctuations in the samian supply reaching Britain as a whole (Marsh 1981) were apparent at Springhead but, within these, levels seemed to have remained relatively steady throughout the exporting period. At least in part this was probably responsible for the low incidence of vessel re-use and repair, and while the wear patterns observed indicated that some vessels saw prolonged use, the composition and condition assemblage as a whole indicated relatively easy access to samian – or at least equivalent high-status table wares – as well as the necessary wealth to obtain it. Overall, then, the samian assemblage appears to owe its character more to the town's status and location as a small settlement on Watling Street, than the 'ritual' nature of many of the activities presumably carried out there.

Illustrated samian catalogue

Fig 1: Plain samian

1. Footring base from conical cup (Conspectus form 22 or similar); stamped]SF (Stamp Cat No 1); Arretine-type ware; probably Augustan; abraded wear on footring. Fill (11909) of mid-Roman SFB 11892 (group 400120), property 12.
2. Conspectus form 18; Arretine-type ware; Augusto-Tiberian. Later prehistoric deposit 5082 at the head of the Ebbsfleet.
3. Knorr 78 cup; La Graufesenque; Dec Cat No 82; late Flavian–Trajanic. Mid-Roman layer 11805, Roadside settlement.
4. Form 42 dish (var D2); South Gaul; Flavian. Fill (2926) of early Roman pit 2925 (group 300130).
5. Form 42 dish (var D2); South Gaul. Fills (2390, 2415, 2448, and 2449) of mid-Roman pits 2414 and 2389 (group 400024) associated with the sanctuary complex.
6. Form 46 cup (var F1); La Graufesenque; rosette stamp (Stamp Cat No 116); *c* AD 90–110; internal abraded wear. Fill (2900) of mid-Roman pit 2899 to the east of Viewing platform 2 (group 400055).
7. Form 27g cup; La Graufesenque; stamped GERMA[NI]; Germanus i (Stamp Cat No 37); chip in rim; *c* AD 65–85. Fill (6355) of early Roman grave 6345 (group 40025) associated with road 400009.
8. Form 18 dish; La Graufesenque; stamped C•ΛPITOF; Capitus ii (Stamp Cat No 19) chip in rim, post-firing graffito V on underside of base; *c* AD 70–85. Fill (6355) of early Roman grave 6345 (group 40025) associated with road 400009.
9. Form 15/17 dish; La Graufesenque; stamped VITAL; Vitalis ii (Stamp Cat No 83); chip in rim; post-firing graffito V on underside of base; *c* AD 70–85. Fill (6609) of early Roman grave 6608 (group 40025) associated with road 400009.
10. Form 42 cup (var E1); Montans; internal abraded ware; 1st century AD. Fill (12193) of early Roman ditch 12194 (group 400110), property 2.
11. Form 18/31; Lezoux; stamped SACER[(Stamp Cat No 69); *c* AD 120–160. Fill (3922) of early Roman pit 3915 (group 400050).

Fig 2: Plain samian

12. Form 18/31; Lezoux; stamped MΛRTIo (Stamp Cat No 43); abraded wear and pit in centre of underside of base; *c* AD 125–150. Fills (11896, 11909, 11973, 11974, and 11977) of mid-Roman SFB 11892 (group 400120), property 12.
13. Form 45 mortaria; Toulon-sur-Allier?; *c* AD 170 onwards. Mid-Roman layer 16861, Roadside settlement.
14. Curle 23/Lud Sa var hybrid; East Gaul; Hadrianic–early Antonine; abraded wear on rim and external wall. Mid-Roman layer 5220 (group 400033).
15. Cup with a flat rim; East Gaul (Argonne); Hadrianic or later. Fill (6135) of post-hole 6158 (group 400029).
16. Mortarium base, part of one edge burnt possibly because it was re-used as a lamp; East Gaul (Trier); late Antonine–early 3rd century. Fills (12567 and 12595) of mid-Roman tree-throw hole 12566 (group 400107) and post-hole 12594 (group 400104), property 2.

Fig 3: Decorated samian

17. Form 11; South Gaul; Dec Cat No 33; Claudian. Fill (6162) of early Roman grave 6164 and mid-Roman layer 5302 (group 400039).
18. Form 29; South Gaul; Dec Cat No 52; Claudian. Fill (6445) of spring channel 1000 (group 400007).
19. Form 29; South Gaul; Dec Cat No 37; Claudian. Fill (5454) of early Roman pit 5452 (group 400037).
20. Hermet 5; South Gaul; Dec Cat No 2; Neronian. Fill (2315) of early Roman beam-slot structure 2314 (group 400054).
21. Form 29; South Gaul; Dec Cat No 85; *c* AD 50–65. Early Roman layer 12132 (group 400107), property 2.

Fig 4: Decorated samian

22. Form 29; South Gaul; Dec Cat No 99; *c* AD 55–65. Fill (16502) of segment 16519 of early Roman roadside ditch 2 (group 400137).
23. Form 37; South Gaul; Dec Cat No 108; *c* AD 55–70. Mid-Roman layer 17757 (group 400191), property 3.

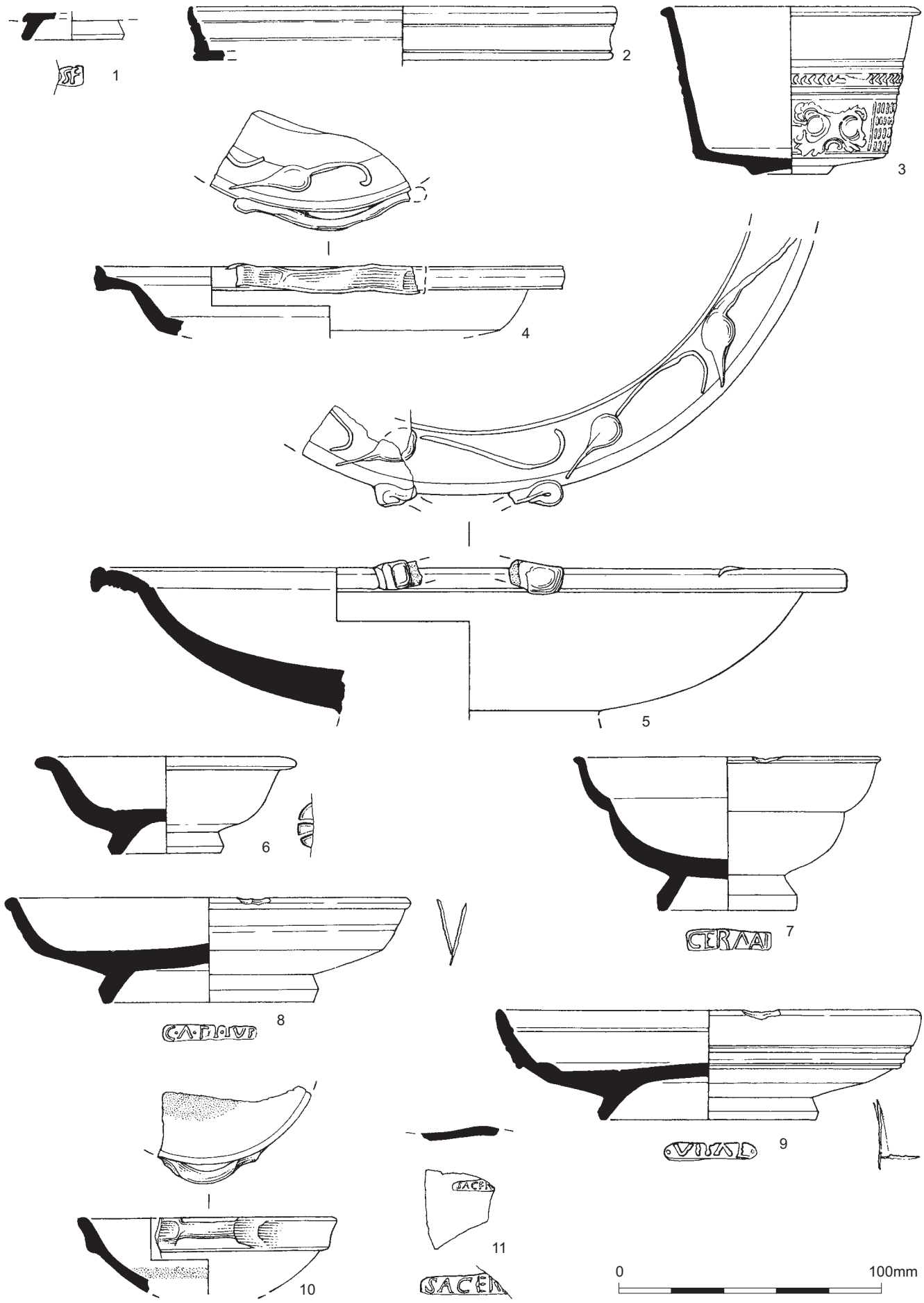


Figure 1 Springhead: plain samian ware Nos 1–11

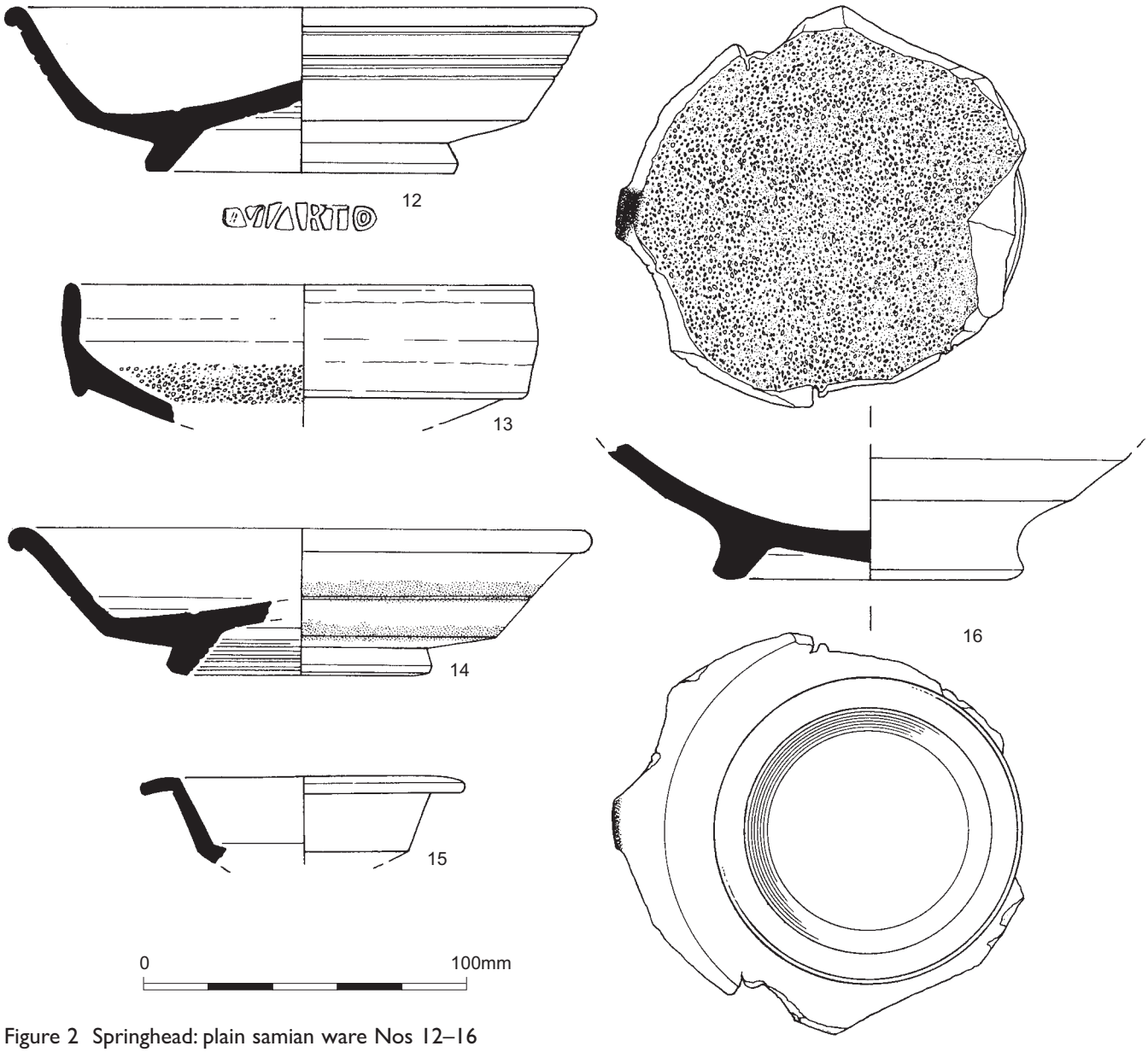


Figure 2 Springhead: plain samian ware Nos 12–16

24. Form 29; Lezoux (micaceous); Dec Cat No 119; *c* AD 50–75. Early Roman layers 10819 (group 400127) and 10822 (group 300408), property 11.
25. Form 29; Lezoux (micaceous); Dec Cat No 118; early–mid-Flavian. Fill (5051) of early Roman pit 2925 (group 300130).
26. Form 37; Lezoux (micaceous); Dec Cat No 117; burnt; Flavian. Early Roman layer 2592, Viewing platform 2 (group 400045).
27. Form 37; South Gaul; Dec Cat No 10; probably Flavian–Trajanic Fill (2794) of mid-Roman beam-slot structure 2793 (group 400054).

Fig 5: Decorated samian

28. Form 37; South Gaul; Dec Cat No 34; burnt; *c* AD 85–110. Early Roman layer 5348 (group 400041) and unstratified, Sanctuary site.
29. Form 37; South Gaul; Dec Cat No 21; late 1st–early 2nd century. Fill (3237) of mid-Roman ditch 3235 enclosing the sanctuary complex (group 400017).

Fig 6: Decorated samian

30. Form 37; Les Matres-de-Veyre; Rosette Potter; Dec Cat No 134; sherd drilled for lead staple repair; *c* AD 100–125. Fill (16128) of mid-Roman pit 16464 (group 400138), property 10 and fill (16443) of early Roman feature 16444.
31. Form 37; Central Gaul; Dec Cat No 254; internal abraded wear on one sherd; probably Hadrianic. Mid-Roman layers 17758 and 17759 (group 400191), property 3.
32. Form 37; Central Gaul; Dec Cat No 146; Hadrianic. Mid-Roman layer 2675 (group 400043).
33. Form 37; Central Gaul; Secundinus III?; Dec Cat No 242; Hadrianic. Early Roman post-hole 17016 (group 400173), property 4.
34. Form 37; Central Gaul; Acavnissa; Dec Cat No 172; *c* AD 125–50. Mid–Roman colluvial deposit 5215 in spring (group 400068).

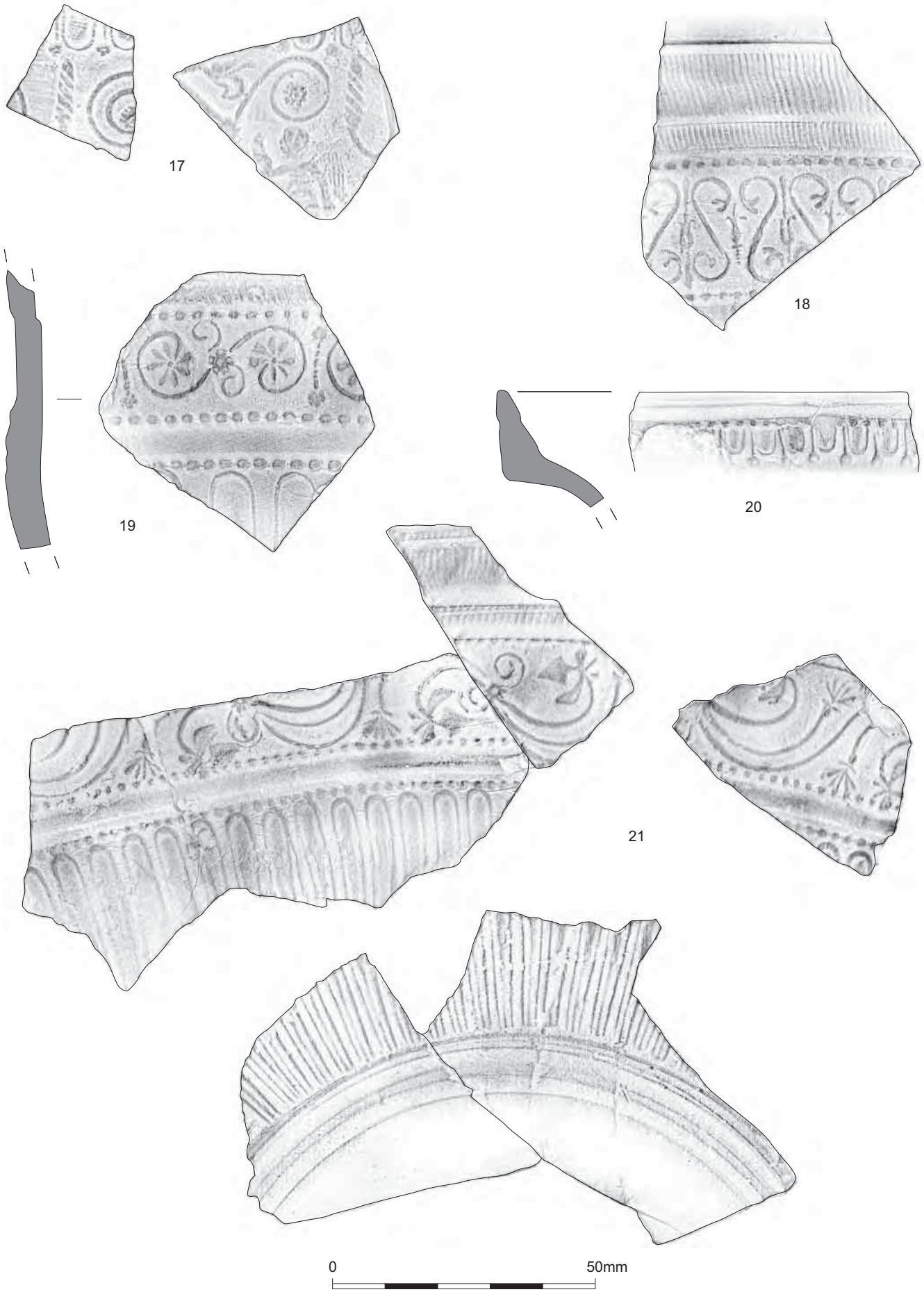


Figure 3 Springhead: decorated samian ware Nos 17–21

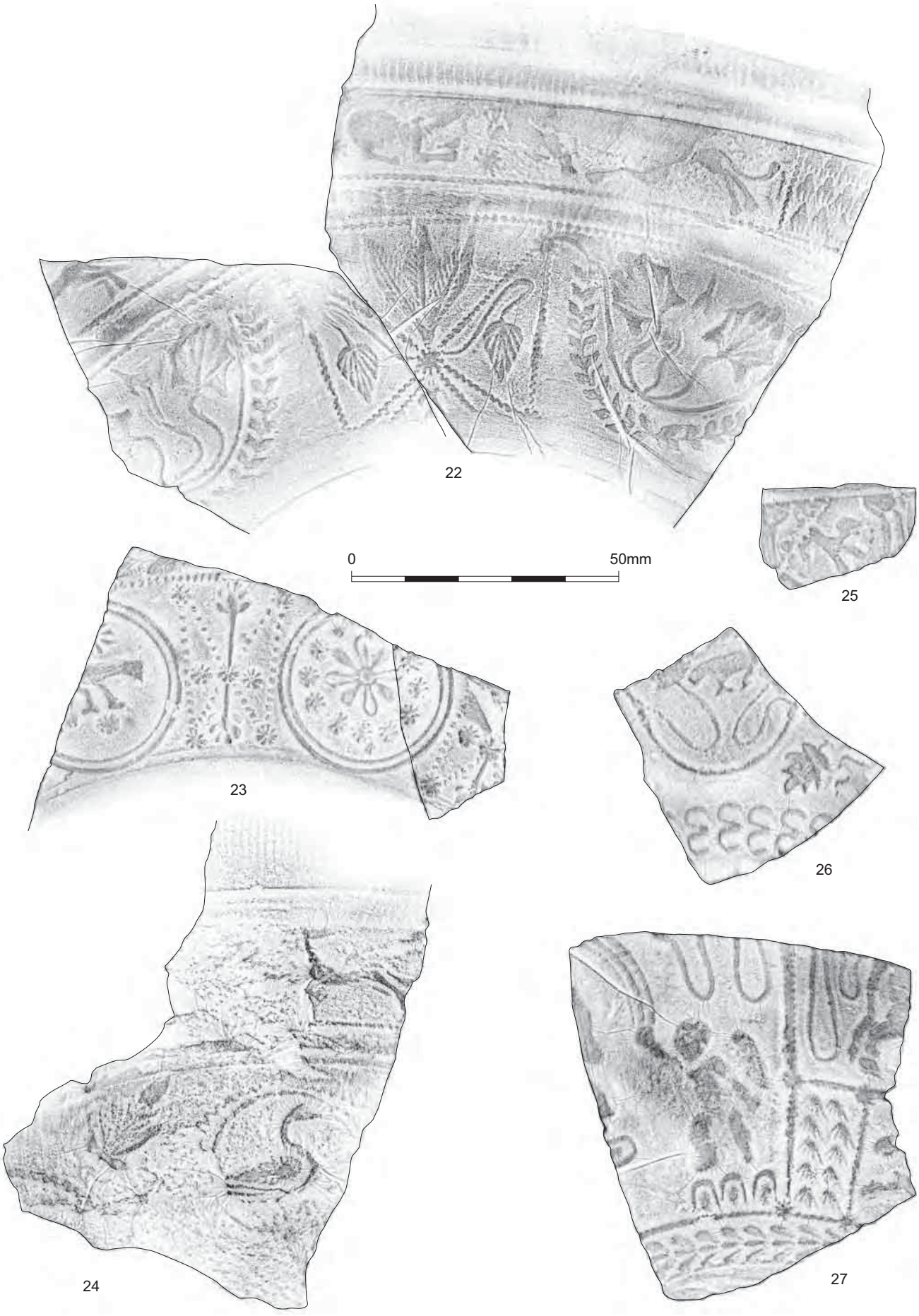


Figure 4 Springhead: decorated samian ware Nos 22–7

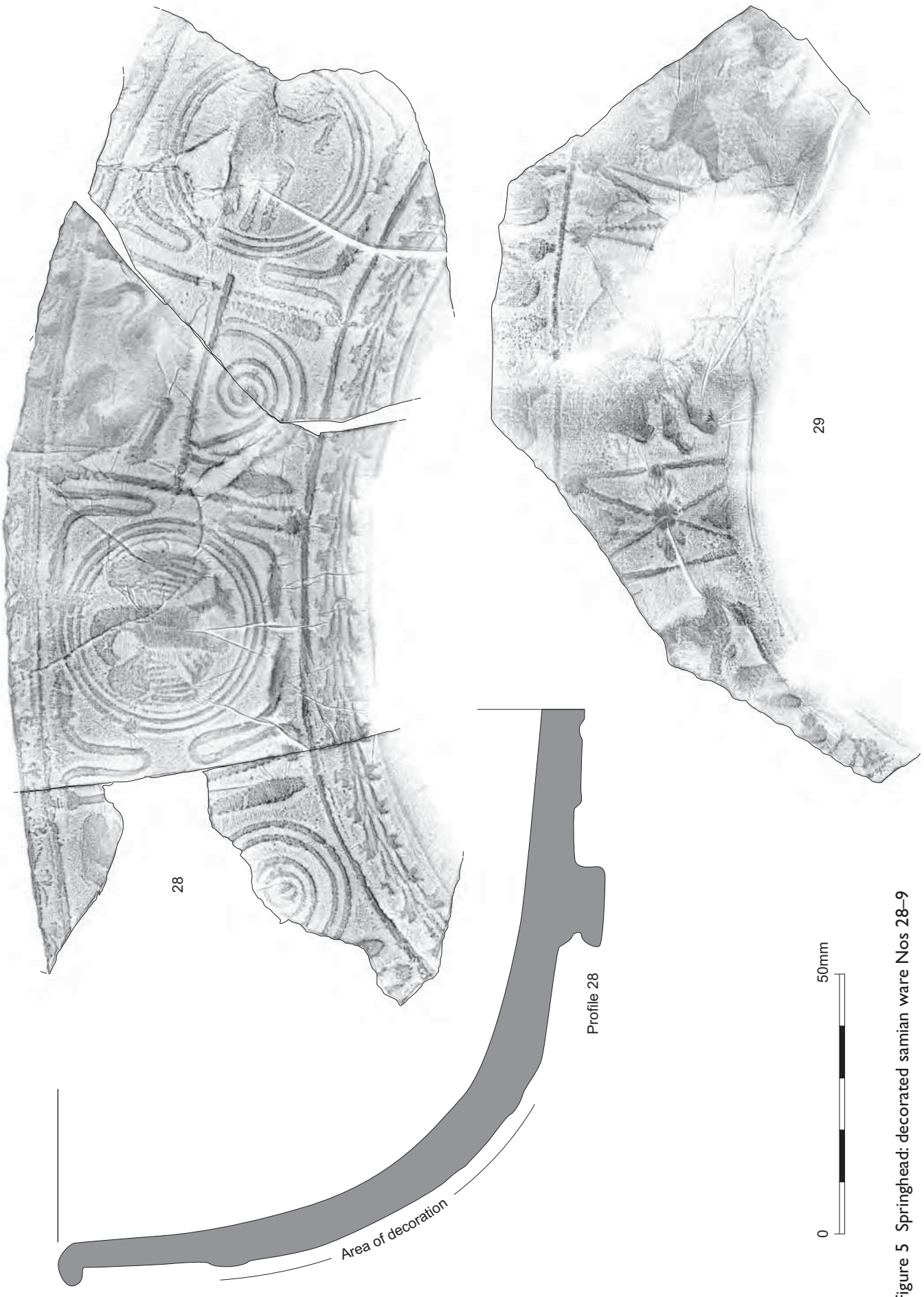


Figure 5 Springhead: decorated samian ware Nos 28–9

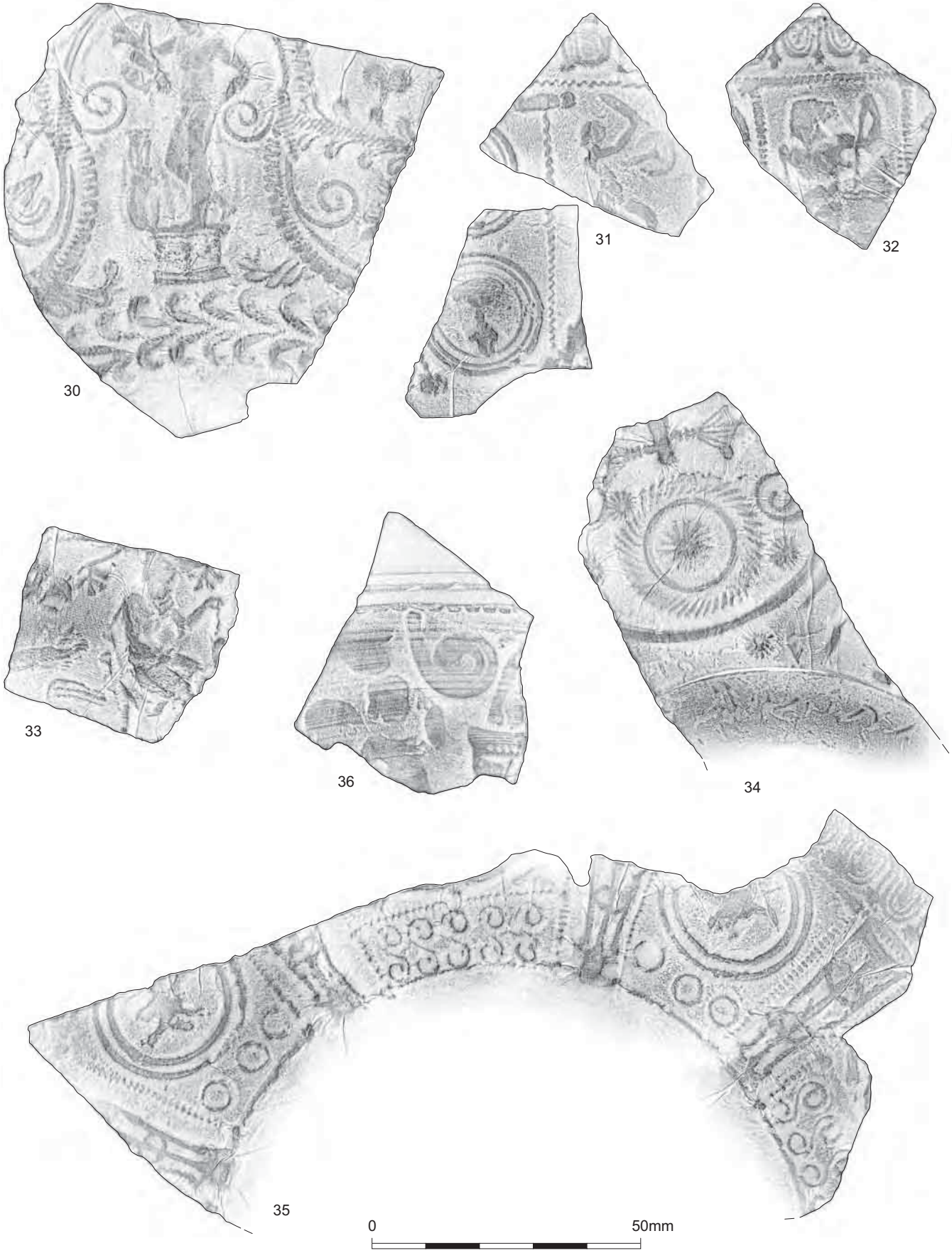


Figure 6 Springhead: decorated samian ware Nos 30–6

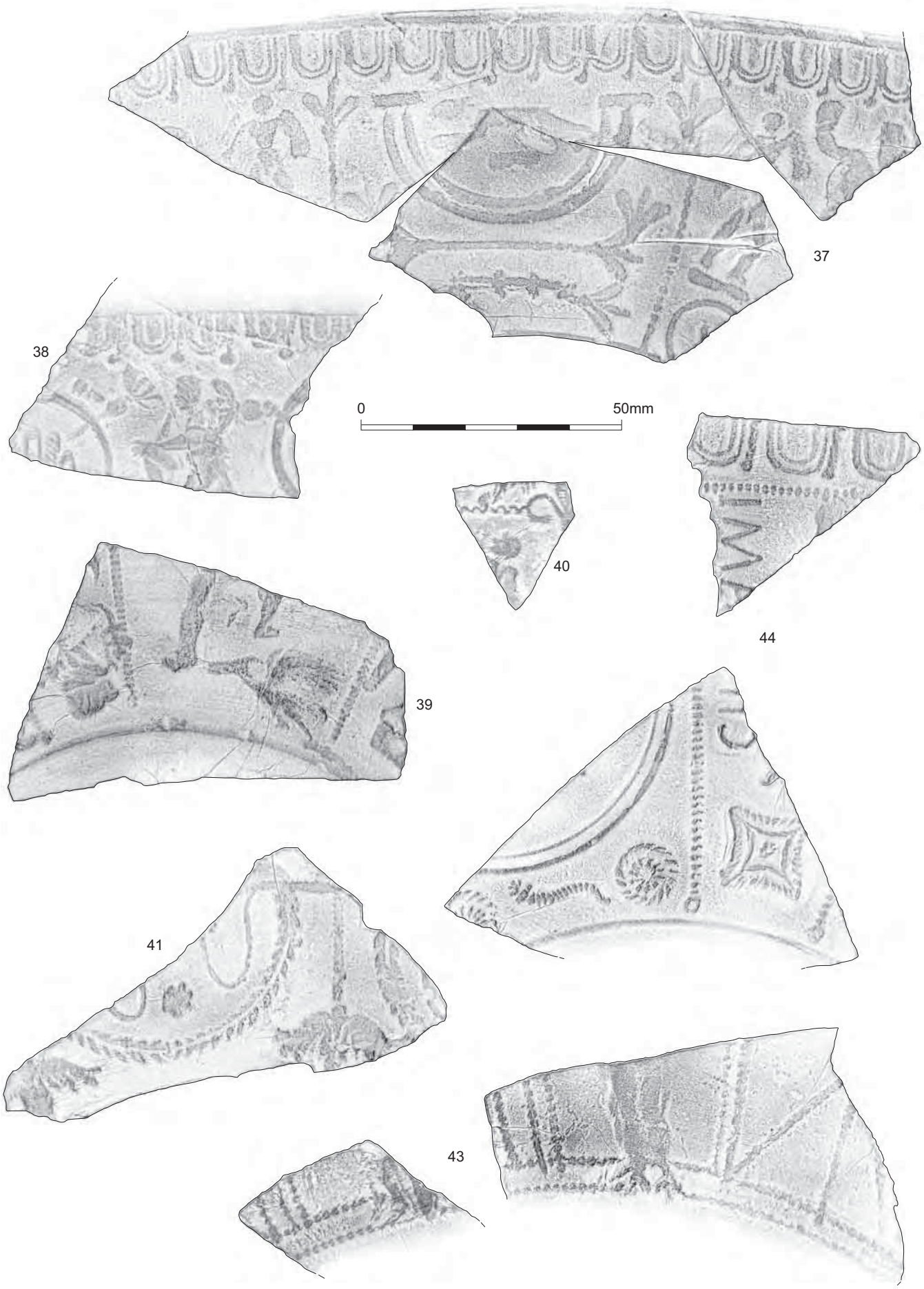


Figure 7 Springhead: decorated samian ware Nos 37–41 and 43–4

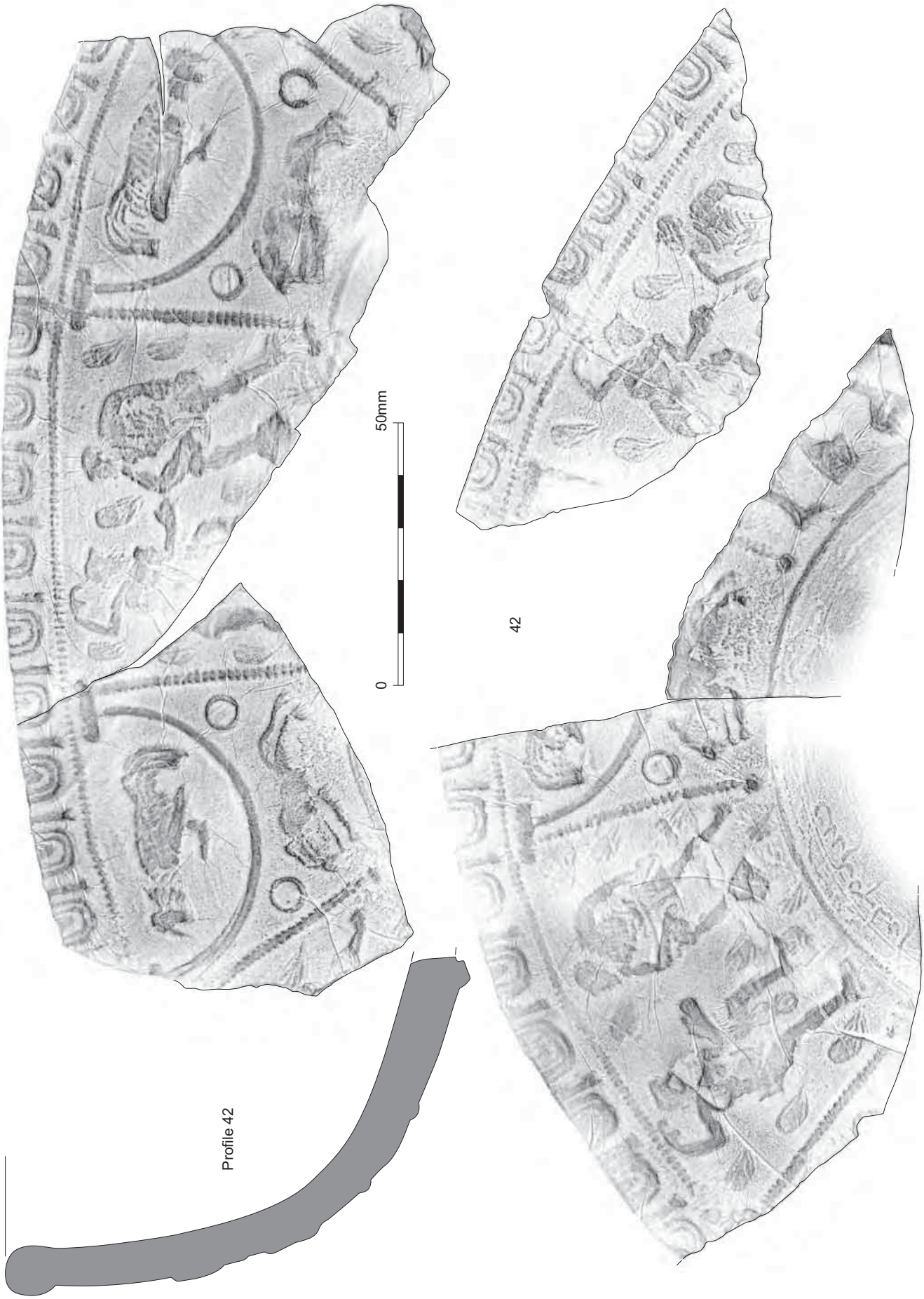


Figure 8 Springhead: decorated samian ware No 42

Figure 9 Springhead: decorated samian ware Nos 45–8

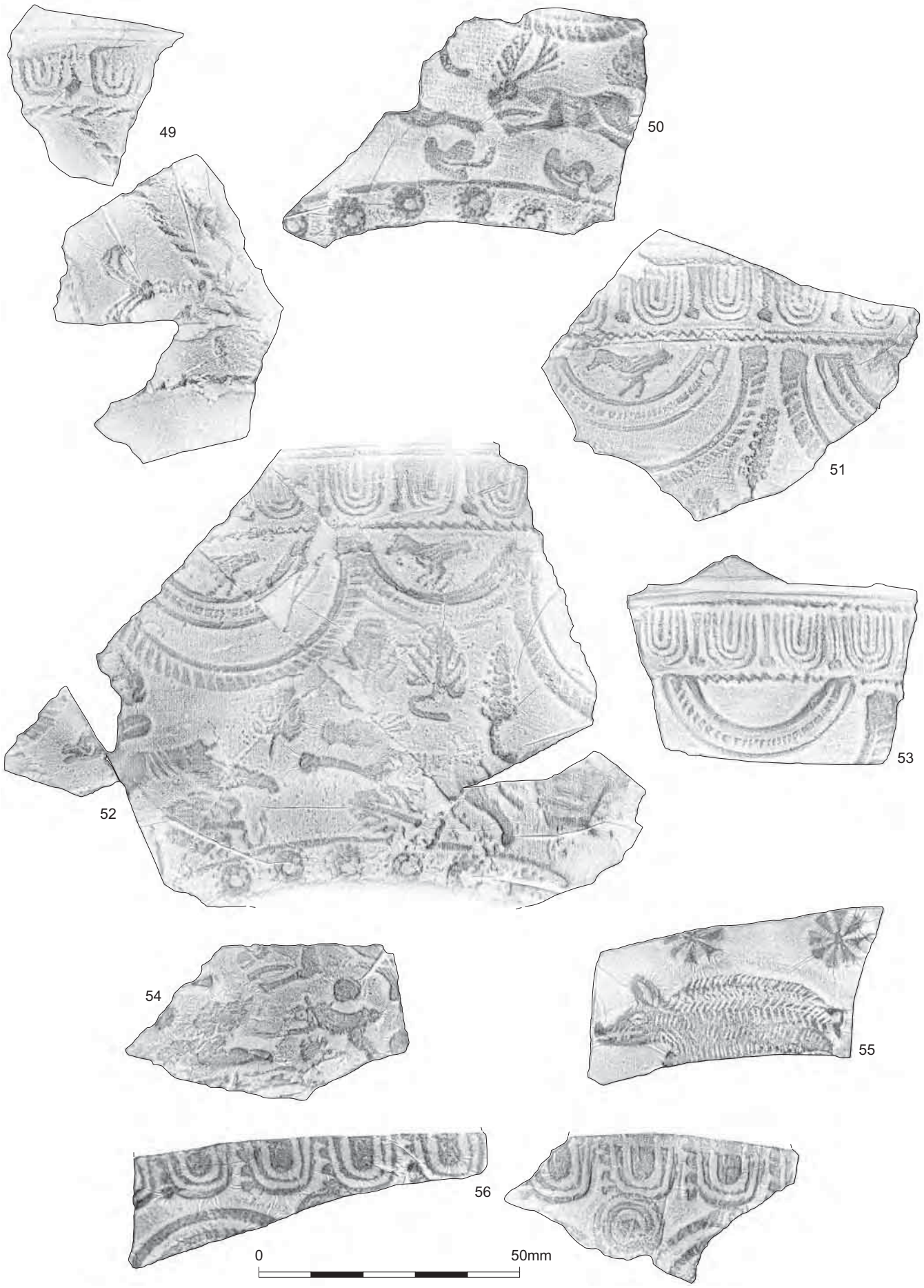


Figure 10 Springhead: decorated samian ware Nos 49–56

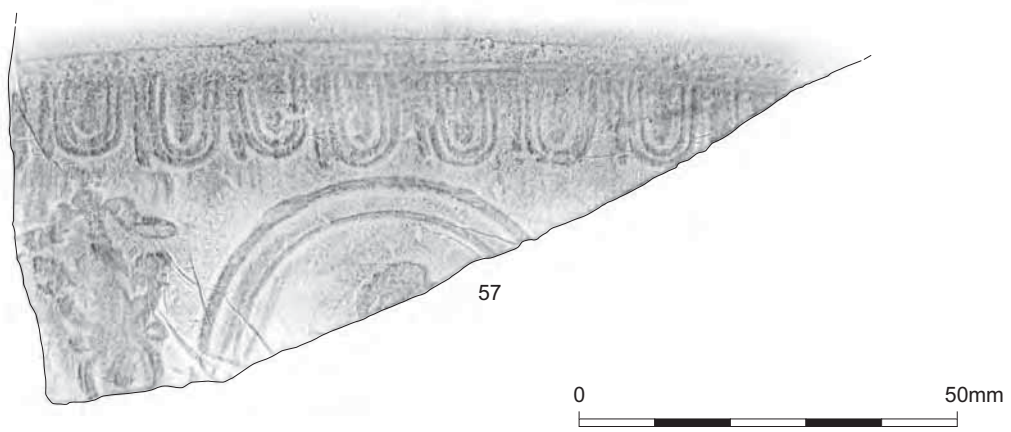


Figure 11 Springhead: decorated samian ware No 57

35. Form 37; Central Gaul; Large S Potter; Dec Cat No 178; discrete patch of internal abraded wear near base; *c* AD 125–50. Mid-Roman layer 5635 (group 4000033).
36. Form 37; South Gaul (Montans); Dec Cat No 115; 1st half of 2nd century. Fill (10373) of early Roman pit 10338 (group 400124), property 11.

Fig 7: Decorated samian

37. Form 37; Central Gaul; style of Potter X-6D; Dec Cat No 213; *c* AD 125–50. Fills (11913, 11916, and 11977) of mid-Roman SFB 11892 (group 400120), property 12.
38. Form 37; Central Gaul; Potter X-6A; Dec Cat No 187; *c* AD 130–55. Fill (6135) of mid-Roman post-hole 6158 (group 400029).
39. Form 37; Central Gaul; probably Potter X-5; Dec Cat No154; burnt; Hadrianic or early Antonine. Fill (2717) of mid-Roman pit 2236 (group 400023).
40. Form 30; Central Gaul; Dec Cat No 182; probably Hadrianic–early Antonine. Layer 5780, surface finds in the temple area.
41. Form 37; Central Gaul; Dec Cat No 188; probably Hadrianic–early Antonine. Fill (6523) of mid-Roman quarry pit 6522 (group 4000008).
43. Form 37; Central Gaul; style of Docilis?; Dec Cat No 183; internal abraded wear; late Hadrianic–early Antonine. Fill (5841) of mid-Roman clay-lined feature 5917 (group 400036).
44. Form 37; Central Gaul; Cinnamus ii; Stamp Cat No 23; Dec Cat No 197; *c* AD 145–75. Fill (10044) of mid-Roman pit 10039 (group 400124) and mid-Roman layer 11421 (group 400125).

Fig 8: Decorated samian

42. Form 37; Central Gaul; Cerialis ii; Dec Cat No 195; burnt; three patches of internal abraded wear with pitting; *c* AD 135–50. Fill (10006) of mid-Roman pit 10005 (group 400124), property 11; fill (11824) of early Roman pit 11818 (group 400118), property 12; fills (11902 and 11973) of SFB 11892 (group 400120), property 12 (Plate 1).

Fig 9: Decorated samian

45. Form 37; Central Gaul; Censorinus; Dec Cat No 170; *c* AD 160–80. Mid-Roman colluvial deposit 5152 in spring (group 400068); and fill 5496 (a non-joining body sherd from this bowl) of early Roman terrace 5492 (group 400009).
46. Form 37; Central Gaul; Dec Cat No 159; *c* AD 140–70. Mid-Roman layer 2946 (group 400043).
47. Form 37; Central Gaul; Paternus II; Dec Cat No 161; *c* AD 160–95. Fill (2986) of mid-Roman ritual shaft 2856.
48. Form 37; Central Gaul; Paternus II; Dec Cat No 255; *c* AD 160–200. Mid-Roman layers 17759 (group 400191) and 17836 (group 400188), property 3.

Fig 10: Decorated samian

49. Form 37; Argonne; Tribunus of Lavoye; Dec Cat No 266; Antonine. Mid-Roman layer 2675 (group 400043).
50. Form 37; Argonne; Gesatus (Cesatus ii) of Lavoye; Dec Cat No 262; Antonine. Lining (2270) of mid-Roman well 2269.
51. Form 37; Argonne; Gesatus (Cesatus ii) of Lavoye; Dec Cat No 263; Antonine. Mid-Roman layer 2675 (group 400043).
52. Form 37; Argonne; Gesatus (Cesatus ii) of Lavoye; Dec Cat No 263; Antonine. Early Roman layer 2957 (group 400043).
53. Form 37; Argonne; Gesatus (Cesatus ii) of Lavoye; Dec Cat No 278; Antonine. Fill (5354) of mid-Roman pit 5353 (group 300130).
54. Form 37; Argonne; Gesatus (Cerialis ii) of Lavoye; Dec Cat No 279; Antonine. Surface finds (5780) from the temple area.
55. Form 37; East Gaul, probably Argonne; Dec Cat No 285; Antonine. Fill (10948) of mid-Roman pit 10950 (group 400123), property 11.
56. Form 37; Rheinzabern; Lucanus I; Dec Cat No 271; *c* AD 210–40. Fill (2903) of mid-Roman ritual shaft 2856.

Fig 11: Decorated samian

57. Form 37; Rheinzabern; Comitialis IV; Dec Cat No 282; late 2nd–early 3rd century. Unstratified, Sanctuary site.

Catalogue of stamps

A note on the possible Arretine potter's stamp

(With thanks to P Kenrick for commenting on this sherd)

1.§ The fabric of this piece is not easily identifiable; B Dickinson and J Bird suggest that it is not from La Graufesenque or any other South Gaulish Samian centre. P Kenrick kindly inspected the sherd and suggests that it could be from one of several kilns producing 'Italian' sigillata in the early decades of the 1st century AD, possibly Lyon, Vienne, or St Romain-en-Gal for example. The form is a conical cup Conspectus 22 (or a similar type). The stamp itself reads [ ]SF, but no parallels are known. Probably Augustan. 11909.

The Samian Potters' Stamps

by B M Dickinson and J M Mills

Each catalogue entry gives: potter (I, ii, etc, where homonyms are involved), die, form, pottery of origin, reading, date, excavation context number and, where allocated, object (SF) number. Ligatured letters are underlined.

1. Agedillus, 2a, 18/31, Les Martres-de-Veyre. AGƎD ILLI. *c* AD 110–25. 5938.
2. C Valerius Albanus, 6b, 18, La Graufesenque. C•VAL•[ALB]. *c* AD 75–100. 12465.
3. Albinus iv, 6d, 33, Lezoux. [AL]BINI•M. *c* AD 135–65. 5215.
4. Albinus iv, 6f, 18/31, Lezoux. ALBINIM. *c* AD 150–70. 17414.
5. Albus i, 9a, 27g, La Graufesenque. [ALB]VS•FE. *c* AD 50–65. 10803.
6. Albus iii, 1a, 31, Lezoux. [AⱠ B]I• ꟽAI. *c* AD 145–80. 2910.
7. Avitus viii, 1b, 18/31R, Rheinzabern. [ΛV] ITVSFEC. Early–mid-Antonine. 16687.
8. Balbinus, 1a, 18/31, Les Martres-de-Veyre. BALBIN[VSF]. *c* AD 100–25. 6064.
9. Banoluccus, 1c, 31, Lezoux. BΛ•NOLVCCI. *c* AD 155–75. 2502.
10. Beliniccus ii, 1a, 33, Lezoux. BELINICCI•ꟽ. *c* AD 125–40. 2732.
11. Belsa (Arvernicus), 1a, 38 or 44, Lezoux. [BELSA•A]RⱭF. *c* AD 170–200. 5780.
12. Borillus i, 10b, 18/31, Lezoux. BO[RILLIꟽ]. *c* AD 150–60. 12501.
13. Burdo, 3a, 31, Lezoux. BVRD[O]NIoF. *c* AD 140–70. 5905.
14. Burdo, 3b, 33, Lezoux. BV[R]DONIOF. *c* AD 140–70. 5951.
15. Butturrus, 2a, 18/31R, Les Martres-de-Veyre. BV[TTVRRI]. *c* AD 135–60. 10000.
16. Cucalus, 2b, 33, Lezoux. [CVC]ALIM. *c* AD 140–70. 6064.
17. Calendio, 2a, 18/31, Lezoux. CALEИ[DIO]. *c* AD 140–70. 12056.
18. Calvus i, 5ff, 18R, La Graufesenque. [OFC]ALVI. *c* AD 75–95. 17043.
19. Capitus ii, 2a, 18, La Graufesenque. C•ΛPITOF. This complete dish was found in grave 6345 with Stamp Cat No 37 and has a small chip off the rim. *c* AD 70–85. 6355, IV. Fig 1, 8.
20. Caprasius, 1b or 1b', 18/31, Blickweiler. CAP[RASIVS] with a scalloped edge to the frame. The complete die, 1b, was used at Chémery-Faulquemont, and it was used later at Blickweiler with a broken right hand side end (known as 1b'). As this vessel is not complete it is not possible to see if the right hand end is complete or not. The pot is under-fired, but is most likely to be a Blickweiler fabric (J Bird, pers comm). Hadrianic or early Antonine. 2675.
21. Castus i, 10a, 18, La Graufesenque. CASTVS•FE. *c* AD 55–70. 16641.
22. Censor i, 3b, 18, La Graufesenque. OFC•EN. *c* AD 70–90. 17755. Use-wear on underside of base – Fig 55, 825.
23. Cinnamus ii, 5b, 37, Lezoux. CI[NN]AMI, each part on different, non-joining sherds, almost certainly from the same vessel (Dec Cat No 197). *c* AD 145–75. 10044 and 11421. Fig 7, 44.
24. Cobnertus iii, 1a, 18/31, Lezoux. [COB]NERTI•M. *c* AD 150–60. 17414.
25. A.Cosius Iucundus, 1a, 15/17, La Graufesenque. OFCO•IVC. *c* AD 80–110. 3036.
26. A.Cosius Iucundus, 1a', 18, La Graufesenque. OFCO•IV. This modified die originally read OFCO•IVC (die 1a); with the loss of the final C as the die has become almost swallow-tailed. *c* AD 85–110. 17043.
27. Cosius Rufinus, 12h, 27g, La Graufesenque. COSRVI (retro). *c* AD 70–85. 10665.
28. Cotto ii, 1c, 18, La Graufesenque. OFCOTTO. *c* AD 70–100. 51724–118.
29. Cotto ii, 1c, 18, La Graufesenque, OFCO[TTO]. *c* AD 70–100. 10315.
30. Cracuna i, 2a, 33, Lezoux. [CRACV]NA·F. *c* AD 125–55. 5215.
31. Criciro v, die 1a, 18/31, Lezoux, [CR]ЄIRO•OFI. *c* AD 135–60. 5758.
32. Decmus iv, 2a, 31, EG. DIICMVSI. Decmus iv of Lavoye, the fabric of this sherd, however, is not distinctive. There are guidelines visible at the top and bottom of the letters. *c* AD 150–80. 2938.
33. Doeccus i, 13a, 31, Lezoux. DOII[C]CVS. *c* AD 170–200. 5215.
34. Felix i, 4c, 18, La Graufesenque. OFFEICI (retro). *c* AD 50–65. 10211.
35. Gaius i, 1a, 18, La Graufesenque. OFGA[I]. *c* AD 70–100. 12421.
36. Germanus i, 28k, 18, La Graufesenque. GERMA[NI]. *c* AD 70–85. 2719.
37. Germanus i, 29a', 27g, La Graufesenque. GERMA , this die (29) started with an N at the end and continued in use after the N had broken off. This complete cup was found in grave 6345 with Stamp Cat No 19 and has a small chip off the rim. *c* AD 65–85. 6355, II. Fig 1, 7.
38. Ianuarius ii, 1a', 33, Lezoux. IΛNV[ΛRIOF]. *c* AD 130–55. 2945.

39. Iullinus i, 7a, 18, La Graufesenque. IV[LLIИ]. *c* AD 80–100. 10405.
40. Lossa, 2b, 31, East Gaulish. ⅃O[S]SΛFEC. Early Antonine. 2735.
41. Lossa, 4a, 31, East Gaulish. ⅃OSSΛE. Early Antonine. 19196.
42. Macer i, 2a, 18, La Graufesenque. MC•RI•M. *c* AD 60–75. 10665.
43. Martio i, 1a, 18/31, Lezoux. MΛRTIo. This is a new die for Martio and has not been recorded elsewhere. *c* AD 125–50. 11896, 11909, 11973, 11974, and 11977. Fig 2, 12.
44. Masclinus, 2b, 18R, La Graufesenque. OF.MƧC[LI⅃]. *c* AD 65–80. 12186.
45. Matugenus ii, 1a, 18, La Graufesenque. OFMT•VGE. *c* AD 50–65. 11381.
46. Modestus i, 9 e, 15/17 or 18, La Graufesenque. [OFM]OD. *c* AD 45–65. 10803.
47. Murranus, 8a, 29, La Graufesenque. OFMVRRN. *c* AD 50–65. 10647, 10819.
48. Muxtullus, 33, Lezoux. MVXTVL[IM]. *c* AD 145–75. 2675.
49. Muxtullus, 3a 33, Lezoux. MV+TV⅃I•[•]. *c* AD 160–75. 19167.
50. Niger ii, 4a or 4a', 18, La Graufesenque. ϴFNIGR. *c* AD 45–65. 10016 and 10017.
51. Pass(i)enus, 33b, 27g, La Graufesenque. [P]ASSEN. *c* AD 50–65. 10190.
52. Pass(i)enus, 57a, 15/17 or 18, La Graufesenque. [PASS]IE[NI]. *c* AD 50–65. 10375.
53. Paternus v, 6a, Walters 79 or Ludovici Tg, Lezoux. [P•AT•E•]RN•I. *c* AD 160–95. 2675.
54. Paternus v, 7a, 37, Lezoux. PAT[ERNFE] retrograde, in decoration (Dec Cat No 171) *c* AD 160–90. 5215.
55. Paulus v, 8c, 33, Lezoux. PΛΛ ΛK'|+ '. *c* AD 170–200. 16035.
56. Peculiaris, 2a', 33, Lezoux. ŒCVL'ARIS. This is a broken die, the original (die 2a) ended with F which has broken off. *c* AD 155–70. 2675.
57. Ponteius, 1a, 18, La Graufesenque. OFPOИTEI. *c* AD 65–85. 51724–143.
58. Pontus, 8d, 15/17 or 18, La Graufesenque. OF•PON[TI]. *c* AD 70–90. 11320.
59. Primulus i, 4b, 27g, La Graufesenque. [PR]IMVL[I]. *c* AD 65–85. 16144.
60. Primus iii, 12q, cup, La Graufesenque. OFPRIMI. *c* AD 50–65. 10803.
61. Primus iii, 30b, 27g, La Graufesenque. PRIMI•MA. *c* AD 60–75. 17572.
62. Primus iii, 30a, 29, La Graufesenque. PRIMI•MA. *c* AD 50–70. 11071.
63. Reginus ii, 2a, 18/31, Les Martres-de-Veyre. REGINVS•F. *c* AD 115–35. 6676.
64. Reogenus, 2b, 18/31, Lezoux. RI•IO[GEN,I]. *c* AD 145–60. 6379.
65. Rufinus iii, 4c, cup, La Graufesenque. [OF]RVFIN. *c* AD 70–90. 51724–56.
66. Rufinus iii, 10a, 15/17 or 18, La Graufesenque. [RVFINI]OF. *c* AD 70–90. 10608.
67. Ruffus ii, 2a, 27, Lezoux. RVFF[I•M]. *c* AD 125–45. 5921.
68. Rufus iv, 1a, 33, Lezoux. RVFVS•F. *c* AD 150–80. 10042.
69. Sacer_, 18/31, Lezoux. SACER[. This stamp has not been recorded before as it is incomplete and the potter's name is not known. *c* AD 120–60. 3922. Fig 1, 11.
70. Sacrillus, 3a, 31, Lezoux. [SΛCRI]LL•I•M. *c* AD 170–200. 2675.
71. Sedatus iv, 2b, 18/31, Lezoux. SIIDATIM. *c* AD 125–50. 10000.
72. Senecio, 7a, 27g, La Graufesenque. SENI CIO, this die should read SENECIO, however, sometimes the second E registers as an I as it has here. *c* AD 45–65. 6379.
73. Senicio, 5b', 27g, La Graufesenque. [S]ENICIO. This die (5b) originally read SENICIO•F, but even though the F broke off, the die continued in use as SENICIO. *c* AD 65–80. 2950.
74. Severianus i, 7a, 33, Lezoux. SEVERИM. *c* AD 170–200. 2903.
75. Severus iii, 20a', 15/17 or 18, La Graufesenque. [SEVERI]MA'. This die (20a) originally read SEVERIMAN, but in this impression most of the N has broken off. *c* AD 70–95. 2691.
76. Severus vi, 3d, 33, Lezoux. •S]IIVIIRI[M• *c* AD 160–90. 17250.
77. Sextus v, 5a, 33, Lezoux. [S]EXTI•M. *c* AD 160–200. 2716.
78. Silvanus i, 6d, 15/17 or 18, La Graufesenque. SILV[ΛN I -*OF*]. Pre-Flavian. 17829.
79. Silvinus iv, 2, 33, Lezoux. SILVINI•[M]. This stamp was used both at Les Martres-de-Veyre and at Lezoux. Hadrianic. 10365.
80. Tertiolus i, 3a, 27, Lezoux. TƎR +OLF. Hadrianic or early Antonine. 2736.
81. L. Ter_ Secundus, 6a, 18, La Graufesenque. L. ƎT R•SEC. *c* AD 75–100. 17572.
82. Virilis i, 6c, 15/17 or 18, La Graufesenque. [OFV]IRILL. *c* AD 75–95. 12421.
83. Vitalis ii, 27b', 15/17, La Graufesenque. VITAI. This die originally read •VITAL• (27b) but it lost the stops at the ends to become VITAL (27b') and finally lost the lower stoke of the L as here. This dish was from grave 6608 and, like the vessels with Stamp Cat Nos 19 and 36, has a small chip off the rim, but is otherwise complete. *c* AD 70–85. 6609. Fig 1, 9.
84. Vitalis ii, 31d, 27g, La Graufesenque. VITΛ (the bar usually shows across the A on this die). *c* AD 70–90. 10405.
85. Q.V_ C_ , 1b, 27, Montans. [Q.]V.C . There is a graffito X on the underside of the base of this cup. *c* AD 120–45. 2219.
86. Q.V_C_ , 1d, 27, Montans. Q.V.C . *c* AD 120–45. 6135.

Unidentifiable, incomplete stamps

87. I[or]I, 18/31, Les Martres-de-Veyre. *c* AD 100–25. 6022.
88.]LΛ or VT[, 33, Lezoux. Antonine. 5921.

89.]M or M[, 18/31, Lezoux. Hadrianic or early Antonine. 2271.
90. O[or]O, 33, La Graufesenque. Flavian. 2550.
91.]VNI[, - , Lezoux. Hadrianic or Antonine. 2675.
92.]CIM, bowl, Lezoux. Hadrianic or Antonine. 6379.
93. ИO[or]OИ, 18, La Graufesenque. Flavian. 5249.
94.]CN, 27, Lezoux. Hadrianic or early Antonine. 3637.
95.]O or O[, 33 or 33a, La Graufesenque. This small cup form is slightly unusual in that it has the external grooves of a 33a, but not the internal step at the base of the wall. *c* AD 45–70. 3619.
96.]R[, 18/31, Lezoux. Drilled for riveting across the stamp. Hadrianic or early Antonine. 2259.
97.]C or C[, 15/17 or 18, La Graufesenque. Early Flavian. 5348.
98. OF C· MVS, 27g, La Graufesenque. Late Neronian–early Flavian. 10211.
99. OF[, 15/18 or 18, La Graufesenque. Pre- or early Flavian. 10835.
100.]VI[, 31, Trier. Late 2nd–early 3rd century. 12130.
101. IAT[or]LAT, 18/31, Lezoux. Hadrianic or early Antonine. 12595.
102 OF.P[(retro), 27g, La Graufesenque. Pre- or early Flavian. 16128.
103. B[, 18, La Graufesenque. Flavian. 16142.
104.]A [ ] S'AƧ, 32, Lezoux. Poorly impressed, possibly illiterate stamp. Late 2nd century. 16290.
105.]NIM, 33, Lezoux. Antonine. 16841.
106.]SF, 18/31, Lezoux. Hadrianic or early Antonine. 16963.
107.]VSF, 18/31R, Lezoux. Hadrianic or early Antonine. 16974.
108.]F, 18/31, Lezoux. Hadrianic or early Antonine. 17191.
109.]NS, dish, La Graufesenque. Claudian–Neronian. 19520.

Unreadable stamps

110. Poorly impressed and thus unreadable, 27, La Graufesenque. Flavian. 5600.
111.]Λ•Λ•E, 31, Rheinzabern. Late 2nd–3rd century. 17447.
112.] Є(retro) [18/31 or 31, Lezoux. Hadrianic or Antonine. 51724–163.

Illiterate stamps

113. XXXXX, 33, Lezoux. Hadrianic or Antonine. 19328.
114. Illiterate, 27g, La Graufesenque. Flavian. 11200.
115. Illiterate, 27g, La Graufesenque. Flavian. 10808.

Rosette stamps

116. Rosette, number of petals not discernible, form 46 F1 var (Vernhet, fig 1), La Graufesenque. For form see Fig 1, 6. The form was a Flavian introduction, probably *c* AD 90–110. 2900.
117. Incomplete rosette, form 46, Les Martres-de-Veyre. *c* AD 100–25. 10808.

Catalogue of decorated sherds

1. 2268. 37, SG. Body sherd with scrap of ovolo. Flavian.
2. 2315. Hermet 5, SG. Rim sherd broken off below the ovolo. The ovolo has a single border, broad core and ring-ended tongue. Neronian. Fig 3, 20.
3. 2592. 29, SG. Body sherd from the base of the decoration with leafy festoons with scrolls within and hanging leaves/buds with vertical wavy border between with rosette terminal. Neronian–early Flavian.
4. 2671. 37, SG. Rim sherd with ovolo and untidy line below. The ovolo is double bordered and the tongue has a blurred rosette terminal. Flavian.
5. 2675. 29, SG. Body sherd from base of decoration, with spiral, wavy lines and a small, pendant trifid. Neronian.
6. 2678. 30, SG. Body sherd with scrap of ovolo and no border below. Little remains of the scrolled decoration except a corded bud and a fragment of a palmate leaf. Neronian.
7. 2699. 30, SG. Body sherd from bottom of decorated zone; the surviving decoration comprises the foot and lower leg of a naked figure above a wavy line which delineates the decorated zone. Neronian–early Flavian.
8. 2709. 29, SG. Body sherd from lower zone with fragment of triple-bordered medallion and pendant tassel above a wavy line, and a ?basal wreath. Early–mid-Flavian.
9. 2716. Déchelette 67. SG. Scrap from top of decorated zone with unidentifiable ?figure. Flavian.
10. 2794. 37, SG. Large body sherd with basal wreath. The decoration includes a cherub supporting one side of a triple-bordered arcade, presumably one of a pair; with partial impressed gadroon below and also beneath the motif (not complete enough to identify) within the arcade. To the left are various panels with rosettes at the junctions, one with a bull, and below it a small panel with two columns of leaf tips and another small panel to the right perhaps containing a dog. A bull in a similar panel arrangement is on a bowl attributed to Crucuro (Mees 1995, Taf 53, 5). The gadroon tips are reminiscent of those used by L. Cosius. They are on a bowl with a similar cherub beneath a triple-bordered arcade and with what may be the same basal wreath (Mees 1995, Taf 32, 3). Probably Flavian/Trajanic. Fig 4, 27.
11. 2831. 29, SG. Body sherd with fragments of decoration above and below cordon which is bounded with fine bead rows. The upper zone appears to contain a winding scroll. Neronian–early Flavian.
12. 2831. 29, SG. Body sherd with part of lower zone extant. Below the cordon bead row is a wreath of leaves (5 segments) with wavy line below. The next band down contains a plant motif consisting of two groups comprising outer plain leaves with two buds between and, to the right, a dog running right (hind quarters only) and wavy line below. The basal wreath, if that is what is below the line, is too fragmentary to identify.

A bowl stamped CV. Albanus from the Cala Culip IV wreck has the wreath, dog and plant motif. (Neito and Puig 2001, 278, 241). Flavian.

13. 2905. 29, SG. Body sherd with fragment of bear facing right within a double-bordered medallion. Neronian–early Flavian.
14. 2918. 29, SG. Body sherd with scrap of blurred wreath. Neronian–early Flavian.
15. 2920. 29, SG. Body sherd with scrap of lower zone decoration of vertical corded spindles. Neronian–early Flavian.
16. 2926. 29, SG. Body sherd with fragment of lower zone decorated with a wavy line scroll containing at least two leaves and a rosette. *c* AD 50–65.
17. 2945. 29, SG. Body sherd from upper zone comprising linked festoons containing simple spirals with small 6-petalled rosette terminals and large pendant bud between. A similar arrangement appears in the lower zone of a bowl stamped by Senicio (Dannell *et al* 2003, Taf A1, no 1299), although the details of the festoon and rosette are different. Neronian.
18. 2951. 37, SG. Body sherd with fragment of St Andrew's cross with bead row dividers and rosette at junction. Mid–late Flavian.
19. 2965. 30, SG. Body sherd with large single-bordered ovolo with ring- tongue below a wavy line. *c* AD 50–70.
20. 3116. 37, SG. Body sherd with fragment of Victory (O.814). Flavian.
21. 3237. 37, SG. Large part of a bowl (minus rim) with a double-bordered ovolo with tasselled tongue. The ovolo was used at La Graufesenque by Amandus iii and C Cingius Senovir (Mees 1995, Taf 186, 11; Taf 185, 1). The simple panelled and repetitive design of the latter (*ibid*, Taf 185, 1) is comparable stylistically with this bowl which is of panelled design; a large panel containing animals alternating with a small panel containing a simple saltire with rosettes at the crossing and at the ends of the diagonals and a simple three-foil leaf in each quadrant. The three animal panels are (from the left) lion and mule (O.1483), an unidentified animal, possibly a stag, running left and a repeat of the lion and mule panel. The lion has lost most of its tail suggesting an old poinçon. The lion and mule motif was popular during the Neronian period (Bird 2005) and although it declined in popularity in the Flavian period, late 1st century examples of its use are known (*ibid*, 77), although not in association with this particular ovolo. Late 1st–early 2nd century. Fig 5, 29.
22. 3241. 37, SG. Body sherd with scrap of scrolled design. The extant decoration includes leaf tip infilling. Flavian.
23. 3241. 37, SG. Body sherd from panel-decorated bowl with stag (O.1738) running right below a wavy line and a large rosette. *c* AD 85–110.
24. 3242. From 29, SG. Body sherd from lower zone of closely-spaced straight gadroons. *c* AD 50–70.
25. 3266. 37, SG. Body sherd from a panel-decorated bowl. The animal motifs are not identifiable. The decoration includes grass motif (Hermet 1934, pl 14, 87). Flavian.
26. 3542. 29, SG. Body sherd, upper zone is panelled with dog running right in one panel, the other filled with leaf tips. The detail below the cordon is not visible. *c* AD 55–75.
27. 3542. 29, SG. Body sherd from lower decorated zone; decoration includes a scroll with pendant, corded buds, inhabited by small Nile goose. *c* AD 70–85.
28. 3691. 37, SG. Small body sherd with fragment of festoon extant below a wavy line border. Probably Flavian.
29. 3879. 30, SG. Body sherd with fragment of trident-tongued ovolo. Flavian.
30. 5051. 29, SG. Body sherd from lower zone of straight gadroons. *c* AD 50–70.
31. 5060. 30, SG. Large rim sherd with a double-bordered ovolo with a trident tongue which is not attributed to any particular potter. The well-spaced panel design with wavy line borders has, from the left, a panel in-filled with diagonal wavy lines, a panel containing Perseus receiving sword from Vulcan (O.883=Dech 510) with right hand broken off as on a bowl stamped by Mercator (Mees 1995, Taf 135, 1); the panel is in-filled with two bottle buds and two tasseled pendants. The right-hand panel is a broad St Andrew's cross with various leaves and buds. *c* AD 75–95.
32. 5152, 5215. 29, SG. Two non-joining rim sherds from the same vessel. The beads below the rouletting and on the cordon are quite small and neat. The upper zone comprises a winding scroll formed from a wavy line with heart-shaped leaves and spirals with internal rosettes. *c* AD 45–60.
33. 5302, 6161, 11, SG. Two non-joining body sherds with a single-bordered ovolo with rosette tongue clearly a separate poinçon; no border below ovolo. The decoration includes scroll with large, corded, vertical buds, rosettes, a small bird facing left and a cherub (possibly O.435). *c* AD 45–55. Fig 3, 17.
34. 5348, u/s. 37, SG. A good portion of a panel-decorated bowl (25 sherds); most of the ovolo has been trimmed off, and the bowl is burnt making the identification to potter difficult. The design consists of inhabited large, triple-bordered medallions with narrow buds in the four corners of the panel alternating with a panel divided horizontally with a creature above the dividing wavy line and a spiral flanked by large, corded, vertical buds (Hermet 1934, pl 89, 6) below. The two large medallions contain, on the left, eagle O.2180, and on the right large hare O.2113. The creature between is a gryphon, a small version of O.878. The basal wreath is similar to two on bowls from moulds with the mould mark PAS (Mees 1995, Taf 161, 3 and 4). The second bowl also has a spiral flanked by vertical buds, as does another bowl by the same maker (*ibid*, Taf 160, 6). *c* AD 85–110. Fig 5, 28.
35. 5404. 37, SG. Body sherd with fragment of dog running right (O.1923) and a simple plant motif. Flavian.

36. 5432. 29. Body sherd with coarse wavy line below rouletting. The panels of the upper zone include a stag running right O.1738 and narrow, horizontal leaf tips. *c* AD 70–85.
37. 5454. 29. Body sherd, upper zone decorated with repeating S-shaped scrolls similar to one used on a bowl from La Graufesenque, stamped by Iucundus ii (Dannell *et al* 2003, Taf A1, 2601). On this pot there is a central 5-petalled rosette and the scrolls are separated by verticals composed of tiny ?astragalii with rosette terminals. The lower zone is filled with broad, widely-spaced straight gadroons. Claudian. Fig 3, 19.
38. 5544. 29, SG. Rim sherd with fragment of upper zone with winding scroll and two heart-shaped leaves extant. The scroll compares with one on a bowl stamped Volus in the decoration and with a bowl stamp of [LICI]NUS (Mees 1995, Taf 202, 1). Claudio–Neronian.
39. 5600. 29, SG. Body sherd with fragment of upper zone with scroll and infilling ring-and-dot motif. Neronian.
40. 5600. 37, SG. Base sherd with basal wreath of trifid leaves. Early–mid-Flavian.
41. 5921. 37, SG. Body sherd from panelled bowl. Large running hare O.2074 above grass/leaves. The second panel contains lion eating prisoner motif (O.1493) with leaves or grass motif below. Flavian.
42. 5921. 30, ?SG. Body sherd with trident-tongued ovolo with blocked-in wavy line border below. The only identifiable figure remaining is of Diana facing right. Flavian or Flavian/Trajanic.
43. 5938. 29, SG. Body sherd from lower zone of vertical corded spindles. *c* AD 50–70.
44. 5938. 29, SG. Body sherd from lower zone; large beads and a triangular leaf are the only extant ornaments. *c* AD 60–85.
45. 5951. 29, SG. Fragment of cordon only. Early–mid-Flavian.
46. 6035. 29, SG. Rim sherd, upper zone of repeating trifid leaves and rosettes and scrolled lower zone. *c* AD 50–65
47. 6102. 37. SG. Body sherds (3), with a slightly blurred ovolo with a trident tongue which may be that used by M. Crestio and other Flavian potters. The decoration is in panels below a smudged bead row and includes a lion running right with a heart-shaped leaf and tendril above it and a compound plant motif (Hermet 1934, pl 14, 87). The lower part of the decoration is almost completely absent but seems to have included linked festoons. The lion and the plant appear on form 29 bowls stamped by Vitalis (Dannell *et al* 2003, Taf I3, 3171 and 3175). Many potters including M. Crestio used the plant. It is not possible to attribute this bowl to a specific potter but a date in the early–mid-Flavian period is certain. *c* AD 75–95
48. 6115. 29, SG. Body sherd from lower zone of vertical gadroons. *c* AD 50–70.
49. 6135. 37, SG. Body sherd with double-bordered ovolo with trident tongue turned to the right, used by Crucuro; below the wavy border are an acorn and a small leaf. Flavian.
50. 6379. 29, SG. Body sherd from a bowl attributable to the Cluzel 15 group (Haalebos 1979). The upper zone is comparable with one from a bowl stamped by Celadus (Dannell *et al* 2003, G5, 1043) in that there are panels separated by cabled vertical borders, presumably alternating, one with a large rosette of rosettes and ring-and-dot motifs in the corners, the other with horizontal trifid leaves, ring-and-dot above and below and a pendant tassel between the opposing pair of trifids. Similar in style, the motifs are not the same. The large rosette may be the same as one on a bowl stamped by Lucceius (*ibid*, B1, 1323). The lower zone is filled with carefully spaced leaf tips which can be seen on bowls by Celadus (*ibid*, E1, 1998) and Murranus (*ibid*, E1, 0767). The trifid, ring–and-dots and the infill zone of leaf tips appear together on a bowl from Colchester (Dannell 1999, fig 2.9, 160) attributed to the Cluzel 15 group. *c* AD 50–65.
51. 6392. 29, SG. Large rim sherd with triple-bordered festoon containing a spiral, between two vertical corded pendants in the upper zone; a similar motif and upper zone style of decoration can be seen on a bowl of Vitalis ii (Dannell *et al* 2003, G4, 1001). A second panel in the upper zone includes a leaf on a bent stalk, as does the lower zone which may also include an animal. *c* AD 75–80.
52. 6445. 29, SG. Rim sherd, upper zone of repeating anthemion; a similar design to the upper zone of a bowl from London (Stanfield 1930, fig 1, D) and within the lower zone of a bowl stamped by Felix i (Dannell *et al* 2003, Taf E2, 0433). In both cases, however, the arrangement of buds differs slightly from this example. Claudian. Fig 3, 18
53. 6552. 29, SG. Body sherd from the lowest part of the decoration; includes a fine leafy festoon or medallion, wavy line ?St Andrew's cross with a rosette. Pre- or early-Flavian.
54. u/s. 30. Body sherd from base of panelled decoration comprising three (or more) rows of fat leaf tips in one panel with a ?dog chasing a ?hare in the lower panel which is bounded by a simple column on each side. The hare is running over a blurred grass motif of ?partly impressed leaves or spindles. Mid–late Flavian.
55. 10145. 37, SG. Part of the base with a basal wreath of S-shaped gadroons below a wavy border with a scroll with small palmate leaves above. The moulding is poor. *c* AD 75–95.
56. 10169 and 10608. 29, SG. Two sherds from the upper zone with the four-pronged motif used by Murranus (and others) with opposing flanking trifid ornaments. The four-pronged motif is in a scroll on a bowl from Chichester (Mees 1995, Taf 154, 3). *c* AD 50–65.
57. 10239. 29, SG. Sherd from upper zone with repeated horizontal leaves in one panel and a fish in the other. The leaves and the fish are on a bowl stamped by Murranus from London (Mees 1995, Taf 152, 1). *c* AD 50–65.

58. 10250. 37, SG. Body sherd with ovolo with trident tongue used by Mercator. The moulding is rather poor, but the decoration includes a scroll with a hissing goose as on a bowl stamped by Mercator from London (Mees 1995, Taf 128, 1) and a composite motif of leaves similar to one on another stamped bowl from Vindonissa (*ibid*, Taf 137, 8). *c* AD 75–100.
59. 10332. 37, SG. Body sherd from just below the ovolo with a scroll with heart-shaped leaves; a seated hare facing left above a wavy line with rosette terminals and two rows of narrow leaf-tips below. The general style is that of Iustus and Meddillus; the hare is in a different leafy scroll on a bowl stamped by Iustus from Girona (Mees 1995, Taf 97, 5). *c* AD 70–85.
60. 10483. 29, SG. Sherd with row of trifid leaves, the same as the motif used repeatedly on a bowl stamped by Cabiatus from Richborough (Pryce 1949, pl lxxx, 43). *c* AD 50–65.
61. 10556. 37, SG. Body sherd from panelled bowl with backward facing stag O.1738, a row of spiral tendrils in panel below and to the right a column with ?ball perched on top. There is a chevron basal wreath. *c* AD 80–110.
62. 10608. 37, SG. Body sherd with horizontal panels, upper with a composite leaf motif, and a wreath of S-shaped gadroons below a wavy line divider. *c* AD 70–90
63. 10628, 10659, 10803. 29, SG. Three body sherds from the same bowl. The upper zone has two rows of trifid leaves with a wavy line between, bounded by the usual bead rows. Neronian.
64. 10659. 29, SG. Part of upper zone with bird O.2260 in a small panel defined with vertical wavy dividers, flanked by horizontal leaf tips. The leaves are larger than that used by Murranus. The bird appears on a bowl from Pompeii stamped by Mommo (Dannell *et al* 2003, B2, 2490) with small vertical leaf tips. *c* AD 50–70 (JB).
65. 10665. 37, SG. Body sherd with scrap of basal wreath of short S-gadroons. Flavian.
66. 10711. 29, SG. Body sherd from base of decoration comprising small medallions within a scroll. A similar lower zone is on a bowl stamped by Murranus in the Musée Paul Valéry (Mees 1995, Taf 149, 1), however, on this bowl the rosette is replaced by the four-petalled motif on a stamped bowl from Bregenz (*ibid*, Taf 153, 4). *c* AD 50–65.
67. 10803. 29, SG. Rim sherd with rouletting and row of beads only. Neronian–early Flavian.
68. 10803. 29, SG. Body sherd from bottom of lower zone with scroll, corded medallion and pendant trifid with a collar of three beads. Neronian.
69. 10808 and 10841. 29, SG. Two body sherds from the upper zone with a fragment of a trifid-filled panel with wavy vertical border and ?rosette in the neighbouring panel. The trifid could be the one used by Germanus as a basal wreath on a stamped bowl from La Graufesenque (Dannell *et al* 2003, E1, 1363). Neronian.
70. 10819. 29, SG. Two rim sherds from the same vessel with an open, winding scroll. Neronian.
71. 10819. 10169, 10483, 10608; 29, SG. Four non-joining body sherd from the upper zone of a bowl. Neronian–early Flavian.
72. 10859. 29, SG. Body sherd with scrap of winding scroll. Neronian–early Flavian.
73. 10978. 29, SG. Rim sherd from a bowl with large stirrup leaves repeated along the upper zone and an inhabited medallion in the lower. Probably early–mid-Flavian.
74. 10998. 29, SG. Body sherd with large 8-petalled rosette within a cabled medallion, a single ring-and-dot to the side, and, open, bifid leaves repeated vertically in the adjoining panel. The rosette was used, in a cabled medallion, by both Lucceius and G. Sal. Aptus; the latter also used the bifid leaf as a basal wreath (Dannell *et al* 2003, Taf E3, 1108), and is on a bowl from Colchester attributed to Luccieus with an accompanying ring-and-dot (Dannell 1999, 374). *c* AD 55–70.
75. 11056. 29. SG. Body sherd from upper zone with scroll with 5-petalled rosette, ?infilled below with vertical leaf-tips. *c* AD 50–75.
76. 11267. 29, SG. Body sherd with a bead row saltire, a rosette at the centre; with a trifid in the upper and lower quarters and a pendant, narrow heart-shaped leaf in each side. Neronian or early Flavian.
77. 11332. 29, SG. Body sherd with scrap of bead row and vertical wavy divider with rosette terminal. Neronian–early Flavian
78. 11381. 29, SG. Body sherd with wreath of trifid leaves with reflexed outer leaves with wavy line below and large area of vertical leaf tips beneath that. Neronian–early Flavian.
79. 11386. 29, SG. Sherd from upper zone of bowl with large 8-petalled rosette within a cabled medallion with rosettes in the corners of the panel, the adjoining panel filled with straight gadroons (the middle section only). The rosette was used, in a cabled medallion, by both Lucceius and G. Sal. Aptus. It occurs in the lower zone of a bowl stamped by Lucceius, with the rosettes and a different gadroon panel (Dannell *et al* 2003, Taf D2, 1325). *c* AD 55–70.
80. 11436. 29, SG. Body sherd with central cordon and fragment of scroll above with spiral tendrils. *c* AD 65–85.
81. 11723. 29, SG. Lower zone of straight gadroons with broad mid-rib. Neronian–mid-Flavian.
82. 11805. Knorr 78, SG. Profile of vase, very blurred decoration with wreath of reverse S's around the top of the decorated zone. Decoration is panelled and non-figurative, comprising rings in a St Andrew's cross and panels of narrow leaf tips. Rim pulled higher than usual for this form. Late Flavian–Trajanic. Fig 1, 3.
83. 12049. 29, SG. Body sherd with foliate scroll in upper zone with frilly-edged leaf and a tulip bud. The detail of the lower zone is blurred. Neronian–early Flavian.
84. 12119. 37, SG. Rim with poorly moulded ovolo, possibly the one used by Sex Iulius Iucundus; the decoration is panelled, the upper panel filled with

paired festoons containing spirals with large pendant bottle buds between. *c* AD 70–90.

85. 12132. 29, SG. A large part of a bowl with a scroll with stirrup leaves, tassels formed from a pair of trifid leaves, and small central rosettes and a lower zone of straight gadroons. The tassel is on a bowl from Colchester ascribed to Modestus (Dannell 1999, 440), and a similar bowl stamped by Murranus (Dannell *et al* 2003, A1, 2372). *c* AD 50–65. Fig 3, 21.
86. 12166. 29, SG. Lower zone of straight gadroons. Neronian–early Flavian.
87. 12181. 37, SG. Body sherd with trident-tongued ovolo with wavy border above and below. The ovolo was used by M. Crestio *et al c* AD 75–95.
88. 12186. 29, SG. Lower zone with straight gadroons with a wavy line and unidentifiable wreath below. Neronian–early Flavian.
89. 12307. 29, SG. Upper zone with row of vertical, short blades. Probably Neronian.
90. 12506. 37, SG. Body sherd from base of decoration with linked chevron-leaf festoons with unidentified pendant between. Several potters used similar festoons. *c* AD 75–95.
91. 12578. 29, SG. Scrap of cordon and flanking beads. Neronian–Flavian.
92. 12630. 37, SG. Body sherd from bottom of bowl. The panelled decoration is divided by wavy lines with rosettes at the junctions. A toothed medallion has a row of small leaves below it; the same leaves appear below an unidentified figure. The small panel below the medallion holds a small dog running right. *c* AD 75–95.
93. 12644. 29, SG. Body sherd with fragment of scroll with a small leaf. The leaf is on a bowl stamped by Crestio from Baldock (Dannell 1986, fig 91, 66). *c* AD 50–65.
94. 16056. 29, SG. Scrolled lower zone with frilly-edged leaves, tassel and bottle buds, with a small seated hare below the scroll. Similar leaves and tassel are on a bowl stamped by Niger from La Graufesenque (Dannell *et al* 2003, G10, 2020. *c* AD 50–65.
95. 16144. 29, SG. Body sherd with panel of leaves above the cordon, and widely-spaced, straight gadroons below. The leaves were used by Murranus and other associated potters (Mees 1995, Taf 152, 1). *c* AD 50–65.
96. 16144. 29, SG. Small body sherd from upper zone; small trifid terminal within a scroll. *c* AD 50–70.
97. 16144. 37, SG. Rim fragment with indistinct ovolo and wavy border. Flavian.
98. 16441. 27, SG. Body sherd from upper zone with eagle, probably O.2175, below a single scroll with a palm leaf/tassel to one side. Several potters used the eagle. Late Neronian–mid-Flavian.
99. 16502. 29, SG. Large part of a bowl with panels of leaf tips alternating with a crouching hound facing a running hound with a rosette between. The lower zone has leafy festoons containing palmate leaves with an elongated heart-shaped bud either side of a saltire with a pendant leaf each side and a bunch of three vertical leaves between. The big bunch of leaves is on two form 29s from La Graufesenque (Rey 544 and 584 in the Musée Fenaille, Rodez, information from G Dannell), with connections to Melainus. Both bowls have the curious medallion of the stamped vessel (Dannell *et al* 2003, Taf E2, 1571). A lower zone from perhaps the same mould is shown by Hermet (1934, pl 57.14). The crouching hound from the upper zone and the spidery rosette are also on that stamped bowl. *c* AD 55–65. Fig 4, 22
100. 16638. 37, SG. Body sherd with a scrap of a trifid-tongued ovolo. *c* AD 75–95.
101. 16641. 29, SG. Body sherd from lower zone with inhabited scroll with narrow bottle buds. *c* AD 70–85.
102. 16641. 30, SG. Three sherds from the same bowl, but not all joining. The ovolo, without border below is on a form 30 from Mainz signed by Cal(v)us (Mees 1995, Taf 16, 1). The decoration is composed of small medallions containing ?trifid leaves, and an arcade with small, broad leaves springing from a vertical beaded border. Corded tassels form another element of the design. The decoration is bounded at the upper and lower edges with a poorly defined wavy line. *c* AD 60–85.
103. 16641. 37, SG. Lower part of decoration with a chevron wreath below a wavy line. Flavian.
104. 16859. 37, SG. Body sherd with part of a winding scroll with birds either side, the most complete is O.2289. Flavian.
105. 17572. 37, SG. Body sherd with trifid-tongued ovolo with narrow core and wavy line below. The scroll with heart-shaped leaves inhabited by small geese in the upper lobes. The lower lobes are divided horizontally by a wavy line with arrowheads/leaf-tips below, and above, in one, sitting hare O.2014. The ovolo was used by an anonymous, but distinctive Flavian potter. *c* AD 75–95.
106. 17583. 37, SG. Body sherd with fragment of scroll with triangular leaf. Flavian.
107. 17755. 37, SG. Body sherd with fragment of scroll, poorly moulded. Flavian.
108. 17757. 37, SG. Body sherd from the lower zone with a scrap of a trifid leaf wreath just below the cordon. The wreath may be the same as one used on a bowl stamped by Lucceius (Dannell *et al* 2003, Taf A1, 1277). The scheme is of double-bordered medallions alternating with beaded St Andrew's crosses with small 8-petalled rosettes at the junctions and either side of the crosses. The left hand medallion contains a bird, the same small rosette, and a larger one; the right, a large 8-petalled rosette within a ring of the small rosettes. The large rosette was used by Lucceius (*ibid*, Taf D4, 1331) within a circle of ring-and-dot motifs within a medallion, and by G. Sal. Aptus with the small rosette on a bowl from La Graufesenque (*ibid*, Taf I1, 1110). *c* AD 55–70. Fig 4, 23.
109. 17853. 29, SG. Body sherd from upper zone with simple scroll with 4-beaded tendril binding and small rosette in the centre of the spiral. *c* AD 50–70.
110. 17882. 37, SG. Poorly moulded, body sherd with indistinct ovolo and solid line or blocked-in row of beads below. The panelled decoration includes a boar

with a long snout running right and a very large hare running left. There are several tendrils, and perhaps also a triangular leaf. Possibly Amandus iii of La Graufesenque. Late Flavian–Trajannic.

111. 17990. 29, SG. Lowest edge of lower zone decorated with volutes on small buds. *c* AD 45–65.
112. 19092. 29, SG. Part of lower zone with scroll in-filled with leaf tips and with a basal wreath of small trifid leaves. The leaves of the scroll, leaf-tips and wreath appear on a bowl stamped by Niger from Rodez (Dannell *et al* 2003, Taf E10, 1512). *c* AD 50–65.
113. 19148. 37, SG. Body sherd with trifid-tongued ovolo with narrow core and wavy line below. The ovolo was used by an anonymous, but distinctive Flavian potter.
114. 51724–176. 37, SG. Body sherd with chevron basal wreath below wavy border; traces of leaf/grass motifs and a vertical wavy border with a rosette terminal remain of the decoration. Flavian.
115. 10373. 37, SG (Montans). Body sherd from upper part of decoration. The ovolo (if there was one) has been trimmed off; only the underlying bead row survives. There are two deep grooves at the top of the decorated zone. The decoration is rather poorly moulded. The details include a cherub facing right holding a torch, a spiral, and an ?arcade. 1st half 2nd century. Fig 6, 36.
116. 19398. 30, SG (Montans). Body sherd with simple saltire of broad wavy lines; a pendant tassel and rosette are the only motifs surviving. Flavian or Trajanic.
117. 2592. 37, Lezoux (micaceous). Body sherd with scrolled design inhabited by a right facing bird. The basal wreath of reverse 3s has no borders above or below it. Flavian. Fig 4, 26.
118. 5051. 29, Lezoux (micaceous). Small sherd from upper zone; a small dog within plain double-bordered festoon is the only extant decoration. The dog is similar to O.1972. Early–mid-Flavian. Fig 4, 25.
119. 10819 and 10822. 29, Lezoux (micaceous). Joining rim and body sherds from two contexts. The only upper zone figure is a dog with a collar, running left. Below the narrow cordon is a simple wavy line scroll with a plain medallion containing a swan looking right, possibly O.2221, and, in another part of the scroll, a leaf. The dog is similar to one on a bowl in the same fabric from Fenchurch Street, London (Mills unpublished, cat 18). *c* AD 50–75. Fig 4, 24.
120. 2270. 37, Les Martres-de-Veyre. Scrap with bead row and ?6-petalled rosette. *c* AD 100–25.
121. 2319. 37, Les Martres-de-Veyre. Body sherd with leaf tip infilling. *c* AD 100–25.
122. 2675. 37, Les Martres-de-Veyre. Body sherd from panel-decorated bowl; the upper panel is filled with parallel wavy lines framing a central triangle of leaf tips with a 6-petalled rosette (Rogers C280) at the apex of the triangle; below a horizontal wavy line the lower panel contains a boar running right which is not recorded for either of the potters below, and may be a new motif. Similar arrangement can be seen on bowls attributed to the Rosette Potter (S&S pl 23, 282) with a different boar, and Potter X-13 (S&S pl 46, 547) with a lion in the lower panel. *c* AD 100–25.
123. 2702. 37, Les Martres-de-Veyre. Small sherd which appears to have a scrolled decoration with the blobby motif Rogers 3093 used by Drusus I (X-3). The design compares with that on a bowl in Drusus I style from London (S&S pl 13, 166). *c* AD 100–25.
124. 2900. 37, Les Martres-de-Veyre. Body sherd with scrap of ovolo Rogers B28 which was used at Les Martres by Drusus I (X-3). *c* AD 100–25.
125. 3243. 37, Les Martres-de-Veyre. Body sherd with fragment of ovolo (Rogers B14) which was used by Potter X-13. *c* AD 100–25.
126. 3547. 37, Les Martres-de-Veyre. Body sherd with a leaf which is probably Rogers G113. *c* AD 100–25.
127. 10000. 37, Les Martres-de-Veyre. Body sherd with wavy horizontal border and Venus O.281 used at Les Martres by Potter X-2. *c* AD 100–25.
128. 10171 and 10000. 37, Les Martres-de-Veyre. Rim sherds in the style of Potter X-13 with ovolo Rogers B14 with a wavy border below. The panelled decoration includes festoon Rogers B40 with an unidentified animal (which is either a broken poinçon or was mis-struck in the mould) and stand Rogers Q21. The ovolo, festoon (with a seated deer), and the stand are all on a bowl attributed to Potter X-13 from London (S&S pl 43, 499). *c* AD 100–25.
129. 10494. 37, Les Martres-de-Veyre. Body sherd with ovolo probably Rogers B37 with fine wavy line, below which are a vertical and a diagonal beaded divider with a rosette at the junction. Probably Drusus I (X-3). *c* AD 100–25.
130. 10813. 37, Les Martres-de-Veyre. Rim and upper part of decoration in the style of Potter X-12. The ovolo replacement Rogers C293 has a wavy border below it, and below that is a band of linked festoons containing large rosettes linked with astragali, all of which are on a bowl from London (S&S pl 40, 462). As on the London bowl there is a band of chevrons below the festoons, but in this case bounded by wavy lines not beads. Rosette Rogers C280 is impressed between the festoons. *c* AD 100–25.
131. 12127. 37, Les Martres-de-Veyre. Rim sherd with scrap of ovolo, possibly Rogers B14. *c* AD 100–25.
132. 12118. 37, Les Martres-de-Veyre. Scrap of decoration at the base of the decorated zone with double D motif Rogers U181 and rosette Rogers C280. Probably the work of Potter X-8. *c* AD 100–25.
133. 12193. 37, Les Martes-de-Veyre. Body sherd with festoon Rogers F40 possibly containing a concentric circle motif. In the corner of the panel is leaf Rogers G138, used by Austrus and Criciro amongst others. The short row of trifids in the panel below suggests Potter X-13 (trifid Rogers G24) who also used the festoon. The left-hand panel contains maenad O.368 and is recorded for several potters but none of those mentioned above. Clearly there are links with several potters, but given the fabric this is most likely to be the work of Potter X-13 or an associate. *c* AD 100–25.

134. 16128. 16443, Les Martres-de-Veyre. Two body sherds from the same bowl in the style of the Rosette Potter. Stanfield and Simpson illustrate several bowls in a similar style (S&S pl 24, 301–7); the bowl from Holt (pl 24, 306) is the closest, and may be from the same mould. The scroll is made up from festoon Rogers F1 with added motifs Rogers K2, J190, S8 and S44, and spindle S&S fig 7, 31. The basal wreath is chevron Rogers G370. The figure is Apollo standing on plinth Rogers Q74 with a composite motif, perhaps an altar, in the background (not in Rogers). Other elements include, to the right of Apollo, a horizontal row of trifids Rogers G169 with small rams horn Rogers G380 above; to the left the feet of a running dog are evident. The second, smaller sherd (not illus) has plinth Rogers Q74 with a figure, probably Diana, upon it. *c* AD 100–25. Fig 6, 30.
135. 16747. 37, Les Martres-de-Veyre. Scrap with ovolo Rogers B185 which was used by Potter X-12; wavy line border below. *c* AD 100–25.
136. 17191. 30, Les Martres-de-Veyre. Substantial body sherd in the style of Potter X-13 with ovolo Rogers B14. All the dividers are beaded with large rosettes (Rogers C280) at the terminals of the vertical dividers. The decoration is of repeating saltires comprising several of the motifs on S&S fig 11: spindle no 26, acanthus no 15 (Rogers K10), astragalus, bars no 29 (Rogers R12) and composite torch-like motif no 31 (Rogers U118). The saltires are a variation of that on a bowl from London (S&S, pl 49, 586) and another from Brecon (S&S pl 49, 588), which also has the rosette. *c* AD 100–25.
137. 19224. 30, Les Martres-de-Veyre. Chevron wreath at base of decoration, Rogers G366, which was used by Drusus I, and Potter X-2. *c* AD 100–25.
138. 2173. 37, CG. Body sherd with ovolo Rogers B143 and bead row below. The decoration is a fragment of a scroll with a large double-bordered medallion with a standing bird (O. 2297?) inhabiting the scroll. The design is similar to a bowl with a Cinnamus ii stamp from Carlisle (S&S, pl 162, 60). *c* AD 150–80.
139. 2217. 37, CG. Base sherd with a little of the freestyle animal decoration extant. The two animals are too incomplete to identify, but the very edge of a leaf might be Rogers J146 suggesting this could be the work of Albucius, in which case the date for the bowl would be *c* AD 150–80.
140. 2241. 37, CG. Very small sherd with part of two small medallions at the base of the decoration. A bowl attributed to Potter X-5 (S&S, fig 19, 2) from Schleitheim has similar repeated small medallions at the bottom of the decoration. Hadrianic.
141. 2448 and 2670. 37, CG (burnt). Two body sherds from 2448 and a non-joining sherd from 2670 probably from the same bowl. None of the sherds join, but between them they contain many of the elements of decoration on a bowl from Corbridge (S&S, pl 155, 25). The ovolo, probably Rogers B52, impressed over a guide line, and with no border below is the same, and was probably used like this by Secundus who also used other ovolos with a guide line. The other decorative elements include a large, plain, double-bordered medallion containing two figures with warrior O.167 (=D623) on the left and Venus O. 325 on the right with two small 'blobs' between them, leaf Rogers G8, and a small medallion (Rogers E17) containing a leaf (perhaps Rogers G372). Vertical bead rows divide the panels. It is possible that this bowl is from the same mould as the Corbridge bowl. *c* AD 145–75.
142. 2448, 2977, 2708, 2946. 37, CG. Eleven sherds (rims and body), almost certainly from the same vessel, although there are few joins; the upper and lower parts of the decoration are associated by context, the use of the corded border (Rogers A36) and bowl finish. The ovolo is Rogers B234 with border A36 below, both of which were used by Paternus II and Iustus. Below the border is Vulcan (O.68) and a standing bird. The remaining sherds are from the middle and lowest parts of the decoration which is clearly panelled, the panels defined by vertical and horizontal border A36 with plain rings at the junctions and terminals, as on a bowl stamped by Paternus from Nether Denton (S&S, pl 105, 12). The figures include flapping birds O.2316 and O.2324 flanking a vase (probably Rogers T23) and in a separate panel, Apollo O.94A. Below Apollo and other figures is a sinuous, corded cornucopia which is not in Rogers. One panel contains a double-bordered festoon flanked by plain rings. The other motif is a pillar surmounted by a lozenge. The pillar, probably Rogers P16, lozenge Rogers U32 and vase were all used by Iustus. A small body sherd almost certainly from the same bowl has lozenge Rogers U32 which was used by Iustus. There are links with the work of Paternus II and Iustus here, the figure types are all in the repertoire of Paternus and Vulcan (O.68) was also used by Iustus; whilst the motifs were used by Iustus and are not recorded for Paternus, the ovolo and border were used by both potters. *c* AD 160–95.
143. 2670. 37, CG. Joining body sherds from panelled bowl with vertical dividers of large beads (Rogers A3) and a horizontal divider. The vertical panel on the left contains a standing figure, possibly prisoner O.1146. To the right is a scrap of a single, plain-bordered festoon. Possibly the work of Casurius or another late Antonine potter. *c* AD 160–90.
144. 2674. 37, CG. Body sherd with fragment of ovolo Rogers B105 with bead row below. There is a plain ring in the field, but the figure is not identifiable. Probably Paternus II. *c* AD 160–95.
145. 2675. 37, CG. Small body sherd with ovolo Rogers B77 and leaf Rogers G205 below the bead row, both of which were used by Priscianus (Rogers 1999, pl 85, 13). *c* AD 125–45.
146. 2675. 37, CG. Body sherd in the style of an anonymous, but distinctive potter. The ovolo is on a bowl from Colchester (Bird 1999, 685). The other elements of the decoration include fine, slightly squashed bead row dividers, a ?medallion and a standing figure with a staff in an upheld left arm. Of all

the standing figures with a staff, this one looks most like a small version of Bacchus O.583. Hadrianic. Fig 6, 32

147. 2675. 37, CG. Body sherd from bottom of decoration with small warrior O.1059 flanked by leaves Rogers J178. Both motifs were use by the Cerialis ii/ Cinnamus ii workshop and are on a bowl assigned to Cerialis/Cinnamus from Clermont-Ferrand (Simpson and Rogers 1969). *c* AD 135–70.
148. 2675. 37 CG. Body sherd from the lower part of the decoration with a large-beaded vertical border and a plain, double-bordered medallion with a part impressed leaf within it and below it. The larger motif or figure within the medallion does not survive. Possibly the work or Doeccus or another late Antonine potter. Also another sherd, probably from the same bowl with part of a plain, single festoon and identical vertical beads. *c* AD 160–200.
149. 2675. 37, CG. Body sherd with ovolo Rogers B143 with bead row below and the head of bear O.1588 only surviving. Both were used by Sacer and Cinnamus ii. *c* AD 135–75.
150. 2675. 37, CG. Scrap of unidentifiable decoration, probably fragment of double, plain festoon with large astragalus. Mid–late Antonine.
151. 2675. 37, CG (burnt). Body sherd with bead border and head of an unidentified figure. Mid–late Antonine.
152. 2679. 37, CG. Body sherd from base of a bowl decorated in Paternus II style with cabled vertical dividers with small rosette terminals. The figures include stag O.1822N and lion O.1430. *c* AD 160–90.
153. 2699. 37, CG (burnt). A body sherd from a panelled bowl with ovolo Rogers B28 with wavy line borders; the remaining figures are Bacchus O.581 leaning on pillar Rogers P.39 and Jupiter O.3. The vertical divider has rosette terminal Rogers C280. There are also plain rings in the field. All of the motifs and figures are on a Quintilianus bowl from Corbridge (S&S pl 70, 21). *c* AD 125–50.
154. 2717. 37, CG. Sherd from the base of the decoration with wide guide line at lower edge. The bowl is divided into vertical panels by bead rows; the only complete figure is bird O.2202 which is attributed by Rogers only to Potter X-5, however X-5 used wavy dividers. Above the bird are the legs of an unidentified human figure. In the flanking panels only an astragalus and a leaf can be seen clearly, the bowl having shifted in the mould giving an unclear impression of the decoration. Hadrianic or early Antonine. Fig 7, 39.
155. 2848. 37, CG. Burnt body sherd from a panel-decorated bowl with figure O.638, a border of large beads, and a large, single-bordered medallion containing a rams horn motif Rogers G351 and other (incomplete) motifs. The beads, figure and rams horn were used by Doeccus. Doeccus usually used a double-bordered medallion. Doeccus or another late Antonine potter. *c* AD 160–200.
156. 2903. 37, CG. Body sherd with scrap of Cinnamus ovolo Rogers B143 or B144. *c* AD 135–70.
157. 2910. 37, CG. Two body sherds from a freestyle bowl. None of the animals is identifiable. Mid–late Antonine.
158. 2945. 37, CG. A scrap of decoration with a rosette at the junction of two cabled lines. Mid–late Antonine.
159. 2946. 37, CG. Body sherd with single-bordered plain medallion within a scroll. There is a mask in the medallion that is not in Oswald; it appears on a bowl with a Pugnus ovolo (B42) from Caerwent (Webster nd, D2/2/12). *c* AD 140–70. Fig 9, 46.
160. 2960. 37, CG. A small naturalistic leaf. Probably Hadrianic or early Antonine.
161. 2986. 37, CG. Large body sherd from a panel-decorated bowl in the style of Paternus II. The ovolo (Rogers B106) was used by Paternus II and several other potters. Small bead borders divide the bowl into vertical panels, and have leaf terminals (Rogers J153) and an astragalus (Rogers R60) about midway. Plain rings are used within the panels. Of the three panels the left-hand one is too incomplete to identify the figure. The central panel contains Apollo (O.93) and the right-hand panel erotic scene O.Y. The ovolo, bead rows, rings and astragalus are used together with a large, but different figure type, on a bowl attributed to Paternus from Bowness on Solway (S&S pl 108, 33). *c* AD 160–95. Fig 9, 47.
162. 2988. 37, CG. Fragment from bottom of decoration. Hadrianic–early Antonine.
163. 3092. 37, CG. Body sherd with scrap of decoration of repeated leaves (Rogers J178) which is characteristic of the Cerialis/Cinnamus workshop. *c* AD 135–70.
164. 3137. 37, CG. Small body sherd with ovolo Rogers B230 with wavy line below used by Potter X-6A. *c* AD 125–50.
165. 3193. 37, CG. Body sherd with ovolo Rogers B39 with wavy line (Rogers A23) below. Only rams horn Rogers G351 with an astragalus below survive. The rams horn and astragalus are on a bowl fragment from London attributed to Potter X-9 (S&S pl 29, 347), the ovolo and border on a bowl from Corbridge (*ibid*, 353). *c* AD 110–30.
166. 3236. 37, CG. Small body sherd with rosette (Rogers C280) with six wavy lines radiating from it; in the two more complete panels created by these lines is impressed a naturalistic triangular leaf (not identified). Probably Hadrianic or early Antonine.
167. 3241. 37, CG. Small body sherd with a pair of plain, double-bordered festoons with astragalus terminals and an unidentified leaf or rosette between the festoons. There is also a fragment of an ovolo and well-spaced bead row below it. Potter not identified. Hadrianic–mid-Antonine.
168. 3393. 37, CG. Body sherd from panelled bowl with wavy line dividing lines; the surviving panel is filled with repeated parallel motifs (Roger U282). Both were used by Geminus. *c* AD 125–45.
169. 5000. 37, CG. Body sherd with scrap of an unidentified ovolo with a bead row below. Hadrianic or Antonine.

170. 5152 and 5496. 37. CG. Three joining rim sherds from 5152 and a non-joining body sherd from 5496 from the same bowl (not illus). It is very hard to attribute this bowl to a particular potter. The ovolo Rogers B28 with astragalus border A10 below suggests a mould by Censorinus or an associate of his. The other motifs include column Rogers P3 with an acanthus springing from the top. The two acanthus tips on this pot are quite different and hard to identify. A pair of these column/acanthus motifs flank a large leaf which is not in Rogers. In the second panel a small, plain, double-bordered medallion contains an unidentified leaf or trifid. The vertical dividers are bead rows with rosette terminals. The two different borders, rosette and medallion are on a pot from Leicester with a different ovolo attributed to Censorinus (S&S pl 102, 14). *c* AD 160–80. Fig 9, 45.
171. 5215. 37, CG. Body sherd with fragment of ovolo Rogers B105 with bead row below and bead row dividing panels, one of which contains a plain festoon with astragalus terminal, the other, part of the retrograde advert stamp PΛT[ER N FE] (*cf* Stamp Cat No 54) and an unidentified motif beside it. *c* AD 160–95.
172. 5215. 37, CG. Sherd from the base of the decoration with a cursive signature of Acavnissa below the narrow line delineating the decorated area. The extant decoration of medallion Rogers E30 containing rosette Rogers 243, linked trifids with an astragalus at 90° to them (Rogers G248) and scattered small rosettes (Rogers C249) are all typical of the work of Acavnissa. The plain ring inside a ring and the curving line which may be part of a scroll or a large medallion are less common; the medallion is paralleled on a signed bowl from the Pique collection (Rogers 1999, fig 1, 1). *c* AD 125–50. Fig 6, 34.
173. 5215. 37, CG. Body sherd with satyr (O.592) and lozenge (Roger U32); the latter is unique to Iustus. *c* AD 160–90.
174. 5215. 37, CG. Body sherd with ovolo Rogers B231 with bead row below used in the Cinnamus workshop. *c* AD 145–75.
175. 5215. 37, CG. Rim sherd with blocked in-ovolo with wavy line Rogers A26 below. Medallion (Rogers E18) with rosettes (Rogers C194) and a trident, which is not recorded by Rogers; to the left of the medallion are all that remains of the decorative scheme. The wavy line, rosettes and possibly the ovolo are on a mould stamped Iustus in the Pique collection (Rogers, 1999, pl 59, 3; MAN 9992). The untidy wavy line, medallion, and general style suggest this may well be his work. *c* AD 160–90.
176. 5217, 6064, 6379. Six body sherds from the same bowl, although not all join. The design is a vine leaf scroll (Rogers H13) containing large, plain, double-bordered medallions with mask O.1214 and dolphin stand Rogers Q58 to the left; below the medallion is a dog running to the left (O.1980) flanked with plain rings. A similar bowl with a Cinnamus stamp from London (S&S, pl. 162, 61) has a scroll (with different leaf), medallion, mask, dog and rings. The mask and stand appear together in a different medallion on a stamped form 30 from London (S&S, pl 159, 26). *c* AD 150–80.
177. 5220 and 5221. 37, CG. Joining body sherds with ovolo Rogers B144 with bead row below. The motifs are repeated leaves Rogers J178 and an (unidentified) animal. The ovolo and leaf were used by the Cerialis ii/Cinnamus ii workshop. *c* AD 135–70.
178. 5635. 37, CG. Four joining sherds giving the profile of a small bowl in the style of the Large S Potter. The decorative scheme is of simple repeating panels as follows: stand Rogers Q21; a small, plain, double-bordered medallion containing flapping bird ?O.2315 with three plain rings below; stand Q21; a panel of five S motifs (Rogers S71) with a festoon flanked with astragali above; stand Q21; a repeat of the bird and rings panel; stand Q21; a repeat of the S and festoon panels. The panel dividers are bead rows with large beads at the junctions; the ovolo Rogers B24. The ovolo, borders and junction beads, bird, rings and panel of S's are on a bowl from Caerwent (Rogers 1999, pl 136, 1); the bird in the medallion, bead rows and junction beads, S's, festoon and astagalus are all on a bowl in the Pique Collection (*ibid*, pl 136, 8). The stand is on a bowl from Wilderspool in the Grosvenor Museum, Chester (inf B Dickinson). *c* AD 125–50. This bowl is worn internally near the base of the wall. Fig 6, 35.
179. 5690. 37, CG. Body sherd with ovolo, bead row below it, vertical bead divider with beaded ring terminal, and part of a figure which appears to be a small version of Hercules O.783. The ovolo is not in Rogers, but is on a bowl signed by Criciro from Aquincum (S&S pl 172,1); the beaded rings are on another signed bowl from Mumrills (*ibid*, pl. 117, 7). *c* AD 135–65.
180. 5691. 30, CG. Base of decoration with a heavy, plain, double-bordered medallion containing cherub O.440 which was used by several mid–late Antonine potters.
181. 5780. 37, CG. Body sherd with scrap of ovolo. Not identifiable. Hadrianic or Antonine.
182. 5780. 30, CG. Body sherd with fragment of panelled decoration with horizontal wavy line divider. There is little that is identifiable, but there is a very curly trifid which is not in Rogers. Probably Hadrianic–early Antonine. Fig 7, 40.
183. 5841. 37, CG. Two body sherds from the lower part of a bowl. The decoration is unusual; the scheme is one of panels with ?pairs of bead rows used for the vertical and basal borders. The extant panels alternate between one with a standing figure (?O.355) and one with a St Andrew's cross formed from bead rows. The design appears very sparse and is not immediately reminiscent of any potter. The use of large figures, double bead rows and simple saltires is paralleled in the work of Docilis. Probably Docilis style. Late Hadrianic–early Antonine. Fig 7, 43.
184. 5913. 30, CG. Body sherd with panelled design using bead dividers in Divixtus style. The motifs include caryatid O.1207, sitting hare facing right O.2061, and

in the panel above a small medallion probably containing bird O.2247 with astagalus Rogers R12 infilling the panel. The bird and medallion occur on a bowl (with a Divixtus stamp (S&S pl 116, 14) and the hare and medallion on another stamped bowl (*ibid*, pl 116, 10). *c* AD 145–75.

185. 5938. 37, CG. Rim sherd with ovolo Rogers B38 with wavy line below and festoon and vertical wavy divider; probably Potter X-9. *c* AD 110–30.
186. 6031. 37, CG. Rim sherd with ring-tongued ovolo Rogers B106 with bead row below, which was used by both Albucius and Paternus II. *c* AD 150–95.
187. 6135. 37, CG. Body sherd from the top of the decoration with ovolo Rogers B230 without a border below it. The decoration is of plain single-bordered medallions with trifid Rogers G233 set across the medallion edge. One medallion appears to hold motif Rogers G17. Between the medallions is a standing figure facing left with an arm extended to the left. The ovolo B230 and G233 were used by Potter X-6A who occasionally omitted the border (S&S pl 76, 25). The figure is Paris O.842, not previously recorded for Potter X-6. The trifid G17 is on a bowl attributed to X-6 from Carlisle (Dickinson 1990, 229, fig 181, 55). *c* AD 130–55. Fig 7, 38.
188. 6523. 37, CG. Body sherd from the base of the decoration with linked festoons above upturned acanthus leaf motifs. The more complete festoon contains some kind of scroll and a rosette. Neither the festoon nor the acanthus are in Rogers so that no potter can be suggested for this interesting piece. Probably Hadrianic–early Antonine. Fig 7, 41.
189. 6588. 37, CG. Body sherd from a bowl in the style of Quintilianus or an associate with ovolo Rogers B28, rather poorly spaced, with wavy line Rogers A24 below. The motifs are gladiators O.1048 with a shield and O.1065 with large rosette Rogers C282 between. The gladiators and wavy line are on a Quintilianus bowl from Verpillières (S&S pl 73, 50). *c* AD 125–50.
190. 6620. 37, CG. Body sherd with ovolo Roger B231, bead row below and vertical bead divider with a rosette terminal. The only motif is lozenge Rogers U36. Both lozenge and ovolo were used in the Cinnamus workshop. *c* AD 145–75.
191. 6649. 37, CG. Body sherd with ovolo. Not identified. Probably Hadrianic or early Antonine.
192. 10000. 37, CG. Body sherd from the lower part of a panelled bowl, with beaded dividers. Figures include flapping bird O.2315 in a double-bordered medallion, and in the panel below nude man O.688. These figures were used by several potters including the Sacer/Attiannus group. *c* AD 125–50.
193. 10000. 37, CG. Rim sherd with ovolo Rogers B28 and bead row below with rosette and traces of decoration. Probably Quintilianus group. *c* AD 125–45.
194. 10000. 37, CG. Joining rim sherds with ovolo Rogers B28 with trace of bead row. Probably Quintilianus group. *c* AD 125–45.
195. 10006, 11824, 11902, 11973. 37, CG. Rim and substantial part of a bowl with mould signature of Cerialis ii below the decoration. The bowl is the same as Simpson and Rogers 1969, figure 2, 13, with the exception of the cockerel in the panel to the right of the signature which is facing the other way (O.2348). The figures are Neptune (O.13), Vulcan, without tongs (O.66), cockerels O.2348 and O.2361, and bear O.1627. The motifs include ovolo Rogers B144, leaf Rogers J178, a plain, single festoon with astragalus terminals, and plain rings. There is a slight defect in the surface suggesting that the mould was cracked when this bowl was made. *c* AD 135–50. Fig 8, 42; Plate 1.
196. 10036. 37, CG. Scrap with vertical beads and incomplete figures either side. Antonine.
197. 10044, 11421. 37, CG. Two body sherds with no join, but probably from the same vessel, each with part of a Cinnamus advertisement stamp (stamp Cat No 23) The upper sherd has ovolo Rogers B231 with a bead row below. The edge of this sherd appears to have been deliberately chipped as if to make some kind of (?scraping) tool. The second sherd is from the bottom of the decoration and has part of a large double-bordered medallion with two rosettes (Rogers C98) flanking cornucopia (Rogers U245) below it; a vertical beaded divider with a small terminal ring and a scrap of another forms a narrower panel within which is the stamp with a pillow motif, probably Rogers U12, below. U12 is not recorded for Cinnamus by Rogers, although the motif on a bowl from London (S&S pl 161, 50) is the same as the motif on this bowl. *c* AD 145–75. Fig 7, 44.
198. 10062. 37, CG. Body sherd in Cinnamus style with leaf Rogers H51 and flapping bird O.2315, and a second sherd with Cinnamus ovolo Rogers B223; the sherds do not join, but are probably from the same bowl. *c* AD 150–80.
199. 10070. 37, CG. Body sherd from a free-style bowl with the body of lion O.1450, the tail of another animal and a trifid motif, possibly Rogers G171, above the lion. Not definitely attributable to any potter. Probably Trajanic–Hadrianic.
200. 10136. 37, CG. Two body sherds from base of decoration showing the lower edge of a double-bordered medallion (or, less likely, festoon), with two rather splodgy leaves below it and above the heavy plain line at the bottom of the decorated zone. *c* AD 140–80.
201. 10301. 37, CG. Rim sherd with ovolo Rogers B24 with row of small beads below. Probably Hadrianic–early Antonine.
202. 10319. 37, CG. Body sherd with Doeccus' ovolo (S&S pl 44.2), heavy bead row below; candelabrum Rogers Q6, vertical beaded divider and a plain festoon with astraglus terminal. *c* AD 165–200.
203. 10319. 37, CG. Body sherd with part of a vine leaf, possibly Cinnamus or Paternus II. *c* AD 150–90.
204. 10403. 37, CG. Body sherd from panelled bowl with vertical beaded divider, dancer O.348 with part impressed leaf in field. The figure is listed for a few potters, including Cinnamus and associated potters. A Hadrianic or early Antonine date is likely.

205. 10430. 37, CG. Small body sherd with ovolo Rogers B204 with bead row below and a fragment of motif Rogers N7, both used by Attianus. *c* AD 125–50.
206. 10606. 37, CG. Rim sherd with no ovolo; the ovolo was either trimmed off to leave a row of bifid leaves (Rogers ?G303), or the leaves replace the ovolo. The border is beaded as are the dividers forming a triangle below, which contains acanthus Rogers K11. The bifid and acanthus are listed for Avitus and the Quintilianus group; several other potters also used the acanthus. Avitus and Quintilianus both normally used wavy line dividers suggesting this may be by an associated potter. Hadrianic.
207. 10606. 37, CG. Body sherd with the edge of a figure and a coarse, vertical wavy line. Hadrianic or early Antonine.
208. 10800. 37, CG. Body sherd with ovolo Rogers B231 with bead row below which was used by Cinnamus. *c* AD 150–70.
209. 11208. 37, CG. Body sherd from the bottom of a panelled bowl in Cinnamus style with seated Diana O.111 between beaded dividers with ring terminals. *c* AD 150–80.
210. 11281. 30, CG. Part of panel-decorated bowl with large bead dividers; small medallion or festoon containing leaf Rogers H114 and in a small panel below, panther O.1512 with partial impression of leaf Rogers J161 below. All the motifs were used by Doeccus, and leaf H114 used only by him. *c* AD 160–90.
211. 11415. 37, CG. Body sherd with scrap of Cinnamus ovolo Rogers B223, bead row and astragalus, and scrap of double-bordered festoon. *c* AD 155–75.
212. 11440. 37, CG. Body sherd with a winding scroll with two 8-petalled rosettes, Rogers C167. There is also a scrap of a trifid motif with the three elements ending level with each other. The rosette was used by Quintilianus and Doeccus. The rosette and a similar trifid occur together on a Doeccus bowl from Bavai (Rogers 1999, pl 41, 21). *c* AD 160–90.
213. 11913, 11916, 11977. 37, CG. Approximately 25% of the rim of a bowl in the style of Potter X-6D. The ovolo (Rogers B233) has no border below. The decoration is panelled, the panels divided by vertical bead rows surmounted with trifid G175. Of the three extant panels the left panel contains a small warrior; the central panel has a double, plain festoon with astragalus terminals containing running hare O.2129A, flanked by trifids G176 with two pairs of horizontal linked trifids below; the right hand panel has the small warrior and Perseus (O.234), and below the warrior is a bar of some kind and a simple spiral. The ovolo with no border is on a bowl from Chesters (S&S pl 76, 25); the ovolo, trifid and Perseus are together on a bowl from York (Rogers 1999, fig 91, 3), the festoon, hare and trifid on a bowl from Upchurch, Kent (*ibid*, pl 75, 20), and the warrior is on a bowl from Silchester (*ibid*, fig 91, 2). The warrior is not listed for X-6, but is probably O.219A. The spiral, also not listed, is Rogers S20 and is also on a bowl in the Pique collection (*ibid*, fig 91, 5). *c* AD 125–150. Fig 7, 37.
214. 12024. 37, CG. Body sherd with incomplete vine leaf. Antonine.
215. 12070. 37, CG. Body sherd from Criciro-style bowl with a slightly blocked-in ovolo, probably Rogers B101, with a neat bead row below. The main panel contains erotic scene O.B within a plain, double-bordered medallion. The vertical divider is beaded with a terminal ring. An unidentified figure stands in the second panel, but it does not appear to be one of the caryatids used by Criciro. *c* AD 135–65.
216. 12102. 37, CG. Rim sherd with ovolo Rogers B17 and bead row below. Used by several Antonine potters including Cinnamus, Paternus and Criciro. Antonine.
217. 12118. 37, CG. Body sherd with scrap of wavy line divider and a trifid motif. Hadrianic or early Antonine.
218. 12166. 37, CG. Two body sherds with ovolo Rogers B39 with wavy border below, and plain double-bordered festoon with astragalus terminal with bead borders around panel. The ovolo, wavy border and astragalus are all on a bowl, attributed to Pugnus, from London (S&S pl 154, 19). *c* AD 140–70.
219. 12193. 37, CG. Base of a bowl with wide band at base of decoration. The motifs include festoon Rogers F40 and panther O.1566 in panel below it; and Hercules O.783 with a broken snake in his right hand in another panel with ?astragali in the field. The dividers are bead rows, probably with rosettes at the junctions although this is unclear. The festoon is recorded for Potter X-13 and Cinnamus. Of all the potters who used the Hercules and the panther figures, only X-13 is recorded as using both. The broken snake is known for Criciro (S&S pl 117, 11). Clearly there are links with several potters here. A Hadrianic date is most probable.
220. 12214. 37, CG. Small body sherd with scrap of trifid motif. Hadrianic or early Antonine.
221. 12218. 37, CG. Body sherd with vertical beads and fragment of ?animal. Antonine.
222. 12304. 37, CG. Body sherd with Cerialis/Cinnamus ovolo B144. *c* AD 135–70.
223. 12411. 37, CG. Rim sherd with distinctive ovolo Rogers B27 and untidy wavy line below, used by Servus II. Part of a large medallion also survives. *c* AD 160–200.
224. 12411. 37, CG. Body sherd with ovolo Rogers B52, used by Criciro and Divixtus, row of neat beads below and a fragment of a medium-sized, double-bordered medallion. *c* AD 135–65.
225. 12499. 37, CG. Body sherd with fragment of ovolo and coarse wavy line and the head of an unidentified figure below. Probably Antonine.
226. 12530. 37, CG. Body sherd from lower part of bowl with decoration in the style of Potter X-5 with a pair of leaves (Rogers J33) flanking a small double-bordered medallion as on an X-5 bowl (Rogers 1999, pl 133, 18). *c* AD 120–45.
227. 12567. 37, CG. The ovolo is too indistinct to identify. Hadrianic–early Antonine.
228. 12591. 37. CG. Body sherd with plain medallion or festoon containing dolphin O.2383 which was used by several Antonine potters including Doeccus and Iustus.

229. 12953. 37, CG. Body sherd with blocked-in ovolo and wavy line below. Hadrianic or early Antonine.
230. 16475. 37, CG. Body sherd with ?corded border below ovolo (unidentifiable), vertical beaded divider and single-bordered, plain, festoon containing panther O.1518 above an astragalus and plain ring below festoon. Possibly Paternus II or another late Antonine potter. *c* AD 160–95.
231. 16641. 30, CG. Body sherd from free-style bowl with many animals interspersed with half-leaf impressions. Rather cramped design, and apparently not the type of leaf usually employed by Albucius and perhaps more akin with Cinnamus (S&S pl 163, 73) or Paulus (*ibid*, pl 165, 3). *c* AD 150–80.
232. 16672. 37, CG. Body sherd with part of single-bordered medallion containing a mask and narrow palm leaf (?Rogers P69) and a plain ring in the corner of a panel. Probably Antonine.
233. 16672. 30 or 37, CG. Body sherd with scrap of ovolo Rogers B108 used by Butrio, Maccirra, Birrantus and Secundinus II. Below the wavy line border is leaf J160. Probably Butrio. *c* AD 120–40.
234. 16676. 37, CG. Body sherd with ovolo Rogers B74 with a bead row and the edge of a large animal below. Probably the Cinnamus group. *c* AD 135–55.
235. 16687 and 16963. 30, CG. Three body sherds with ovolo Rogers B106 and a neat bead row below. The ovolo was used by Albucius and Paternus II. The hunting scene includes small stag D.860 (=O.1732, but not such a good comparison) and small hound O.1926A. Paternus II used both animals, along with many other potters. The partial leaf impressions in the field is probably Rogers J146 which both potters used, but Albucius often used the edge in this fashion. *c* AD 160–90.
236. 16863. 37, CG. Body sherd from Cinnamus-style panelled bowl, with Diana O.111 with trifid leaf (Rogers J153); in the next panels are a small double-bordered medallion and small deer (O.1814A) in the field. *c* AD 150–80.
237. 16890. 37, CG. A cornucopia, but longer than Rogers U245, with quite a small top; the blob at the right of the top is probably the end of something else. To the left of it is what may be the reverse version of the squiggle, above a little leaf (possibly J109). Probably Hadrianic–early Antonine.
238. 16892. 37, CG. Body sherd in the style of an anonymous but distinctive Hadrianic potter. The ovolo and border are on a bowl from Colchester (Bird 1999, 685).
239. 16917. 37, CG. Body sherd with Cinnamus ovolo (Rogers B223) and bead row only. *c* AD 150–80.
240. 16917. 37, CG. Body sherd with Cinnamus ovolo (Rogers B223), bead row and standing bird. *c* AD 150–80.
241. 16917, 17043, 19103. 37, CG. Three body sherds, two joining with a scroll with large palmate leaf Rogers J1; the other has the leaf, scroll and a small bird and part of an ovolo with a wavy line below. The ovolo, not in Rogers, is the same as one used by Criciro (S&S 1990, pl 172, 1). The leaf is on a Criciro bowl from York, and another from Colchester (Bird 1999, 792). *c* AD 135–65.
242. 17016. 37, CG. Body sherd with the distinctive leaf used by Secundinus III (Rogers J145) and man with lamp, figure O.966, which is not recorded for Secundinus III. Hadrianic. Fig 6, 33.
243. 17189, 17194. 37, CG. Joining body sherds with ovolo Rogers B143 with bead row below. Probably Cinnamus or an associate. *c* AD 150–80.
244. 17230. 37, CG. Body sherd from the bottom of a panel-decorated bowl, with the feet and legs of Aesculapius O.905 in a narrow panel, and to the right, a lion below a large medallion which has lozenge Rogers U36 either side of it. Cinnamus used the lozenge and figure (eg, S&S pl 157, 6 and 7.); the lion is probably the lion on a form 30 stamped by Cinnamus (*ibid*, pl 159, 23). *c* AD 150–80.
245. 17233. 37, CG. Scrap with hands and face of unidentified figure. Hadrianic or Antonine.
246. 17237. 37, CG. Body sherd with ovolo Rogers B24 and row of large beads below. The ovolo was used by several potters; probably Hadrianic–mid-Antonine.
247. 17683. 37, CG. Body sherd with part of cherub, probably O.378, which was used by both Hadrianic–early Antonine and late Antonine potters.
248. 17758. 37, CG. Body sherd from base of a panelled bowl with beaded dividers and small rings at junctions. The figures include a plain ring below a caryatid, possibly O.1202, and small animal. Probably the product of the Cinnamus group of potters. *c* AD 150–80.
249. 17758. 37, CG. Body sherd with two figures of Venus (O.293A and O.322) with wavy dividers above and to one side. Avitus is recorded as having used both figures. *c* AD 125–45.
250. 17759. 37, CG. Body sherd with a fragment of a vine leaf scroll; the leaf is probably Rogers H37, suggesting Paternus II. *c* AD 160–90.
251. 17759. 37, CG. Body sherd with bead dividers, trifid Rogers G175 and rosette Rogers C280. Probably Potter X-6D. *c* AD 125–50.
252. 17759. 37, CG. Body sherd with scrap of decoration including a beaded divider with rosette terminal. Not distinctive enough to date closely.
253. 17759. 37, CG. Sherd with ovolo Rogers B12 with a beaded border below. The decoration includes a large, open, 8-petalled rosette that is not in Rogers, with scroll Rogers M50 below. Probably the work of the Sacer-Attianus-Criciro group. *c* AD 125–45.
254. 17758, 17759. 37, CG. Two non-joining body sherds; the triple medallions suggest they are from the same bowl. Body sherd with ovolo Rogers B38, attributed to Potters X-9 and X-10, and a crisp wavy line below. The figure O.201 is listed for X5/Silvio and Secundinus III. There is a trace of a triple-bordered medallion with a heavy outer ring in the second panel. The second sherd also has vertical wavy dividers. The extant decoration is of two triple-bordered small medallions with a heavier outer ring; the complete medallion contains a motif, very similar to Rogers Q94, although with a longer and

heavier base section. The triple-bordered medallion is unusual on Central Gaulish bowls, but occurs on a bowl from Schleitheim attributed to Potter X-5 (S&S fig 19, 2). There are links here with several potters and it is not possible to attribute this bowl certainly to any one of them. Probably Hadrianic. Fig 6, 31.

255. 17759, 17836. 37, CG. Six rim and body sherds from a Paternus II-style bowl. The ovolo is Rogers B234, used by Paternus, Iustus and Antistii, with a wavy line below; the panel dividers are cabled with small ring terminals. The figures include dog O.1926A in a double festoon with astragalus terminals and Apollo O.94A which is on a stamped Paternus bowl (Rogers 1999, pl 78, 14). The dog is listed for Paternus and also as 'Iustus style' by Oswald. Motifs include trifid G159 (listed for Censorinus, Laxtucissa and Paternus) and an 8-petalled rosette within a small double-bordered medallion. A bowl from London (S&S, pl 104, 4), stamped by Paternus, has both wavy and cabled borders, the rosette and small medallions (although without a motif inside). A bowl from Old Penrith, attributed to Iustus, has the ovolo, borders with ring terminals and the rosette (Dickinson 1991, fig 55, 125). *c* AD 160–200. Fig 9, 48.

256. 17769, 17916, 19240. 37, CG. Three non-joining body sherds with small double-bordered medallions with a heavier outer circle, two of which contain right facing masks, one possibly a bird. Two of the sherds have fragments of leaves and tendrils. The leaves may be Rogers H96 used by Potters X-5, X-9 and X-11. Trajanic or Hadrianic.

257. 17821. 37, CG. Body sherd with ovolo Rogers B106 used by Laxtucissa and Paternus II, with a wavy border below. Cherub, probably O.440, in a medallion, possibly Rogers E18, which has been mis-struck in the mould; there is a similar medallion on a Paternus-style bowl from Silchester (J. Bird, pers comm.) *c* AD 160–90.

258. 17836. 37, CG. Body sherd with a large double-bordered medallion with a large bead row above and a scrap of an ovolo, probably Doeccus' ovolo which is not in Rogers (S&S, fig 44, 2). *c* AD 160–90.

259. 19196. 37, CG. Body sherd from Cinnamus-style bowl, with scroll, vine leaves and plain rings below the leaf. The leaf is probably Rogers H29 which was used by Laxtucissa and Paternus II. *c* AD 145–90.

260. 19426. 37, CG. Rim sherd with ovolo, possibly Rogers B38, and wavy border below. Trajanic or Hadrianic.

East Gaulish Samian

(Identifications and references kindly provided by Joanna Bird)

261. 2223. 37, EG, probably Argonne. Body sherd with incomplete ovolo fragment above fine bead row. Antonine.

262. 2270. 37, Argonne. Body sherd from lower part of bowl in the style of Gesatus (Cesatus ii) of Lavoye. The festoon, small leaf, grapes (stalk only) and basal wreath of beaded rings are on a bowl on Müller 1968, pl 18, 501 and on Cat No 263; the heart-shaped leaf with bent stalk is on Müller 1968, pl 17, 447 and the stag on Oswald 1945, fig 7.2. Antonine. Fig 10, 50.

263. 2675, 2957. 37, Argonne. Body sherds from two contexts in the style of Gesatus (Cesatus ii) of Lavoye with ovolo with wavy line below. The decoration comprises small festoons within larger festoons, the smaller containing a small bird walking left with a scene of hounds chasing hares below. Above the animals are more or less vertical leaves (two different leaves) and buds (or grape bunches). The larger leaf is repeated, placed horizontally below the beasts. A basal band of beaded rings between ?bead rows complete the design. The ovolo, wavy line, outer festoon, bird and large leaf are found together on a bowl (Oswald 1945, fig 7, 1); the inner festoon and bud are on Müller 1968, pl 18, 488; the hare, hound, and basal band appear together on Müller 1968 pl. 18, 501; and the smaller leaf on his pl 17, 441. The two fragments do not join, but appear to be from the same bowl. That from 2957 has a bird within a small festoon between birds within inner and outer festoons; this may be a filler where the design was not accurately spaced around the bowl. Antonine. Fig 10, 51–2.

264. 2675. 37, Trier. Body sherd with ovolo, no tongue and no border below, with hare and hound (tail only) below. A bowl with the ovolo over a line with the hare and hound is known from Trier Werkstatt II, Serie B (Huld-Zetsche 1993, pl 33, B81). Antonine.

265. 2675. 37, Argonne. Three joining body sherds. Widely-spaced ovolo with no tongues between above a corded line. The only surviving decoration is part of a corded festoon and an unidentified figure. No parallel has been found. Antonine.

266. 2675. 37, Argonne. Three sherds from the same bowl in the style of Tribunus of Lavoye. The ovolo does not match those shown by Oswald (1945, fig 6), but the corded lines and basal border are on Oswald 1945, fig 8, 22, 25 and 26 and the big bifid on fig 8, 16. A bowl from Corbridge (J Bird, pers comm) has the ovolo and a similar saltire with corded bands and the bifid leaf, and a large bust used by Tribunus (also on Oswald 1945, fig 8, 16). Antonine. Fig 10, 49.

267. 2675. 37, Rheinzabern. Body sherd from the lower part of a bowl with simple bifid wreath between lines. The wreath and lines occur on several bowls of Arvernicus-Lutaevus of Rheinzabern (Ludowici and Ricken 1948, pls 72–3). The surviving figures are too fragmentary to identify. Late 2nd–early 3rd century.

268. 2675. 37, Argonne. Body sherd with ovolo fragment. Antonine.

269. 2715. 37, ?Trier. Body sherd with lowest edge of decoration comprising bead rows forming downward pointing triangles; similar to one from Trier, Werkstatt II, with triangles which contain small motifs (Fölzer 1913, Taf xxii, 3). Antonine.

270. 2736. 37, Trier. Body sherd with basal wreath of bifid leaves. The same wreath is on a bowl from Trier, Werkstatt II, Serie B (Huld-Zetsche 1993, pl 33, B81). Antonine.

271. 2903. 37, Rheinzabern. Two body sherds, not joining, but from the same pot in the style of Lucanus I of Rheinzabern. The ovolo, small roundel as Ludowici and Ricken 1948, pl 163, 16; the ovolo and beaded medallion as pl 163, 13. *c* AD 210–40. Fig 10, 56
272. 3236. 37, Trier. Body sherd from base of decoration with a fragment of a wreath of loopy bifid leaves; probably Huld-Zetsche 1993, O125, Werkstatt II, Serie B, C, D. Early–mid-Antonine.
273. 5000. 37, Argonne. Body sherd with large, tongue-less ovolo (similar to, but larger than Cat No 265), with a corded line below. Not identified. Antonine.
274. 5035. 37, EG (probably Argonne). No slip or decorative detail surviving. Antonine.
275. 5152. 37, Argonne. Small body sherd, motifs too fragmentary to identify. Antonine.
276. 5215. 37, Trier. Body sherd with ovolo and fine beads below. The ovolo, with a narrow core and a club-shaped tongue, was used by Censor and Dexter (Fölzer 1913, no 946). Mid–late Antonine.
277. 5247. 37, Rheinzabern. Fragment of ovolo with narrow core and corded tongue (Ricken and Fischer 1963, E3) used by B.F. Attoni and Cerialis IV. Late 2nd–early 3rd century.
278. 5354. 37, Argonne. Body sherd from a bowl in the style of Gesatus (Cesatus ii) of Lavoye. The ovolo, wavy line, and small and large festoons are the same as on Cat No 263. On this sherd, however, there is no bird within the inner festoon, perhaps suggesting this is a third Gesatus bowl from the site. Antonine. Fig 10, 53.
279. 5780. 37, Argonne. Body sherd probably again by Gesatus (Cesatus ii). The scene is of wild animals including the stag on the bowl (Cat No 262) above; the other animals are not identifiable, but include a small boar. The rosette in the field was used as a border at the base on a Gesatus bowl from Walbrook which also has the stag (Bird 1998, fig 231, 14). Antonine. Fig 10, 54.
280. 5810. 37, Trier. Body sherd with a column, half fluted and half twisted (eg, Fölzer 1913, types 871 and 874); the animals, facing away from the column on either side of it, are not certainly identifiable but are probably big cats. First half of 3rd century.
281. 5814. 30, Trier. Small body sherd with a scrap of an ovolo which is probably Huld-Zetsche 1993, E14, Werkstatt II, Serie C. Early–mid Antonine.
282. Unstratified Sanctuary site (ARC SPH00). 37, Rheinzabern. Large body sherd in the style of Comitialis IV of Rheinzabern. The ovolo (Ricken and Fischer 1963, E25), the cornucopia (*ibid*, O160), gladiator (*ibid*, M220) and medallion (*ibid*, K20a) are all recorded for him. Late 2nd–early 3rd century. Fig 11, 57
283. 10086. 37, Rheinzabern. Body sherd with motif of three concentric rings (Ricken and Fischer 1963, O117) used by Janus I and Reginus I; Janus I is recorded as using this rosette inside it. The leopard, probably Ricken and Fischer 1963, T45, was also used by Janus I; the other animal may be T65, and was used by associated potters. Mid–late Antonine.
284. 10259, 10265. 37, Rheinzabern. Two tiny body sherds from the same bowl with ovolo (Ricken and Fischer 1963, E25) and cornucopia (probably *ibid*, O160) both recorded for Comitialis IV of Rheinzabern (see also Cat No 282). Late 2nd–early 3rd century.
285. 10948. 37, East Gaul, probably Argonne. No parallel has been found for the finely modeled boar, here with eight-petalled rosettes. Antonine. Fig 10, 55.
286. 12411. 37, Trier. Body sherd with fragment of ovolo Ricken and Fischer 1963, E42 used at Rheinzabern by Julius I and Lupus, and at Trier by the Primanus group. *c* AD 235–50.
287. 16475. 37, Rheinzabern. Body sherd with fragment of ovolo Ricken and Fischer 1963, E40 which was shared by several potters. Late 2nd–early 3rd century.
288. 16981. 37, Trier. Body sherd of Werkstatt II-style bowl with row of rosettes (Huld-Zetsche 1993, O98) and guide line characteristic of Serie A (eg, *ibid*, A52); these appear with the lion (*ibid*, T44) in a different arrangement on A62. The venator, type M116, is only recorded on two bowls of Serie F. Early–mid-Antonine.

Other imported finewares

The earliest finewares are all of pre- to early Flavian date. As in other areas of Kent (Pollard 1988, 36) Gallo-Belgic wares dominate – *Terra Rubra*, *Terra Nigra*, and fine whiteware butt beakers, although here these are considered to be part of the oxidised ware group. Although not formally assigned to fabric, sherds of Rigby's TR1(A), 1(B), and TR2 (1973, 11–12) are all represented and most sherds derive from platter forms, in particular Cam types 4a and 5a and b (Fig 30, 362), dated to *c* AD 5–49, and *c* AD 5–61 respectively (Hawkes and Hull 1947, 216–7), indicating that *Terra Rubra*, like the Arretine ware, probably arrived before the Conquest. Certainly the importation of *Terra Rubra* into Britain seems to have ceased by about AD 60, by which time the military, seemingly the mainstay of the TR potters, had switched to supplies from the Southern Gaulish samian industry. The *Terra Nigra* assemblage is also dominated by platters. Most are of Cam 16 type (Fig 42, 555; *ibid*, 220), perhaps the most common and latest form to occur in Britain, again often, although not exclusively, associated with the military. Examples have been found in Claudio–Neronian pit groups pre-dating the Boudiccan destruction of Colchester (excavations by R. Niblett in 1970) while evidence from the northern frontier indicates that these vessels were still in use as late as *c* AD 70–85 (Bidwell 1979, 190). Other forms include Cam 2B (Fig 30, 363) and 11 platters, both dated to the first half of the 1st century AD (Hawkes and Hull 1947, 216, 219), a Cam 56 cup, imported before and after the Conquest (*ibid*, 227) and sherds from a possible butt beaker and necked jar or beaker form. None of the Gallo-Belgic wares is stamped. The eight sherds of Central Gaulish lead glazed ware include a handle from a flagon with moulded decoration (Fig 29, 339), probably Déchelette form 60. The most important source of these wares is generally taken to be St Rémy-en-Rollat, on the River Allier, just north of Vichy, although some may have been made at Lezoux (Greene

1978, 39). Flagons are perhaps the most common form found in Britain, and may originally have carried spring water from the Vichy spa, still one of the most important in France (Symonds and Wade 1986, 56–7), while their presence in funerary contexts may suggest that they were also favoured as votive objects (Greene 1978, 40; Pollard 1988, 37). One other sherd from a closed form was noted, the others being derived from cups or beakers. Internally-slipped Pompeian Red ware dishes and platters from Central Gaulish sources (Peacock 1977, 154–5, fabric 3) were represented by base and body sherds only. This fabric first appeared in Britain soon after the Claudian Conquest (*ibid*, 159) and has been found in Claudian-Neronian contexts in other parts of Kent (Pollard 1988, 37), while in London it appears to have remained current until at least the Hadrianic period (Davies *et al* 1994, 134).

During this early period, cups and beakers in imported fineware fabrics are not well represented, finds being restricted to a single Lyons colour-coated ware beaker rim fragment and four pieces (298 g) of the buff, micaceous Central Gaulish colour-coated ware (Greene 1979, 43). This fabric is generally considered to be of pre-Flavian date, and around AD 70 a new, hard, white non-micaceous fabric was developed and produced, for a time at least, alongside a harder-fired version of the buff fabric Beaker forms, with few changes in morphology, continued to be produced well into the 2nd century. At Springhead, in contrast to the situation in London (Davies *et al* 1994, 129–30), the white Flavian-Trajanic fabric occurred in much larger quantities (89 sherds, 673 g), perhaps supporting the idea that the rarer buff sherds belonged within the earlier period. One of these buff Central Gaulish vessels (Fig 22, 206; pl 2) is of particular significance, for it was found intact – a large, everted rim beaker in a moderately hard fired and highly micaceous fabric with a matt, mottled orange/brown colour coat and barbotine 'hairpin' and 'teardrop' decoration. On this vessel, the decorative scheme is highly reminiscent of schematic ears and leaves of wheat. This form of decoration was more usually, although not exclusively (eg, Seager Smith and Davies 1983, 209, fig 115, 34, and 35), associated with the white, non-micaceous fabric (Greene 1979, 44–6). It is possible that this vessel represents a transitional piece, dating to *c* AD 65/70–80; other sherds from this feature (cenotaph 6104) and associated contexts are unlikely to outlast the 1st century AD. Most of the sherds in the white Flavian–Trajanic fabric derived from similarly globular beakers with everted rims, most with the more common roughcast decoration (Fig 45, 601, 603, and 612; *ibid*, fig 17, 3).

By the end of the Trajanic period, dark-coloured beakers from Cologne (Anderson 1980, 14–16) and the Argonne region (*ibid*, 28–32) were also reaching the site. The majority of these were bag-shaped with cornice rims and roughcast clay decoration (Cam type 391; *ibid*, fig 7, 1–3 and fig 11, 1–7) although among the Cologne wares, occasional folded (*ibid*, fig 7, 4) and plain-rimmed varieties (Cam type 392; Anderson 1980, fig 8, 6) were also noted, together with upright- (*ibid*, fig 8, 2) and curved-necked, rouletted (*ibid*, fig 8, 7) forms. Sherds decorated with elaborate barbotine plant and animal (the so-called hunt cups) scenes were recorded on vessels with both cornice and plain rims. Anderson dated the cornice rim examples to the Hadrianic–early Antonine period onwards, those post-dating *c* AD 150 having a more angular profile and a wide band of rouletting just above the base, while the plain rimmed versions also date from the later 2nd century continuing into the early 3rd (*ibid*, 16). A group of three Cologne vessels (Fig 53, 810, 811 and 813) were found together in the top of pit 12160, pre-dating the temple on property 2. Other sherds from the upper fill of this feature, especially a south-east Dorset Black Burnished ware jar with surface treatments and decoration characteristic of the period after *c* AD 235/245 (Fig 53, 809) and a Thameside beaker dated to *c* AD 180–230 (Monaghan 1987, 68, class 2E0; Fig 53, 802), suggest that they were not deposited until around the middle of the 3rd century. The Cologne vessels may therefore have been curated and, perhaps, deliberately selected for deposition together – the fabric was certainly not so common at Springhead that one would expect three vessels from a single feature, although none of them were complete. However, it is, of course, possible that they were merely redeposited at this time, the result of contemporary activity disturbing earlier deposits.

After AD 150, colour-coated beakers were also being obtained from Lezoux (Central Gaulish black-slipped ware), including sherds from an indented form with rouletted decoration from the ritual shaft 2856 (not illus) and a particularly fine, globular, necked beaker with barbotine dots and motifs again reminiscent of (elongated) ears of wheat (Fig 50, 722; Symonds 1992, fig 11, 223), from pit 10039 on property 11. A single sherd from layer 12304 on property 2 indicates the presence of at least one beaker from Xanten (Anderson 1980, 20) where production occurred from the mid-/late 2nd–early 3rd centuries. Small numbers of Moselkeramik sherds from Trier indicate that imported beakers continued to reach Springhead until at least the mid-3rd century and possibly beyond (Millett 1986, 75), although after this, there is no evidence for imported tablewares reaching the town.

Although not strictly a fineware, sherds from two North Gaulish greyware vessels, both of later 2nd–3rd century date, were also recorded. The first of these, from ditch 19089 on property 3, is probably a *Vase Tronconique* with an elongated conical neck and thin horizontal bands (*bandes lustrées*) on the neck and body (Richardson and Tyers 1984). The fabric of the second is highly micaceous and more tentatively identified; the rim, probably from a jar, was everted and squared with a wide groove on its underside. It was found on property 11 (context 11938). Similarly small quantities are known from the Lullingstone villa (Pollard 1987, 183, fabric 25) and elsewhere in Kent (Pollard 1988, 222, appx 3, fabric 16).

Amphorae

The amphora assemblage includes a limited range of rims, bases, handles, and four stamps. The majority of sherds are fairly small (average 86 g); Dressel 20 in particular seems to have suffered with the surface of many sherds laminating. Overall, amphorae occurred in roughly equal proportions in the assemblages from the Roadside settlement and Sanctuary site, although there are differing emphases on the types present, with Cadiz, Gallic, and Dressel 2–4 amphorae more common within the Sanctuary site. The amphorae predominantly date from the 1st into the 3rd centuries AD, with none of the late Roman types found at Northfleet (see Biddulph below) and Lullingstone (Pollard 1987, 213) villas.

Dressel 20 amphorae dominate (88% by fragment count and weight; Table 1). This includes a small quantity of sherds (1% by count) in the later fabric, which continued to be used after the mid-3rd century when the main importation period of Dressel 20s ceased. As the most common amphora type imported into Britain, the prevalence of Dressel 20 is unsurprising. The earliest rims (Martin-Kilcher 1983, types 10 and 12), date to the mid-1st century AD, and the remainder (*ibid*, types 17, 24, 30, 36) belong to the mid-1st to mid-2nd centuries, the main period of Spanish oil imports into Britain (D F Williams 1993, 215). As at Canterbury, where Dressel 20 amphorae were again the dominant type, comprising 68% of albeit a more diverse range of amphora than at Springhead, there were no apparent pre-Conquest examples (Arthur 1986, 245). Four handle fragments are stamped but only one from unphased layer 16328 in property 9, is legible (Fig 12, 58) and is comparable with an example from Mainz (Remesal Rodriguez 1986, 143, 78a).

Gallic amphorae form the second largest component of the assemblage, representing 5% of the amphorae by count, 4% by weight (75 sherds, 4195 g). Only one rim, from a Pélichet 47 wine amphora, was identified (in pit 11211 associated with the first or second phase of the smithy (group 400141) on property 10), along with two flat-bottomed base sherds. Other Gallic forms may also be represented but cannot be distinguished given the paucity of diagnostic sherds. These amphorae, originating in southern France, again had a long life span (Williams 1993; Arthur 1986) ranging from the middle of the 1st to the 3rd century, possibly into the 4th century. None is known from pre-Boudiccan deposits in Britain (Peacock and Williams 1986, 143) and at Springhead they occurred in early and mid-Roman deposits. At the Northfleet villa Dressel 20 and Gallic amphora is present in roughly equal measure, although this in part reflected the later occupation of the site.

Dressel 2–4s were tentatively identified from a number of production sites, with only one rim fragment and four examples of the characteristic long, bifid handles recovered. Although the most common European wine amphora during the early Empire, the suggestion that it may have been in decline by the late 1st century AD (Peacock and Williams 1986, 105) may go some way to explaining its relative scarcity at Springhead, where it comprises less than 2% by count (1% by weight) of the assemblage. Most examples are of Italian origin, with 12 sherds in micaceous clays thought to date from the late 1st century into the early 3rd (Davies *et al* 1994, 21, fabric Koan-884). This group also includes body sherds in the distinctive Campanian 'black-sand' and 'feldspathic' fabrics (Tomber and Dore 1998, 88, fabric CAM AM1 and 98, fabric ITA AM2 respectively) as well as sherds from other southern Italian sources. In addition, 17 body sherds were

Stamp catalogue

(Fig 12)

1. RVRNC (Remesal Rodriguez 1986, 143, no 78a); positioned beneath the lower handle attachment of a Martin-Kilcher (1983) type 36 rim dated *c* AD 150/60–250. Unstratified (layer 16328), Roadside settlement, PRN 922. Fig 12, 58.
2. V[on a rolled and abraded upper handle stump. Fill (context 2848) of mid-Roman ritual shaft 2856, PRN 899. Fig 12, 59.

(not illus)

3. Incomplete and badly abraded stamp on a handle fragment, possibly a rounded letter – C, G, O, or Q, followed by a retrograde N, another indistinct letter (perhaps an M) and possibly an S. Fill (context 6447) of channel, earliest phase of the spring (group 400007). Not illus.
4. Stamp on large handle fragment, too worn to be legible. Surface 10946 (group 400127), pre-dating the earliest phase of the circular structure on property 11. Not illus.

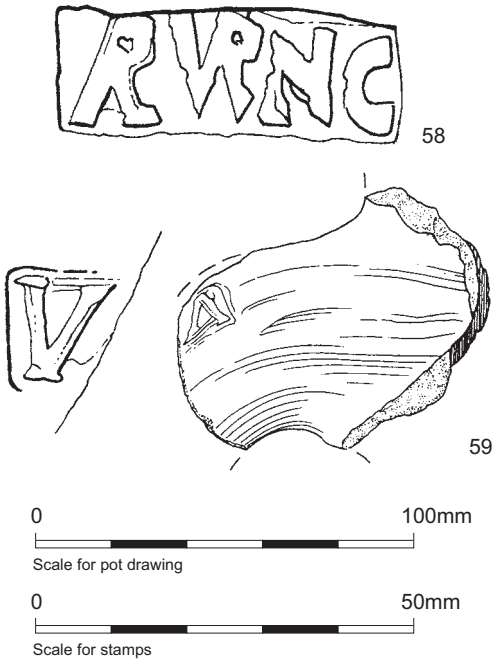


Figure 12 Springhead: amphora stamps Nos 58–59

tentatively identified as London 555 amphora, being in the buff–beige, calcareous fabric probably of Gaulish origin (Davies *et al* 1994, 14, L555), although Baetican sources have not yet been ruled out (*ibid*, 16; Carreras Monfort 2003, 87).

Nineteen fragments (2157 g) are from the Cadiz region of Spain. These identifications were again based on fabric criteria alone as no diagnostic sherds were recovered. The principal form from this region was the Cam 186, used to transport fish-based products from the late 1st century BC–early 2nd century AD (Williams 1993, 217), and this form may, therefore, be represented within this material.

The Rhodian amphora sherds (Table 1) include a single solid spike from pit 2227 located in the pit alignment to the north of the portico building on the Sanctuary site. These amphorae are of 1st–mid 2nd century date and are known to have contained wine or, occasionally, figs (Davies *et al* 1994, 26; Peacock and Williams 1986, 103, class 9).

A small, globular amphora with a furrowed rim (Fig 50, 717; Peacock and Williams 1986, 210–11, class 55) was identified among the unassigned amphora sherds. These vessels originated in Normandy (Laubenheimer 2003, 43) during the 1st–3rd centuries. A few examples are known in the south of England, including one from the Thurnham villa (Booth 2006c, section 4.4.3) and a mid-2nd century example from Richborough (Peacock and Williams 1986, 210).

Mortaria

The mortaria considered here include all examples from British and Continental sources with the exception of those made in Central and East Gaulish samian wares, where sherds from approximately 31 additional vessels were recorded (see Mills above). Overall, the non-samian mortarium sherds represent just 0.5% of the assemblage, although being large, heavy vessels, their weight accounts for almost 3% of the total. These vessels never form more than a very minor component of the Springhead assemblage and, on the evidence from this site, Pollard's (1988, 66) comment that 'The utilization of mortaria in food preparation appears to have been adopted at all levels of society (as represented by settlement hierarchy) by the end of Trajian's reign' seems to be something of an over-statement. However, mortaria were comparatively more common at the Northfleet villa (see Biddulph below).

No examples of Claudian wall-sided mortaria (eg, Cam 191) were found, the earliest being of Flavian date. Overall, imported fabrics are scarce, accounting for just 18% of the sherds (both by number and weight). Most numerous are vessels of Gilliam form 238 (Group II: AD 65–110) and Bushe-Fox 22–30 (AD 70–150) from the Oise/Somme area of northern Gaul where kilns have been found near Noyon, although others probably existed in the area (Hartley 1998, 203). These fabrics occur in moderate quantities in the City of London (Davies *et al* 1994, 62) and elsewhere in Kent (Pollard 1988, 225; Booth 2006c, section 4.4.4). A handful of sherds from the Massif Central region of France, probably around Vienne/Lyon (Tomber and Dore 1998, 68, CNG OX), were also identified. These flanged vessels, characterised by a horizontal ledge behind the bead, were imported between *c* AD 50 and 80/85. The only other definite imports are pieces from at least five vessels in an off-white sandy fabric with abundant quartz trituration grits (Tomber and Dore 1998, 78, RHL WH) arriving from the Rhineland *c* AD 150–250. Although precise details of the rim forms varies, all these vessels have deep flanges pressed close to the vessel wall with an inturned bead, often with an incised groove. Similar forms are known from St Magnus House (Richardson 1986, 119, 1.69–1.72) and other sites in London as well as Canterbury, Dover, and the Lullingstone (Pollard 1988, 224) and Thurnham (Booth 2006c, section 4.4.4) villas.

The bulk of mortaria reaching Springhead during the second half of the 1st and early 2nd centuries were from the *Verulamium* region (modern St Albans, Hertfordshire), including Brockley Hill, although some 2nd century vessels in this style were also made in London using imported clay (Seeley and Drummond-Murray 2005). Rims from approximately 41 vessels were recognised, heavily weighted in favour of the pre-Flavian–Trajanic hooked flanged forms (eg, Fig 38, 494 and Fig 40, 496). Although some typological development occurred during this period (Davies *et al* 1994, 47), no attempts were made to divide these rims chronologically at Springhead. However, evidence from the stamps on 17 vessels (see catalogue below) indicates that these mortaria were reaching Springhead from at least the 3rd quarter of the 1st century AD (as there are at least three stamps of Albinus, AD 60–90), while at the opposite end of the range there are stamps of Matugenus, dated to *c* AD 80–125 (Hartley 1984, fig 118, 85–6), and possible one of Arentius, Arenus or Arentiacus who worked *c* AD 110–40 (Hartley 1972, 379, fig 146, 41; 1984, 289). As in London, far fewer *Verulamium* region vessels were used by the Hadrianic–early Antonine period and only two examples of the form with a high, prominent bead (*ibid*, type BEF), which appeared *c* AD 120 but was common only after AD 140, were recognised at Springhead.

At about this time, the main source of mortaria supply switched to Colchester, after the expansion of this industry around *c* AD 130/40 following its capture of the northern military markets (Hartley 1999, 211). However, this group may also include vessels from various small-scale production centers scattered across Kent and East Anglia which made mortaria in fabrics and forms very similar to those used by the Colchester potters and which may represent offshoots of this larger industry (Hartley and Tomber 2006, 81–2 and 97). Although further work is needed to refine the chronology of Colchester and Colchester-type production (Bidwell 1999, 498), the existing framework (Hull 1963) suggests that trade with Springhead peaked

during the late 2nd century. Of the 52 rims identified, 40 belong to this period (Cam 496, 497, and 501; eg, Fig 23, 236; Fig 37, 479; Fig 44, 595–6), with ten dated to the late 2nd–3rd centuries (Cam 498 and 504). Outside this range, one vessel is probably of Neronian date (Hull 1963, 182, Cam 192) while another is of a 4th century type (Cam 505). No name stamps were found, but herringbone stamps, particularly characteristic of the Colchester industry during the period *c* AD 140–70 (Hartley 1999, 209), were recognised on four vessels (Fig 14, 78–82).

Sherds from two vessels (Fig 23, 226) are from Wiggonholt in West Sussex where kilns were active between *c* AD 150 and 250 (Evans 1974). One of the vessels is stamped (Fig 14, 83; *ibid*, fig 17, 168). Other sherds from this region may also be present among the 'unassigned mortaria'group. This material consists of a wide variety of fabrics of unknown provenance, each occurring in only small quantities. One hammerhead mortarium (Fig 50, 727) may be in Canterbury oxidised sandy pale washed ware (Pollard 1987, fabric 45) while a small group of sherds occurred in a light red, white-slipped fabric, slightly coarser but otherwise almost identical to that used for the Hoo ware flagons, beakers, and jars. Two of these rims, both broadly conforming to the highly variable Cam form 497, were stamped. One (Fig 14, 86) had an ear of wheat stamp with partially impressed and incomplete letters beneath, the other (Fig 14, 87) had a lengthy illiterate or illegible retrograde stamp positioned horizontally along its flange. Two other unassigned vessels were stamped; one with the name CALLEC on a hammer-headed form from post-hole 17918 in property 3 (Fig 14, 85) and a rather untidy row of rectangles (Fig 14, 84) on another hammer-head form in a micaceous white-slipped red ware fabric with flint trituration grits from feature 17188 in property 5. The mid 1st century AD waster dump at Eccles (Detsicas 1977) may indicate another potential source, although judging by the main period of mortaria use at Springhead, the majority are likely to be of 2nd century date.

During the late Roman period, mortaria were obtained from more distant British sources – the Oxfordshire region, the Nene Valley, and Much Hadham. The Oxfordshire products are most numerous and include vessels in whiteware, white-slipped red ware, and red colour-coated fabrics (Young 1977, types M17 (Fig 52, 749), M18, M22 (Fig 53, 788), C97, and C100), spanning the entire period of production in this area. The Nene Valley and Much Hadham vessels are each represented by single undiagnostic pieces, but associated sherds suggest that both were reaching the site during the 4th century. Most of these sherds were found on property 2. Oxfordshire and Much Hadham mortaria are also present among the 3rd–early 5th century AD groups from Springhead examined by Pollard (1988, 242), but at that time finds of Nene Valley vessels were mostly confined to the London area and east Kent.

Stamp catalogue

(Fig 13)

60. North Gaulish; flange fragment; narrow herringbone border only, name not present; AD 50–60. Fill (16573) of early Roman post-hole 16571, property 9; PRN 443.
61. *Verulamium* whiteware; flange fragment; ALBIN[Albinus (Hartley 1972, fig 145, 7); AD 60–90. Early Roman layer 17571, property 3; PRN 446.
62. *Verulamium* whiteware; Lon HOF rim (Fig 40, 496); ALBIN[Albinus (Hartley 1984, 281–2); AD 60–90. Early Roman layer 16144, property 10; PRN 374.
63. *Verulamium* whiteware; Lon HOF rim;]BINVS[Albinus (Hartley 1972, fig 145, 7); AD 60–90. Fill (10647) of early Roman pit 10646, property 11; PRN 433.
64. *Verulamium* whiteware; Lon HOF rim;]INV[the last letter missing as stamp is poorly impressed – probably Albinus (*cf* Hartley 1972, fig 145, 11); AD 60–90. Early Roman layer 10613, property 11; PRN 434.
65. *Verulamium* whiteware; Lon HOF rim; neat, narrow herringbone border like that used by Marinus (Hartley 1972, fig 145, 26). AD 70–110. Mid-Roman layer 17757, property 3; PRN 448.
66. *Verulamium* whiteware; Lon HOF rim; neat, narrow herringbone border and part of letters]INV[possibly Marinus (Hartley 1972, fig 145, 26). AD 70–110. Mid-Roman layer 17757, property 3; PRN 449.
67. *Verulamium* whiteware; Lon HOF rim; MORICAMLV – Moricamulus (Hartley 1972, fig 146, 30; 1984, fig 118, 88) – there is no evidence for the final S on this stamp either, which is otherwise complete. AD 70–110. Early Roman layer 11257, property 10; PRN 437.
68. *Verulamium* whiteware; Lon HOF rim; both the name, MARINUS, and the FECIT counterstamp (Hartley 1984, fig 118, 80–1) on the same side of the spout, the stamps slightly overlapping and facing in opposite directions. Probably Brockley Hill fabric. AD 70–110. Fill (10960) of early Roman hearth 10959, property 11; PRN 435,
69. *Verulamium* whiteware; Lon HOF rim; to one side of the spout]ECIT within a wide herringbone border (Hartley 1984, fig 11, 86). On the other side, a very incomplete stamp (not illus) with neat, narrow herringbone border and the top of the letter T (or possibly I) surviving. Possibly Matugenus (*ibid*, fig 118, 85 and 86), AD 80–125. Fill (11056) of early Roman pit 11055, property 10; PRN 493.
70. *Verulamium* whiteware; Lon HOF rim; DOINVS (Hartley 1972, fig 145, 20), the latest of Doinus' four dies, AD 85–110. Fill (16641) of segment 16655 of the early Roman rioadside ditch 300045; PRN 442.
71. *Verulamium* whiteware; Lon HOF rim (Fig 38, 494); two identical retrograde stamps BRVCI one on either side of the spout; Brucius (Hartley 1972, 374, fig 145, 13; 1984, 283), AD 90–120. The vessel is complete but has a large, irregular hole made in antiquity through the base. Fill (16472) of early Roman pit 16471, property 5; PRN 444.

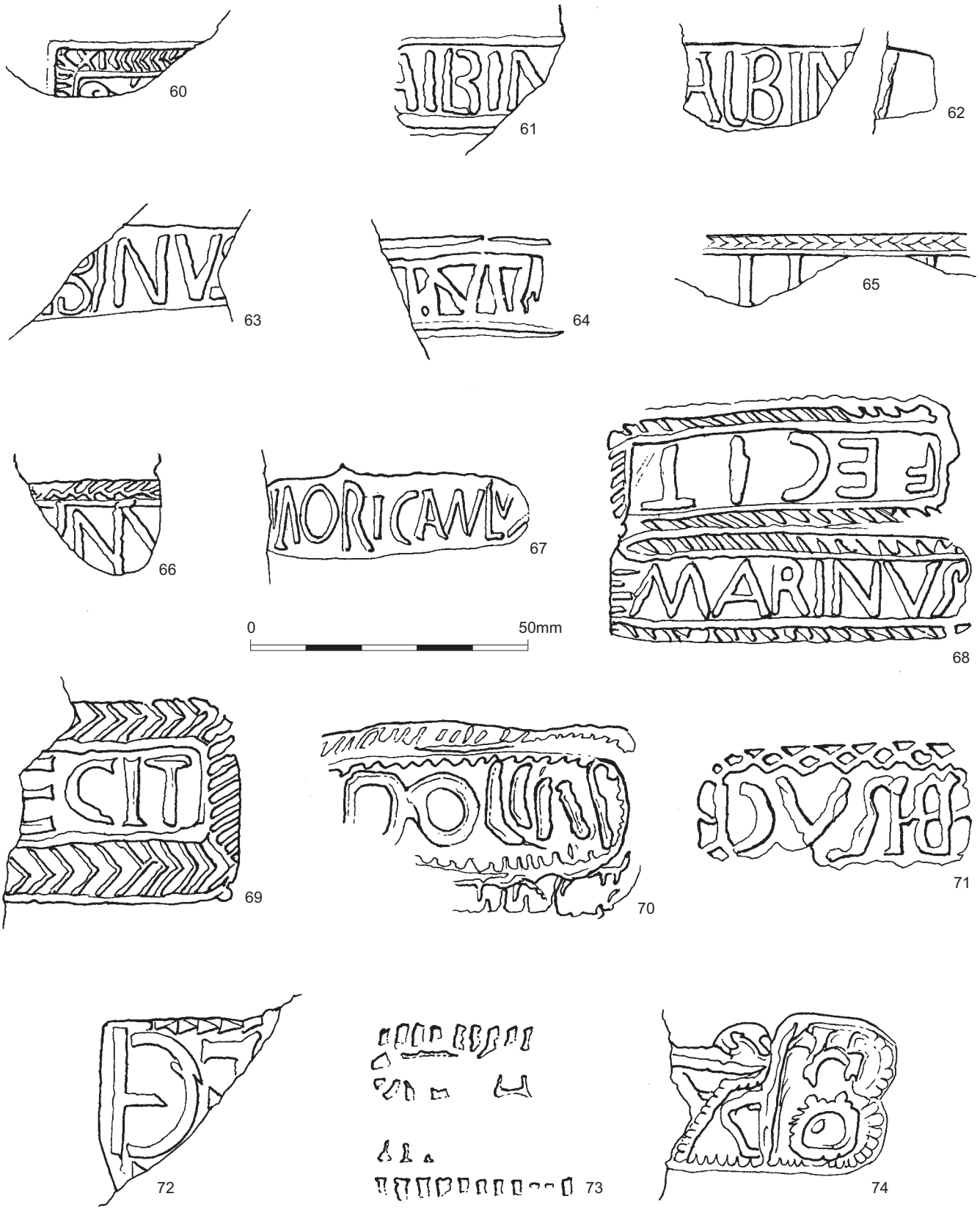


Figure 13 Springhead: mortarium stamps Nos 60–74

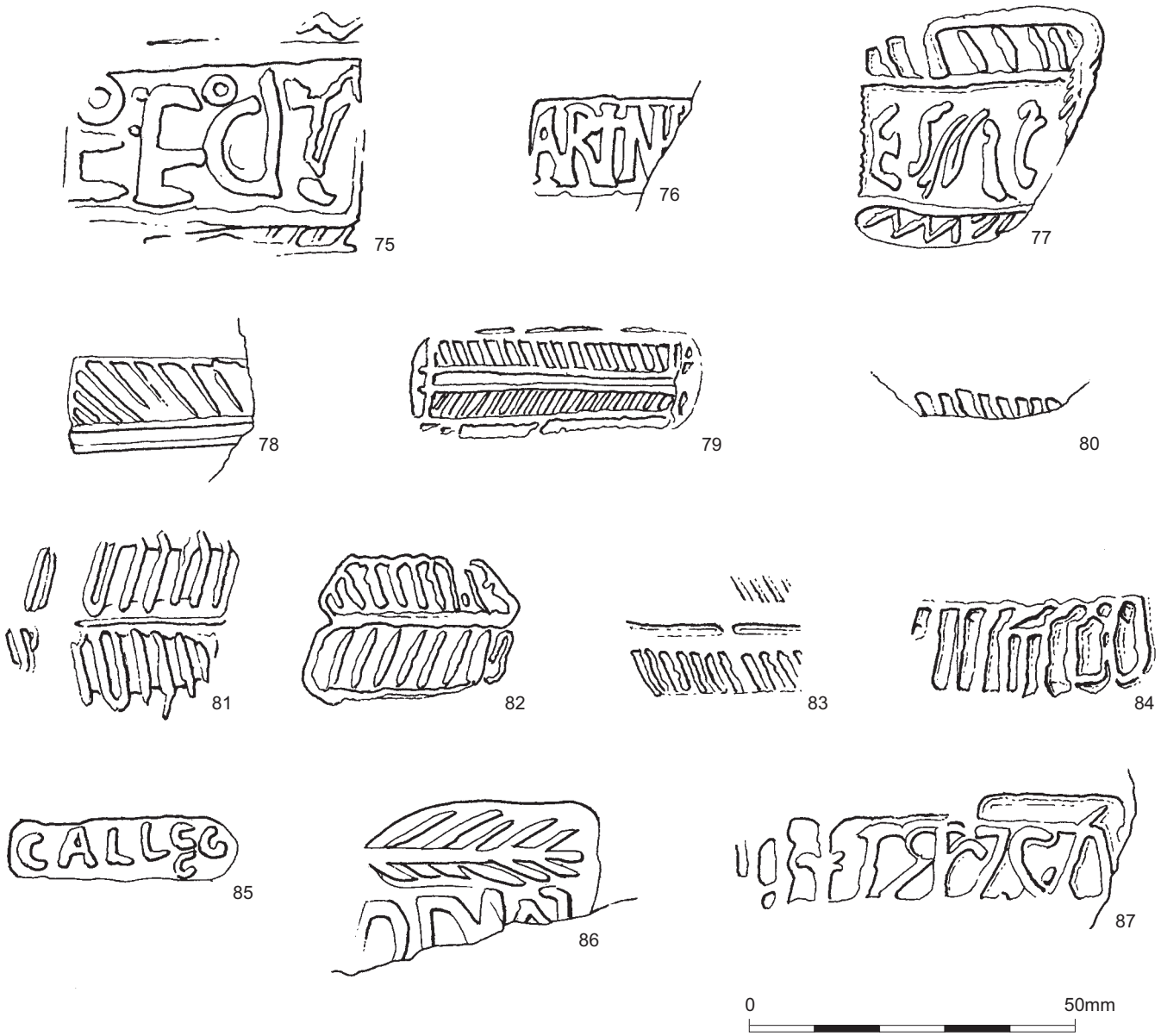


Figure 14 Springhead: mortarium stamps Nos 75–87

72. *Verulamium* whiteware; Lon HOF rim;]ECI[large retrograde letters inside a narrow herringbone border, probably part of a FECIT counterstamp; AD 50–120. Fill (3036) of early Roman pit 3199, PRN 539.
73. *Verulamium* whiteware; Lon HOF rim; stamp poorly impressed and illegible; AD 50–120. Mid-Roman layer 12147, property 2; PRN 441.
74. *Verulamium* whiteware; Lon HOF rim; stamp poorly impressed and incomplete; AD 50–120. Fill (17638) of mid-Roman pit 17636, property 3; PRN 447.

(Fig 14)

75. *Verulamium* whiteware; Lon HOF rim; FECIT with small circles between and above the letters and traces of a narrow herringbone border beneath. AD 50–120. Mid-Roman layer 10405, property 11; PRN 436.
76. *Verulamium* whiteware; Lon HOF rim; ARIN[set within a plain rectangular border. Although only known from retrograde dies, the names Arentius, Arenus, and Arentiacus are all recorded, working *c* AD 110–40 (Hartley 1972, 379, fig 146, 41; 1984, 289). Probably a Brockley Hill fabric. Early Roman layer 12180, property 2; PRN 440.
77. *Verulamium* whiteware; Lon HOF rim; stamp incompletely impressed and barely legible; possibly ESMC[within a wide, coarsely-cut, irregular feathered border; early 2nd century. Mid-Roman layer 17913, property 3; PRN 450.
78. Colchester flange fragment; herringbone stamp (Hull 1963, 112, fig 60, 39), incomplete and poorly impressed; AD 140–70. Fill (2717) of mid-Roman pit 2236, pit alignment 400023 within the sanctuary complex; PRN 556.
79. Colchester Cam 497 rim; herringbone stamp (Hull 1963, 112, fig 60, 33); AD 140–70. Fill (3453) of Late Iron Age pit 3363; PRN 536.
80. Colchester Cam 497 rim; coarsely-cut, borderless herringbone stamp (Hull 1963, fig 60, 32; Symonds

and Wade 1999, 205, fig 4.27, 139); AD 140–70. Mid-Roman layer 16363, property 9; PRN 492.

81–2. Colchester Cam 497 rim (Fig 23, 236); coarsely-cut herringbone stamps with single central ribs and no borders (Hull 1963, fig 60, 32; Symonds and Wade 1999, 205, fig 4.27, 139). Located on either side of the spout, extending onto bead; AD 140–70. Fill (5496) of early Roman cut 5491 (82; PRN 535) and mid-Roman layer 6064, dumping over early road, (81; PRN 597).

83. Wiggonholt; Lon HOF rim; feather stamp (Evans 1974, fig 17, 168) one side poorly impressed; AD 50–120. Mid-Roman layer 12094, property 2; PRN 439.

84. Unassigned white-slipped fabric; Lon HAM rim; a single, untidy row of rectangles. Layer 17189 property 5; PRN 445.

85. Unassigned hard, buff fabric; Lon HAM rim; CALLEC positioned longitudinally along the flange. Similar form to Cam 498 but with a more externally rounded bead, deeper internally. Fill (17917) of mid-Roman post-hole 17918 property 3; PRN 451.

86. Unassigned white-slipped fabric similar to that from Hoo; flange fragment; 'ear of wheat' stamp with partially impressed and/or incomplete letters beneath, probably AN[or NV]. Mid-Roman layer 5498, dumping over early road; PRN 538.

87. Unassigned white-slipped fabric similar but coarser than that from Hoo; flange fragment; a lengthy illiterate or perhaps an illegible retrograde stamp positioned longitudinally along the flange. Mid-Roman destruction layer 5913, sanctuary temple 400033/5; PRN 540.

British Finewares

This category consists of an array of relatively high quality, thin-walled vessels predominantly fulfilling roles in the serving and presentation of foodstuffs and beverages. Overall, they represent 12% of all the late Iron Age and Roman sherds from Springhead (5% by weight), compensating for the paucity of imported tablewares and drinking vessels in this assemblage, and are approximately equally represented in both the main areas of the site (11% and 13% of the sherds, 5% and 6% of the weight from the Sanctuary site and the Roadside settlement respectively) (Table 1).

The period *c* AD 70–120/30 witnessed the development of numerous fineware industries in south-eastern England, those clustered along the north Kent coast (Monaghan 1987) being especially important in the supply of ceramics to Springhead. Although present from before AD 70, these wares really took off during the last decade of the 1st century, perhaps as a response to the decline in samian supply after the collapse of the Southern Gaulish industry (Marsh 1978, 207–8; Pollard 1988, 63; see Mills above). Together, the local fabrics represent 96% of all the British fineware sherds (94% by weight). Fine Greywares, broadly conforming to Monaghan's (1987, 249, 252–3) fabrics S5, S6 and N1–3, are the most prolific, alone accounting for 85% of the British fineware sherds (82% weight). The vast majority are of very high quality; thin-walled and competently potted, using a fine, well-levigated clay without added temper, and exceptionally well-finished. With such vessels available right on their doorstep, it is easy to appreciate why the inhabitants of Springhead needed only a limited range and quantity of regionally imported and Continental finewares. Many of the forms show Continental influences, being loosely based on samian (Monaghan 1987, classes 4H, 6, and 7) or Gallo-Belgic proto-types (*ibid*, class 2G) while the fine cordoned bowls, one of the most popular forms, appear to have a heavy Belgic influence (*ibid*, 132, class 4J). These Continental links are reinforced by the presence of, albeit illiterate, stamps (Fig 15, 88–90) centrally positioned on the interior of three bases, all from features/deposits of early Roman date. Despite Monaghan's statement to the contrary (1987, 158), all three are likely to derive from platter forms.

Fine Greyware stamps

(Fig 15)

88. Illiterate stamp set within broad circular band of imitation rouletting. Early Roman pit 6285 (context 6286), clay-floored circular building 400028, PRN 677.

89. Edge of stamp only; possibly B[, P[or R[centrally positioned within compass-drawn circles and imitation rouletting; low footring base. Early Roman layer 10819, group 400127, pre-dating earliest phase of circular structure on property 11, PRN 356.

90. Edge of ?illiterate stamp set within compass-drawn circles and imitation rouletting; flat base. Fill (context 10659) of segment 10660 of early Roman roadside ditch 300386, PRN 533.

Beaker forms dominate (53% (693) of the 1300 rims recognised) – initially, during the late 1st and early 2nd centuries – favouring the butt (eg, Fig 31, 371; Fig 40, 528) and biconical (eg, Fig 37, 478; Fig 42, 541) forms (Monaghan 1987, MON classes 2B and 2G), with poppy-head beakers (Fig 23, 230; Fig 48, 666; *ibid*, class 2A) and barbotine dot decoration on cornice and bead rim (eg Fig 44, 577) types becoming increasingly common after *c* AD 120. Although seen by Monaghan to be the mainstay of the Upchurch potters (1987, 218), poppy-head beakers are perhaps not as common as might be expected at Springhead, representing 21% (148 examples) of the beaker rims. Despite being made over a shorter period (*c* AD 70–130, compared with *c* AD 70 through into the 3rd century; *ibid*, 55–61) the biconical forms (2G) are far more common, representing 53% (369 examples) of the beaker rims; indicating a very clear preference among the home market at least. The range of open bowls, dishes, and platters (MON 4, 5, and 7; eg, Fig 23, 229; Fig 24, 258, 260; Fig 25, 267; Fig 28, 300, 308; Fig 31, 373; Fig 32, 418; Fig 33, 431; Fig 35, 465; Fig 37, 477; Fig 42, 540, 549) accounted for a further 40% of the rims. Within the

dish category (MON class 5) which total 95 rims, 84 are from shallow, round-bodied flanged forms (eg, Fig 23, 223; Fig 31, 367; Fig 35, 470; Fig 43, 573; *ibid*, class 5B). Pollard (1988, 60) noted only one example among the Springhead material he examined and only a handful from Lullingstone (Pollard 1987, fig 78, 219–22), suggesting that the form was perhaps not of north Kent origin, especially as its distribution shows a bias towards the east of the county. However, evidence from this larger Springhead assemblage has firmly established the fine flanged dishes as a local, if not highly standardised, form. Jars, mostly made in fabrics at the coarser end of the Fine Greyware range, included narrow-necked (Fig 28, 312), bead (Fig 40, 529), hooked (MON 3F), lid-seated (MON 3L), and everted (MON 3H–J) forms, totalling 4% of all the rims in this fabric. Miscellaneous types (cups (Fig 24, 241; Fig 31, 374), flagons, lids (Fig 42, 551), miniatures, etc) represent just 3% of the rims. The miniatures are both short-necked, biconical flasks (Fig 22, 207; Fig 31, 366). Two incomplete vessels with similar body shapes were illustrated by Monaghan (1987, 162, 9B2.1–2) and were thought to be based on biconical beakers (MON 2G), although evidence from the two Springhead vessels suggests that they may belong to flasks.

No attempts were made to differentiate between true 'London ware' (Marsh 1978, 124) vessels with their characteristic incised line (including compass-inscribed circles and semi-circles, perhaps inspired by the ovolos on samian) and rouletted decoration and the local, north Kent (probably Upchurch) vessels decorated in this way. Although the fabrics can be differentiated by the higher quality of the London products and the distinctive black 'sandwich' firing effect and clay pellet inclusions present in those from north Kent (Davies *et al* 1994, 151), this is often highly subjective. With the proximity of Springhead to the north Kent kilns and the overwhelming preponderance of local fabrics within the assemblage, this differentiation was not considered a worthwhile exercise at the level of analysis being undertaken. Bowls, imitating samian forms 30 and 37 (eg, Fig 24, 259; Fig 30, 354; Fig 51, 737; MON 4H), beakers (MON 2H), a highly elaborate lid (Marsh 1978, type 55), and at least one example of a narrow-necked jar or flask (Tyers and Marsh 1979, 565, fig 238, IIR) are decorated in this distinctive style. A small group of ring-and-dot decorated beakers was also recognised in the local Fine Greyware fabric. Although not included in Monaghan's type series, greyware examples are known from Southwark (Marsh and Tyers 1979, 569, fig 239, III.B.1) and other parts of the City of London (Davies *et al* 1994, fig 136, 838–40) and may well be from a north Kent source.

A range of fine oxidised wares was also made locally, although these are much less common, representing 11% of the sherds (13% of the weight) in this group; something in the order of one oxidised sherd for every 7.5 grey ones. These vessels are made in the same virtually inclusion-free fabric as the Fine Greywares, ranging from pink through to red or orange in colour,

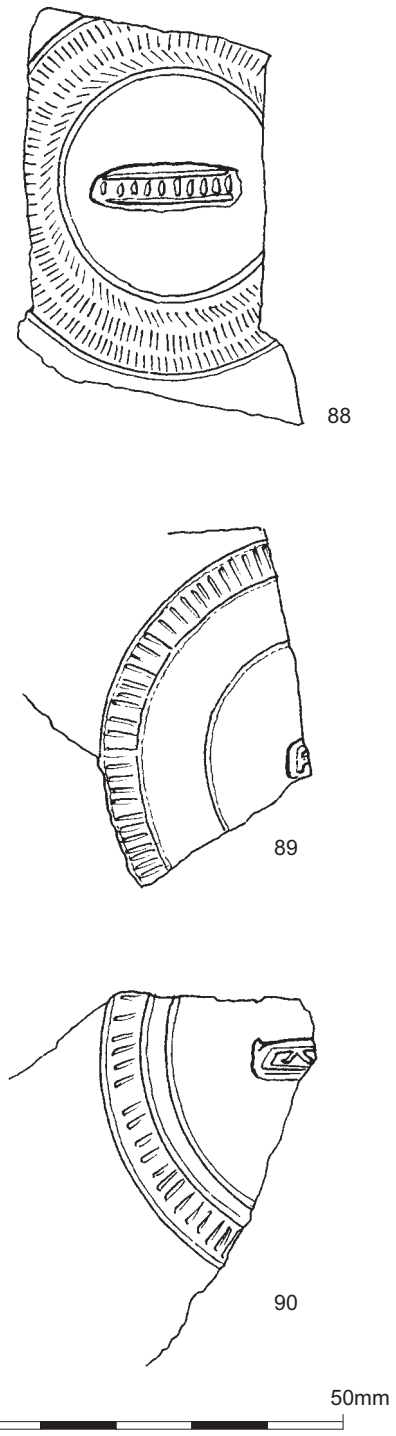


Figure 15 Springhead: potters' stamps on Fine Greyware Nos 88–90

sometimes with a slightly more reduced core, and similarly highly burnished or polished surfaces, some with a self-coloured slip (Monaghan 1987, 252, fabrics N1–2). Forms occur in inverse proportions to the Fine Greywares, concentrating on open vessels. Bowls, dishes, and platters are especially common, together accounting for 74% of the 203 rims recorded. Beakers account for a further 14% of the rims, with cups at 6% and jars and other miscellaneous types (eg, flagons and lids) at 3% each. Forms broadly based on samian prototypes (eg, Fig 25, 282; Fig 28, 307; Fig 30, 355; Fig 38, 489;

Fig 40, 500; Fig 42, 559; Fig 43, 570; Fig 48, 676; Fig 49, 707; MON 4H, 6C, and 7) were especially common, perhaps reinforcing the concept of this being a samian replacement fabric. Some 58 (4%) sherds have the London ware-style decoration; most are from bowls (eg, Fig 45, 604; Fig 48, 679) but one group of joining sherds from early Roman pit 10657 on property 11 is from a beaker (Monaghan 1987, 70, MON 2H1) or narrow-necked jar/flask (Tyers and Marsh 1979, 565, fig 238, IIR). One fragment from the base of a strainer (Monaghan 1987, 164, MON 11) was also identified on property 3.

Although not considered by Monaghan to be '... a ware in its own right' (1987, 174), the Upchurch painted wares form a highly distinctive sub-section of the local oxidised fineware production. In this assemblage, they represent 15% of the local oxidised fineware sherds (by both number and weight). The fabric was first described by Pollard (1982, 315, 564) and is characterised by white or cream painted decoration or, more rarely, a cream slip with red painted decoration. Bowls loosely based on samian forms 30 and 37 (eg, Fig 24, 245; Fig 34, 448; Fig 40, 497; Fig 42, 533; Monaghan 1987, 130, MON 4H) are the most commonly occurring, together with a range of beakers (MON 2F (Fig 24, 248), 2I, and 2J), necked bowls (MON 4A, 4B, and 4J), cup (Fig 33, 423; MON 6), dish (MON 7A), and lid (Fig 43, 571; MON 12) forms. Both the cup and dish are also loosely based on samian vessels (form 27 and the 18/31 series respectively). Three joining sherds from a sharply carinated biconical vessel have been tentatively identified as being from a spouted strainer bowl (Marsh 1978, 181–4, type 46).

During the Flavian–Hadrianic period (*c* AD 70–120/30), a wide range of other fine tablewares reached Springhead from sources to the west, probably within the area of modern day London. Although none of these occurs in particularly large quantities (see Table 1), they appear to be even rarer on other sites in Kent (Pollard 1988, 62) and during the 1970s, when many of these fabrics were described for the first time (eg, Arthur 1978; C Green 1978; Marsh 1978; Rodwell 1978), evidence from the earlier Springhead collections was instrumental in providing a chronological framework for these wares. Amongst the earliest are beakers in a distinctive fine, lightly burnished, pale orange or buff coloured ware, identified as Ring-and-dot Beaker fabric (Davies *et al* 1994, 142) after its most characteristic form – ovoid beakers with alternating panels of barbotine rings and dots (Tyers and Marsh 1979, type IIIB). Rims from at least four beakers, which may have been made in the *Verulamium*–London area, were identified, while other forms in this fabric (eg, Davies *et al* 1994, 143, fig 120, 766–74) without the ring-and-dot decoration may well be present among the unassigned oxidised wares.

Sherds from seven British lead-glazed vessels, all belonging to Arthur's (1978, 298–308) south-east English group, were also recognised. Two, from post-hole 6158 of Building 400029 and layer 11315 within property 10, are carinated bowls, imitating samian form 30 (*ibid*, type 5); the form of the others is less certain but one has barbotine dots and two have ring decoration beneath the glaze. One sherd from roadside ditch 11339, is also unusual in that part of a handle attachment survives; although probably from a closed form, none of the vessels illustrated by Arthur (*ibid*, figs 8.2–4) has a handle. Other fabrics include London Marbled Ware (Davies *et al* 1994, 122, LOMA) and three tiny sherds of a white egg-shell ware (*ibid*, 146, LOEG), both of which are predominantly of Hadrianic date in London. The marbled sherds are from carinated and hemispherical bowls (Fig 45, 611; Fig 49, 685; Marsh 1978, types 42 and 44).

Rim sherds also indicate the presence of at least five Stamped London ware vessels, all belonging to Rodwell's (1978, 234–45) group 2, which was widely distributed in the London/Essex area during the mid–late Flavian period. These vessels (eg, Fig 25, 266; Fig 45, 620; Fig 50, 713) are broadly based on samian forms 30 and 37 (*ibid*, fig 7.3, 7; fig 7.6, 32–3). The most likely source for these vessels is believed to be in the region of Little and Much Hadham on the Hertfordshire/Essex border. Vessels of this type are known from the previous excavations at Springhead (eg, Rodwell 1978, fig 7.5, 26; fig 7.6, 35, 37) as well as other parts of west Kent (Philp 1980; Pyke 1983; Applegate 2007). Mica-dusted wares occur in greater quantities, representing 1% of the British fineware group. As in London, these wares continued well into the second half of the 2nd century. Vessel forms (some represented by body sherds only) are dominated by beakers and bowls (Marsh 1978, types 20–2, 24, 29, 31, 34–7), although the range of less common forms includes a necked jar (*ibid*, type 23), sherds from at least two spouted strainer bowls (*ibid*, type 46), a large flagon with twisted rope-effect handles (Hawkes and Hull 1947, Cam 166B), and a loose ring handle (Fig 41, 531) probably from a spouted strainer bowl or a cauldron (*ibid*, Cam 302; Marsh 1978, type 47).

During the Hadrianic and early Antonine periods, poppy beakers (Tyers and Marsh 1979, type IIIF) from the Highgate kilns in London were also reaching the site (eg, Fig 35, 468). The Highgate C fabric (Davies *et al* 1994, 82) is distinguished from similar vessels in the fine north Kent greyware by its blue–grey colour and silvery slip, but the total number of sherds presented here should be regarded as a minimum count, the differences in these fabrics often being marginal in the extreme. It is possible, for example, that the eight Fine greyware bag-shaped barbotine dot decorated beakers (eg, Fig 44, 577; Tyers and Marsh 1979, 569, type IIIE.1) were also made in the Highgate kilns. The form is known there (Brown and Sheldon 1969, 65 group 2, no 7) but not included in Monaghan's (1987) type series, although the fabrics of these vessels bore none of the hallmarks of the Highgate wares, being indistinguishable from the local wares. Rims indicate the presence of only nine Highgate C poppy beakers, so clearly the London potters never provided a major threat to the local suppliers and it is unclear whether the Highgate vessels had the status of

exotic imports or would have been indistinguishable from their local equivalents to the inhabitants of Springhead. It is curious to note that with the exception of four sherds from post-hole 6158 of building 400029, all the Highgate C sherds were found in the Roadside settlement area, scattered across properties 2, 3, 4, 6, 8, 9, and 11 as well as in roadside ditch 400121. Highgate C sherds have also been found at Pepperhill, Northumberland Bottom, and Thurnham (Booth 2006c, section 4.4.10).

Dark colour-coated ware beakers from Colchester were also reaching Springhead during the 2nd century, augmenting the rather sparse supply from Continental sources. Most are bag-shaped forms with cornice rims (Hawkes and Hull 1947, Cam 391), plain or with roughcast decoration, predominantly made *c* AD 110/25–60, although occasional examples with roughcast clay pellets were made into the early 3rd century (Bidwell 1999, 494–5). Other forms include a taller beaker with a beaded, slightly undercut rim and barbotine decoration (Symonds and Wade 1999, 273–4, fig 5.36, 188, Cam 391C) dated late 2nd–3rd century, and a neck sherd probably from a flagon with moulded leaf/flower decoration (Hull 1963, fig 56, 23). A single indented beaker sherd from layer 12508 on property 2 indicates that rare examples of Colchester beakers continued to reach Springhead into the later 3rd, perhaps even the 4th century.

After AD 150, colour-coated wares were also being obtained from the Nene Valley, although the majority were found in late Roman contexts (Table 1). Most came from property 2, especially the possible pre-temple structure (400106) and other mid-Roman features (group 400109) as well as deposits associated with the demolition of the temple (group 400103). All the sherds are from beakers, although only four identifiable rims are present – two from bag-shaped forms with the later type of rather crudely executed cornice rims (Anderson 1980, fig 15, 1; Perrin 1999, 90–2, fig 60, 132–4, 136–8) which continued into the mid–3rd century – and two from taller, funnel-necked forms (Cam 408–10) of 3rd or 4th century date. Both the cornice rim vessels have the barbotine animal decoration characteristic of 'hunt cups', while body sherds from other contexts suggest that the total number of these may have been as high as five. Three groups of body sherds with thick, overslip white paint decoration, imitating Moselkeramik beakers, are also present, while other body sherds indicate that indented forms, which enjoyed a florit during the mid–late 3rd century (Perrin 1999, 93), were also reaching Springhead.

A wider range of vessel types is present among the Oxfordshire colour-coated wares which were again predominantly associated with the late Roman deposits on property 2. Over half the sherds (46 out of 79) are from closed, brown colour-coated forms. Although flagons were not common in the south-east during the 4th century (Pollard 1988, 142), at least one (Young 1977, type C2) was found amongst the demolition deposits on property 2 while the beakers consist of indented (*ibid*, types C20, C31, and C32; Fig 52, 757) and funnel-necked (*ibid*, type C22; Fig 52, 745–6) varieties. The red colour-coated bowls include some of the most common and widely distributed types made throughout the life of the industry (*ibid*, types C45; Fig 52, 755, C49; Fig 52, 758, and C51), together with a necked bowl with stamped decoration dating from *c* AD 340–400 (Fig 52, 750; *ibid*, 166, C78 or 79). By the 4th century, it is possible that many of these regionally imported fineware vessels, from the centralised Oxfordshire, Nene Valley, and Much Hadham industries, were purchased elsewhere in Britain and brought into Kent as personal possessions – their distribution reflecting the places where the more mobile members of the population lived (Pollard 1988, 143).

The small group of unassigned colour-coated wares mainly consists of small, dark-coloured beaker sherds from lesser known production centres, perhaps including Eccles (Detsicas 1977), or atypical fabrics from those already mentioned above. Most are probably from British sources, although the possibility of Continental imports cannot be excluded, and they are likely to span the entire Roman period. Also included are two groups of sherds probably from a single carinated vessel with rouletted decoration in a fine, sandy oxidised fabric with a bright reddish–orange slip found in pit 17525 and pit 17506 on property 5, and a piece from a beaker with a simple, internally-thickened rim, also in a fine red-slipped ware fabric, from pit 2236. Both are likely to be of mid-Roman date.

Oxidised Wares

This group comprises a wide range of pale-fired (white, buff, orange) fabrics, sometimes white-slipped, from various local (north Kent), British (*Verulamium*, Oxfordshire), Continental (North Gaul, Speicher) and unknown sources (Table 1). These latter fabrics are likely to include local products, despite the apparent local preference towards the production of reduced wares (Monaghan 1987, 178). The range of forms tends to be more restricted than those of the contemporary reduced coarsewares, comprising mainly flagons/flasks with a limited number of beakers and bowls. Overall, the oxidised wares amount to 8% of all the sherds (6% by weight) from the early Roman features and deposits, with the white-slipped vessels forming the dominant ware group (59% by count, 26% by weight). The proportion of oxidised wares within the whole assemblage decreases by the late Roman period to 4% of both the sherds and their weight.

The earliest products comprise the fine sand-tempered butt beakers (eg, Fig 19, 143–4; Fig 33, 434). Although traditionally white, the fabrics of these vessels varies from white to pink, orange, light brown, and grey. While most are probably imports from northern Gaul (Rigby 1989, 137), arriving during the first half of the 1st century AD and into the early Flavian period (Symonds and Wade 1999, 472, Cam 113), the form

may also have been copied at British centres such as Colchester (*ibid*, 473) and *Verulamium* (Davies *et al* 1994, 184). Although never common, imported butt beakers were predominantly of pre-Boudiccan date in London (*ibid*, 146) and at Springhead, these sherds were most common in the Late Iron Age and early Roman features and deposits on the Sanctuary site (54 pieces, 485 g, compared with 37 pieces, 427 g, from the Roadside settlement).

Within the oxidised wares, the white-slipped Hoo ware fabric (Monaghan 1987, 253, fabric N4/1s; Davies *et al* 1994, 38) is the most dominant, closely followed by the unsourced white-slipped wares, which largely mirror the range of forms that occur among the Hoo products. No definite kiln evidence has yet been discovered for the production of Hoo ware but, following the discovery of a significant quantity of flagons including wasters and kiln debris on the Hoo peninsula, production nearby was postulated by Blumstein (1956). Swan also suggested production of white-slipped wares in the area during the Claudio–Neronian period (1984, 85), while one potential source of the iron-free clay needed for slip production may occur in the region of Cliffe Woods (Monaghan 1987, 178) *c* 8 km to the north-west of the Hoo peninsula. The prevalence of collared, or Hofheim, flagons (*cf* MON 1E5; Tyers and Marsh 1979, form 1A) within local assemblages has led to suggested links with the Continent (Blumstein 1956, 275). Certainly the occurrence of such material is out of keeping with contemporary local production, leading Monaghan (1987, 217) to suggest the influence of immigrant potters in the production of such 'alien' forms and fabrics. Indeed, the use of a white slip, necessary so that these otherwise orange vessels could conform to current Continental fashion, was itself a new introduction during the middle of the 1st century AD and one of the first definite elements of 'Romanisation' applicable to Roman ceramics. These flagons are not only a prolific form within the Hoo ware repertoire at Springhead (Fig 32, 414), but also one of the earliest forms to be made in this fabric, dating to the 3rd quarter of the 1st century AD. Other mid–1st century AD types include narrow-mouthed, neckless jars (Mon 3B1), cordoned bowls (Mon 4F3) and a surprisingly high number of butt beakers (Mon 2B2). Sherds of this latter form, also derived from Continental prototypes, occur only rarely in London (Davies *et al* 1994, 39, fig 30, 137), so their frequency at Springhead, while reflecting the settlement's size and close proximity to the proposed area of production (Monaghan 1987, 217), may highlight the true importance of butt beakers within the repertoire of the Hoo ware potters.

Hoo ware vessels continued to account for a significant component of the assemblage during the Flavian and Trajanic periods. Compared with those from London (Davies *et al* 1994, fig 30, 130–40), for example, the range of forms current at Springhead during this period was surprisingly varied. From *c* AD 70/80, the collared flagons were gradually replaced by ring-necked forms (eg, Fig 22, 211; Fig 32, 401; Fig 35, 469) which continued into the second half of the 2nd century (Monaghan 1987, 48–50). Biconical and globular beakers (MON 2G1 and 2I0 respectively) were also recorded while bowls and dishes accounted for 20% of vessel types present in this fabric, the shouldered bowl (eg, Fig 28, 306) being the most common. Other forms included platters (MON 7A), flanged bowls (Fig 23, 228; Fig 24, 240), and cups imitating samian form 27 (MON 6C) which, although rare, are known from London (Davies *et al* 1994, fig 30, 140), while one bowl from a triple vase (Fig 47, 645) was found in mid-Roman ritual shaft 2856.

Evidence from Springhead (eg, Fig 47, 651) suggests that Hoo ware continued to be used well into the 2nd century, beyond the generally accepted date range of production. In London, for instance, it was virtually absent by the Hadrianic period (*ibid*, 51) although here, the north Kent white-slipped ware, whose fabric is described as being 'virtually identical' to Hoo ware (*ibid*, 40), is identified as a possible Antonine continuation of the Hoo tradition. The presence of another variant of the Hoo fabric, containing abundant microfossils (*ibid*, 38) was also noted at Springhead, although not separately quantified. One such sherd, recovered from property 10, is from an unusually large and elaborately decorated strap handle (Fig 40, 519). However, after the early Antonine period, the overall decline in the popularity of white-slipped vessels (Pollard 1988, 177) is evident within the Springhead assemblage, with no forms other than flagons (Mon 1E1, 1E2) continuing beyond the end of the 2nd century.

Verulamium region products are likewise well represented at Springhead, particularly the flagons, which first occurred during the pre-early Flavian period, continuing throughout the 2nd century. The change in flagon forms during this period follows the recognised development from collared to long, flaring ring-necked and short, expanding ring-necked vessels identified in the London assemblages (Tyers and Marsh 1979, 549–50). Second century flagons from *Verulamium* also include the large, double handled 'amphora type' (Fig 32, 416; Fig 38, 485; *ibid*, type IJ), the smaller, squat, double-handled flagon (*ibid*, type IE), and a pinch-mouthed flagon (*ibid*, type ID). Mortaria aside, the only other forms represented are a small number of bowls with moulded flanges (*ibid*, type IVA) and a spouted strainer bowl (Marsh 1978, 181–4, type 46), while pieces from two tazze, one internally scorched (Fig 22, 192), were also recorded.

In contrast to the white and white-slipped wares, which declined in importance during the 2nd century, the unsourced oxidised wares show a slight increase at this time. A diverse range of forms was recognised (eg, Fig 34, 436; Fig 40, 530; Fig 51, 729, 734) but rarely more than one or two examples of each. A number of vessels are particularly worthy of note. A sherd from an oxidised, globular beaker with red painted swirl or spiral on the exterior surface (Fig 45, 602) occurs in a highly micaceous fabric and, therefore, is unlikely to be a local product. A beaker with similar decoration comprising

three cream painted swirls was recovered at Canterbury (Blockley *et al* 1995, 753, fig 323), although its occurrence within a late Roman feature (period 4) places it much later than the Springhead example. Three low-waisted unguent jars (Fig 30, 360; Fig 45, 616; Fig 48, 660) were also recorded among the unsourced oxidised wares while other unusual forms include a strainer bowl base and a *patera* handle (Fig 49, 702) in an orange sandy fabric. Part of a lamp (Fig 35, 461) was found on property 3. Lamps were comparatively rare in Britain and, although most were probably imported, there is evidence of limited British production (Marsh 1978, 189; Ekhardt 2002, 343–8). The fabric of this example may well be local, although it is coarser than either Hoo or the local fine oxidised wares. Its nozzle and most of the base are missing, but the plain discus surrounded by a raised rim, central filling hole, and basal rings suggest that it belongs to the *firmalampen* category, introduced during the last 3rd of the 1st century AD and continuing into the early 2nd century (Ekhardt 2002, 188–9).

The quantity of oxidised wares used during the 3rd century shows a further marked decline. Unsourced vessels of this date include Figure 53, 797 and 802 but the only definitely late Roman fabrics are from the Hadham and Oxfordshire kilns. Oxfordshire coarsewares probably began reaching Springhead sometime during the late 2nd century, indicated by a whiteware bowl (Fig 52, 751) with orange–brown painted decoration found on property 2. With the exception of mortaria, Oxfordshire whiteware forms are rarely found outside the immediate hinterland of the kilns (Young 1977, 97) and the presence of this vessel at Springhead is, therefore, unusual, perhaps representing the transportation of personal property rather than trading links. Oxfordshire Parchment ware, on the other hand, had a much wider distribution and, probably travelling piggy-back with mortaria, is relatively well-represented in north Kent (*ibid*, 82; Pollard 1988, 125) by the middle of the 3rd century. Only one sherd, however, was recognised in this assemblage: a painted wall-sided bowl (Young 1977, P24), the most common form made in this fabric. The only other definite late Roman ware is a single jar rim sherd (Fig 45, 621) probably from Spechier, one of a group of products encompassed by the term *Eifelkeramik*, which describes wares made in a number of workshops in the Eifel/Rhine area of Germany (Richardson 1986, 109). Production at Speicher occurred in the 2nd–4th centuries and although the products were exported all over the Northern provinces they are rare finds in Britain. A few other vessels probably of early–mid-3rd century date, are, however, known from New Fresh Wharf, London (*ibid*, 110, 1.64–8). Rather than being traded in their own right, such vessels may have travelled alongside the far more commonly imported lava quern and millstones from the Eifel/Rhine region (Shaffrey, this vol, Chap 9; Fulford and Bird 1975, 181).

Coarsewares

This group of coarse, predominantly unoxidised fabrics forms the overwhelming bulk of the Springhead assemblage – 75% of all the late Iron Age and Roman sherds, 79% of their weight (Table 1). Vessel forms are predominantly utilitarian in nature, used in a wide variety of food storage, preparation, and 'everyday' serving roles, as well as the occasional industrial purpose. Once again, most are products of the north Kent industries which so dominated the Springhead market that vessels from further afield probably arrived as personal possessions rather than as traded items, at least until the late Roman period.

Thameside/Upchurch greywares

Local sandy greywares formed the single largest fabric group, representing 34% of all the sherds (25% of the weight) and almost half the coarseware group (45% of the sherds, 32% of their weight). The term 'Thameside/Upchurch greywares' has been used to refer to these wares which incorporate all variants of Monaghan's coarser sand-tempered fabrics (1987, 244–8, fabrics S1–3) made at various centres on the banks of the Thames estuary. However, given the well-known problems of differentiating the products of the numerous Roman sandy greyware industries, coupled with the level and, by necessity, speed of the analysis employed for the Springhead assemblage, products from kilns in other parts of Kent, Essex, the London area, and even Continental sources may have become subsumed into this group. In the same vein, the boundary between the Thameside/Upchurch greywares and the Fine greywares (discussed above) is somewhat blurred – quite where does 'fine' become 'medium' and 'medium' become 'coarse' within the products of a single industry, perhaps even made by the same people, when it is impractical to examine each piece individually given the exceptionally large quantities involved? The term 'BB2' (Farrar 1973, 84; Tomber and Dore 1998, 165–6) has not been applied to this assemblage. Although still useful on the Northern Frontier, it has long been recognised as outdated in Kent (Pollard 1983, 123; 1987, 198–9; Monaghan 1987, 171–2), it being inappropriate to separate out a suite of widely-traded, mid-Roman forms (everted rim jars, plain and decorated pie-dishes, and shallow, plain-rimmed dishes) with distinctive surface treatments, which characterise BB2, from the far wider range of products used locally, or to expand the narrow definition of the term so applicable in the north to include all the Kentish vessels. Although the vast majority of the Thameside/Upchurch greyware vessels from Springhead could be encompassed by Monaghan's (1987) type series, as expected from a site located so close to the centres of production, considerable variability exists within forms. It is hoped that the illustrations provide a flavour of these, but obviously only full analysis would provide comprehensive details.

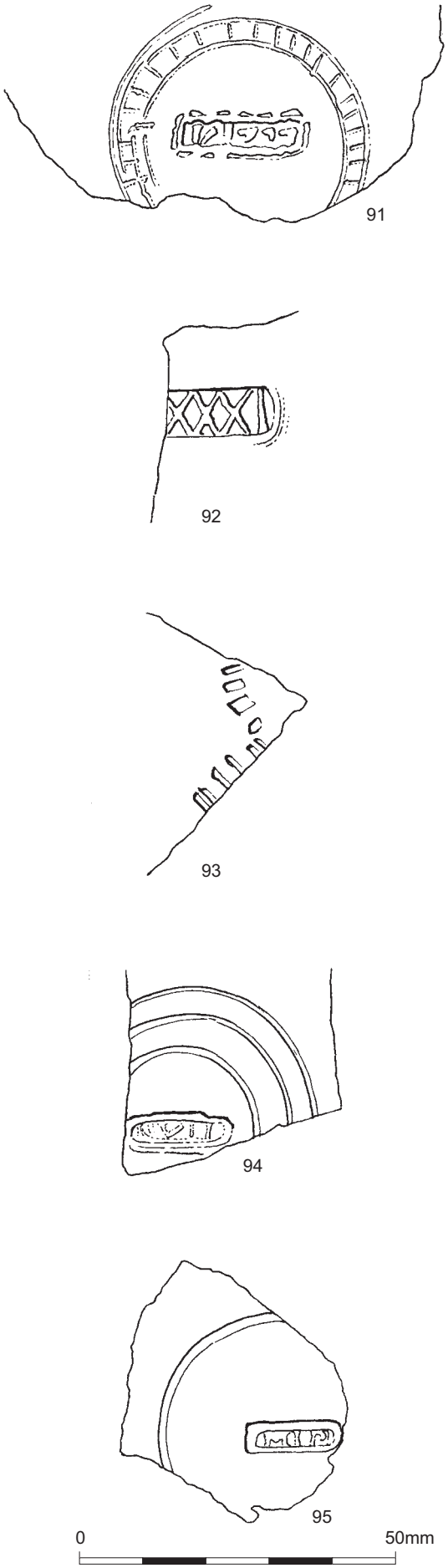


Figure 16 Springhead: potters' stamps on Thameside/Upchurch greyware Nos 91–5

Production of wheelthrown sandy greywares in the north Kent coastal zone appears to have started around the time of the Conquest and gradually increased in popularity, replacing the earlier flint-tempered industry, perhaps based in the Upchurch area, by *c* AD 70–80 (Monaghan 1987, 216). The Thameside/Upchurch fabrics represent a mere 3% of the sherds from late Iron Age features and deposits, swiftly rising to 31% of those from early Roman features (2% and 21% by weight). The earliest vessel forms remained based in the local ceramic traditions – surfaces are burnished and cordons frequently used – while the use of the wheel influenced the shape of some vessels. Among the bowls, for instance, the high-waisted, cordoned forms (MON class 4C; eg, Fig 22, 202; Fig 30, 351) gradually developed more distinctive necks and cursive profiles (MON 4F; eg, Fig 28, 318; Fig 31, 376, 395). Monaghan (*ibid*, 216) noted that the facetted jar (eg, Fig 29, 335; Fig 42, 546; Fig 43, 565) became the standard form during the pre-Flavian period but it is relatively rare at Springhead, the bead rimmed jars (eg, Fig 24, 250; Fig 40, 504) being far more numerous. Bead rimmed bowls (MON 4E; eg, Fig 29, 350) were also made at this time and, although no definite examples of pedestal jars were identified by Monaghan (*ibid*, 79), sherds from at least 18 examples (mostly represented by bases) were recorded in this assemblage (eg, Fig 20, 157; Fig 45, 606, 608, 609; Fig 46, 641). At the finer end of the range, butt (eg, Fig 31, 396; Fig 38, 490) and biconical (eg, Fig 23, 224; Fig 24, 247) beakers, platters (MON 7), and shallow, flanged bowls (MON 5B) were used in small numbers, while coarser platters (MON 5E4 and 7B2), roughly copied from imported Gallo-Belgic forms, also occur in the early groups at Springhead. Illiterate stamps were noted on five platter base sherds, highlighting the Gallo-Belgic origins of these forms and the use of stamps by the north Kent potters (*cf* Monaghan 1987, 158).

Thameside/Upchurch greyware stamps

(Fig 16)

91. Illiterate stamp centrally positioned on the interior surface surrounded by compass-drawn circles and imitation rouletting; flat base. Layer 11641, group 400129, associated with the first phase of the circular structure on property 11, PRN 534.
92. Illiterate stamp]XXXI centrally positioned on the interior surface of a Mon 7B1 platter. Fill (context 16065) of segment 16057 of early Roman roadside ditch 300451, PRN 532.
93. Pseudo-stamp in the form of an X made up from short stabbed lines in the centre of the base of an open form. Layer 10819, group 400127, pre-dating earliest phase of circular structure, property 11, PRN 999.
94. Illiterate stamp set within compass-drawn circles. Layer 2592 associated with the primary use of 'Viewing platform' 400045, PRN 559.
95. Illiterate stamp on interior of an open form surrounded by a compass-drawn circle. Fill (114) of pit 113, property 8; PRN 998.

The Flavian and Trajanic periods (*c* AD 70–120/30) witnessed a huge expansion of the industry in terms of both volume of output and the range of forms produced, coupled with various technological improvements such as the widespread use of the wheel, resulting in more standardised, symmetrical forms. Monaghan attributed this to '... a sudden, unprecedented demand for coarse pottery within northern Kent.' (1987, 217) and this may, of course, be linked with demand from the burgeoning temples, sanctuary complex, and town at Springhead, which probably formed the main market of this industry. At Springhead, this period saw the introduction of the tall- and the short narrow-necked flasks (MON 1A and B; Fig 52, 768), a few cups (MON 6), beaker and bowl forms based on Continental prototypes (MON 2H (Fig 46, 639), 4H, 5B (Fig 35, 466–7; Fig 45, 632)), and the demise of butt beakers (MON 2B) in favour of biconical (MON 2G1), globular (MON 2I), and 'poppy-head' (MON 2A, Fig 45, 617) forms, mainly in the Fine Greyware fabric, although a few coarser examples were included in the Thameside/Upchurch greyware group. The range of necked, cordoned bowls became more restricted, focusing on those with developed S-profiles (MON 4A, Fig 32, 407; Fig 37, 476; Fig 40, 505), which appeared in the early 2nd century (*ibid*, 217). Narrow necked (eg, Fig 26, 285; Fig 27, 298; Fig 28, 316; Fig 37, 472), bead rim (eg, Fig 44, 583, 590; Fig 45, 627), and lid-seated jars (eg, Fig 26, 283; Fig 37, 474; Fig 44, 580; Fig 49, 689) continued throughout the Flavian and Trajanic years, well into the 2nd century, while the hooked rim (MON 3F) and facetted (MON 3G) forms gradually died out, perhaps being replaced by the ubiquitous everted rim (eg, Fig 48, 663; Fig 52, 743, 770) types (*ibid*, 218). Lids (eg, Fig 23, 234; Fig 24, 261; Fig 29, 333, 348), too, were common at this time and, although Monaghan (1987, 108, 219) noted that his main lid-seated jar form (MON 3L) was not as common in Kent as it was in parts of Essex, at Springhead rims belonging to such vessels account for approximately 23% of all those from jars. Although more commonly found in the north Kent/south Essex shell-tempered fabric, nine rims from large storage jars (MON 3D2–5) made in the Thameside/Upchurch greyware fabric were also found at Springhead, indicative of at least limited production of these forms. Where sufficient survives, these vessels share the stabbed decoration characteristic of their shelly cousins, while at least one of the greyware examples, from pit 2227, part of the pit alignment (300073) forming the boundary beyond the north end of the 'portico' building, has deposits of (birch bark) resin on the top of the interior of the rim.

The rest of the 2nd century saw increased specialisation in a very narrow range of forms, yet there was another increase in the volume of production and a correspondingly wider distribution zone, products from this area regularly reaching the northern frontier (Monaghan 1987, 219–20, 223–5). Thameside/Upchurch greywares represent 63% (47% by weight) of the sherds from mid-Roman features and deposits at Springhead. Flasks and flagons died out, and forms based on samian and Gallo-Belgic imports were abandoned, while beaker production concentrated on the poppy-head forms, although this type was never common at Springhead even among the Fine Greyware fabrics. Bead-rim (MON 3E) and lid-seated (MON 3L) jars continued to be made in limited numbers for local consumption until *c* AD 170 (Monaghan 1987, 108–10) and, presumably, lids (MON 12) continued too. The new forms comprised plain (eg, Fig 44, 591, 593; Fig 46, 638; Fig 50, 726) and decorated (eg, Fig 30, 361; Fig 44, 592; Fig 45, 610) pie-dishes, shallow, plain-rimmed dishes (eg, Fig 44, 581; Fig 45, 605; Fig 52, 748, 780), and lattice-decorated, everted rim cooking pots (eg, Fig 44, 584; Fig 45, 619, 631; Fig 46, 640; Fig 47, 646), based on South-east Dorset BB1 forms, with parts at least of each vessel coated in a thin, often silvery, slip, and silkily burnished. Overall, rims belonging to vessels of these classes, traditionally identified as BB2, account for 39% of all the Thameside/Upchurch rims in this assemblage. However, there is limited evidence to suggest the continued production of other vessel types, such as the narrow-necked and everted rim jars (MON 3A and 3H) while grooved rimmed dishes (eg, Fig 47, 642; Fig 48, 670; Fig 52, 779, 781–2) were introduced for local consumption only around AD 130/40 (Monaghan 1987, 220, 225).

At the end of the 2nd century or thereabouts, funnel-necked beakers (eg, Fig 48, 671; Fig 52, 776–7) were introduced into the coarseware repertoire, lasting into the 2nd or 3rd quarter of the 3rd century (Monaghan 1987, 63), while a small number of folded beakers and jars (Fig 48, 659, 677; Fig 53, 801, 803) were also made in the early years of the 3rd century. However, this time, it seems that the north Kent pottery industry was in decline, although the reasons for this remain unclear (Hume 1954, 73, 79; Monaghan 1987, 227–30). Production reverted to being for local markets only, Pollard (1988, 123) noting that west Kent assemblages continue to be dominated by these wares throughout the 3rd century, with the importation of other coarseware fabrics perhaps beginning in its final quarter. At Springhead, Thameside/Upchurch greyware sherds account for 78% (62% of the weight) of the sherds from the late Roman features and deposits. As Monaghan (1987, 220, 225–7) and Pollard (1988, 123–5) suggest, there is evidence in this assemblage for the continued production of the 2nd century forms but, before the middle of the 3rd century, manufacture of the S-profile bowls (MON 4C2) and plain bead-rimmed dishes (MON 5C) ceased, leaving only narrow-mouthed (MON 3A) and everted rim (MON 3H) jars and shallow, plain- and grooved- rimmed dishes (MON 5E and 5F). Dropped flanged dishes/bowls (Fig 52, 747, 759; Fig 53, 796, 806), again based on South-east Dorset BB1 vessels, were produced from around AD 200/240 (*ibid*, 136) and a small number of large jars with inward-curling thickened rims (MON 3D6) were made for local consumption. Monaghan dates this form to *c* AD 170–250, and noted examples among the assemblage from the production site at Broomhey Farm

(*ibid*, 84). One of the three examples from Springhead is almost complete (Fig 48, 655), deliberately deposited within the *temenos* on property 2. Overall, however, after *c* AD 250, the scale of the north Kent industry seems much reduced.

Rare forms within the assemblage include a decorated cheese press lid (Fig 25, 273) found in post-hole 5755, to the rear of the sanctuary temple (400035). Monaghan catagorises these as 'rare' finds (ie, forming a small but distinct proportion of the output; 1987, 43) except on certain marsh sites, and dates them to *c* AD 70–200, coinciding with the most prolific period of the industry's history. Unfortunately other sherds found in association with the cheese press lid are not chronologically diagnostic, although a Fine Greyware barbotine dot decorated beaker sherd and other Thameside/Upchurch sherds hint at 2nd century date. Strainer bowls (MON 11) are represented by perforated base sherds only, probably of 1st century AD date, and 11 miniature vessels (Monaghan 1987, 162, MON 9) were also identified; these are discussed more fully below.

Despite its size, there was no evidence in this assemblage to confirm the possibility of greyware pottery production in the Thameside/Upchurch tradition at Springhead itself (Jessup 1928, 337; Penn 1965). The database records fewer than 25 sherds with any significant degree of overfiring, and only three instances of other firing errors were noted – a spalled, roll-rimmed pie dish (MON 5D) from pit 10170 on property 11, a mis-shaped everted rim jar (Fig 45, 614) from post-hole 5251 in the sanctuary temple screen/fence 300110, both of mid-Roman date, and a warped biconical bowl (Fig 37, 77) from early Roman pit 16902 in property 4. None of these vessels is so severely affected as to be unusable, and in today's terms would be considered 'functional seconds' rather than wasters.

Unsourced sandy wares

A wide range of other, unsourced sandy wares was divided into two groups – 'sandy fabrics' and 'greywares' – based on perceived date range and general appearance. The 'sandy fabrics' owe allegiance to the pre-Roman Iron Age traditions of the area being softer, thicker-walled, and fired in the dark brown–grey–black range, while the 'greywares' are harder fired, more 'Romanised', and often bluish–grey in colour. Although these two fabrics are relatively unimportant within the coarseware assemblage as a whole, together representing just 3% of the sherds (2% of the weight), the sandy fabrics form a significant component of the assemblage from the late Iron Age features and deposits (12% of the sherds and weight and third in order of frequency after the grog-tempered and north Kent/south Essex shelly wares). Evidence from other sites suggests that the majority date from around the middle of the 1st century AD, the use of sand as the sole tempering material being very rare prior to this (Pollard 1988, 31, 41). Thereafter, the importance of the sandy fabrics declines rapidly, forming only 2% of the sherds from the early Roman groups and 1% from those of mid-Roman date. Jars dominated – bead-rimmed (Fig 18, 129), facetted and lid-seated forms, necked jars (Fig 18, 119), and jars with everted rims – while necked cordoned bowls, imitation Gallo-Belgic platters, and dishes with flattened, inturned rims and lids (Fig 19, 145) are also present. Part of the perforated base of a strainer bowl (MON 11) was found in layer 11436 in property 11. Two non-joining lengths of triangular-sectioned rod, one with clear evidence for a T-shaped junction at one end (Fig 27, 295), may represent a ceramic trivet or 'gridiron'. One example of a shallow dish with an internally grooved rim (*cf* Monaghan 1987, 154, MON 5F0.5) may be more akin to the 'Atrebatic' or Surrey bowls characteristic of the early Alice Holt industry (Lyne and Jefferies 1979, 31, class 5), although Marsh and Tyers (1979, 577, class IVK) note the rarity of the form in both London and Kent. Given the well-known difficulties in differentiating between various sandy coarseware fabrics, and despite the small number of sherds isolated as early Alice Holt products (see below), it is possible that other vessels from this industry are present amongst this group. The majority, however, are likely to be relatively local products, perhaps including early or atypical variants of the north Kent fabrics as well as products from isolated, as yet unknown kilns. The presence of an early Roman kiln in the immediate vicinity of the Keston villa, for example, has been inferred from pottery and other artefacts recovered (Philp 1991). Likely products of this kiln include domestic wares as well as imitation Gallo-Belgic vessels in a range of fine sandy fabrics and it is possible that some of the Springhead material derives from this source

Similarly, the more 'Romanised' greywares include the products of several centres, spanning a wide date range. Unrecognised Alice Holt products are likely to be present amongst this group, as are other atypical variants of the North Kent fabrics, products from kilns in the London area, perhaps including additional Highgate C wares (see below), Copthall Close greywares and others (eg, Davies *et al* 1994, 88–97), as well as vessels from more local sources. The frequency of these wares at Springhead increases through time, representing 0.5% of the sherds from the late Iron Age features and deposits (mostly deriving from their later, uppermost fills), 1% of those from the early and mid-Roman groups and 3% of those of late Roman date, emphasising an increased reliance on more distant sources of ceramics as the local industries declined during the 3rd century. Vessel forms confirm the wide date range: butt and biconical beakers; narrow-necked jars; bead rimmed (Fig 29, 336), hooked and lid-seated jars; wide-mouthed everted rim jars; necked, cordoned, and bead rimmed bowls; imitation form 30 and 37 bowls; carinated bowls with moulded flanges and shallow platters dating to the 1st–2nd centuries; everted rim jars, some with moulded rims; and plain (Fig 54, 821) and decorated 'pie-dishes' of the 2nd–3rd century. Late Roman forms comprise: everted rim jars (eg, Fig 54, 819), some with triangular,

hooked, and/or moulded rims (Fig 52, 753; Fig 53, 793); dropped flanged bowls/dishes (Fig 52, 764; Fig 54, 823); and shallow, plain or grooved rim dishes. Although far more common in oxidised wares, a possible tazza rim in a very gritty greyware fabric was found in late Roman layer 16687, along with other material of mixed mid-2nd to late 3rd/early 4th century date. This moulded rim, with square toothed rouletted or notched decoration (Fig 54, 824), can be broadly paralleled among tazze made in the *Verulamium* region (although its fabric would be highly atypical of this source) from the early Antonine period onwards (Davies *et al* 1994, 51, fig 40, 219, fig 48, 276; Pollard 1987, 244, fig 78, 213). The Lullingstone example too is residual, or perhaps curated, in a late 4th century deposit (*ibid*, 192).

North Kent/south Essex shelly wares

Locally produced, north Kent/south Essex shelly wares containing abundant, coarse, crushed fossil shell form 39% of the coarseware sherds (50% by weight) and around one-third of the entire Springhead assemblage (29% of all sherds, 39% of total weight). Although produced at a number of local sites such as Cliffe, Cooling, and Halstow Marshes (Monaghan 1987, 222), as well as in south Essex (Drury and Rodwell 1973, 1, 15, 24; Jones and Rodwell 1973), at a macroscopic level it was not possible to separate the different fabrics. Although ubiquitous in the west Kent area from the late 1st century BC to the early 2nd century AD, at Springhead the proportion of north Kent/south Essex shelly wares peaks in the Flavian–Trajanic period, comprising 51% of the coarseware sherds (62% by weight) from features and deposits of early Roman date. However, from the mid-2nd century onwards, their importance declines sharply, crashing to just 6% (by number and weight) of the material from late Roman features and deposits (Table 1).

Jars are by far the most dominant form; of approximately 2120 vessels recorded by rim count, just over 1900 comprise jars, 90% of which are from bead rim, lid-seated, and storage jar forms, in roughly equal proportions. Simple bead rim forms (eg, Fig 18, 122, 127; Fig 27, 290) and jars with externally thickened, flattened bead rims (eg, Fig 18, 128; Fig 22, 194; Fig 34, 444) are particularly common. Although generally more popular in Thameside Essex than in Kent (Monaghan 1987, 108), lid-seated jars are one of the major jar forms found at Springhead, originating in the Conquest period and persisting into the 3rd quarter of the 2nd century. Principal types consist of jars with a simple groove on top of a slightly thickened rim (eg, Fig 50, 710) and the bead rim form with deep groove (eg, Fig 22, 204; Fig 27, 296; Fig 40, 516; Fig 42, 542–3), although there is a fair amount of variation within this class. Although considered by Monaghan to form only a small but distinct proportion of the north Kent output, jars with a ledge or lid-seating at the top of an everted bead rim, a cordoned or facetted shoulder, and rilled decoration (MON 3L9) also occur in significant quantities, highlighting the importance of these vessels away from the production sites and/or the possibility that this form, in particular, may have been obtained from the Essex kilns.

The presence of symbols inscribed into the shoulder zone of lid-seated vessels before firing is well-attested in Essex (Jones 1972, 337; Going *et al* 1987, 102, fig 49) but less so in Kent, although examples are known from Cooling (Pollard 1988, fig 50, 13) Twenty-one such marks were recorded at Springhead, with another six highly fragmentary examples. Most take the form of incised lines resembling Roman numerals, although downward-pointing arrows and other triangular marks, 'X's and crosses also occur. Eleven were found within the Roadside settlement with the remainder, including the six most fragmentary marks, being from the Sanctuary site. Of the 18 examples on identifiable vessel forms, 16 occur on Monaghan's 3L7 variant, two on MON 3L2 jars, and one on an everted rim jar of uncertain form.

Pre-firing makers' marks on north Kent/south Essex Shelly wares

(Fig 17)

96. I; shoulder of MON 3L7 jar. Fill (10211) of segment 10194 of early Roman roadside ditch 300387; PRN 453.
97. I; shoulder of MON 3L7 jar. Fill (12231) of medieval ditch 12230, sub-group 300353, property 2; PRN 459.
98. I; shoulder of MON 3L7 jar. Layer 2831, secondary use of early Roman 'Viewing platform' 400046; PRN 925.
99. II; shoulder of MON 3L7 jar. Fill (10345) of segment 10274 of early Roman roadside ditch 300387; PRN 456.
100. II; shoulder of large everted rim jar with stabbed decoration. Fill (10647) of early Roman pit 10646, associated with the second phase of the circular structure 400128 on property 11; PRN 457.
101. II; shoulder of MON 3L7 jar. Fill (16472) of early Roman pit 16471 to east of road junction on property 5; PRN 487.
102. II with additional horizontal bar; shoulder of MON 3L7 jar (Fig 22, 204). Fill (5146) of early Roman post-hole 5147, associated with the 'portico' building 400020 in the sanctuary complex; PRN 520
103. II with additional horizontal bar; jar body sherd. Early Roman layer 17572, group 400196, property 3; PRN 463.
104. II with additional horizontal bar; shoulder of MON 3L7 jar. Early Roman layer 6022, smithy 400029; PRN 618.
105. IIII; shoulder of MON 3L7 jar. Fill (11082) of early Roman pit 11078, associated with first or second phase of smithy on property 10; PRN 458.
106. IIII; shoulder of MON 3L2 jar (Fig 50, 710). Fill (16463) of early Roman pit 16464, predating earliest phase of smithy on property 10; PRN 462.
107. IIII; shoulder of MON 3L7 jar. Fill (2950) of early Roman pit 2954 (sub-group 300130); PRN 926.

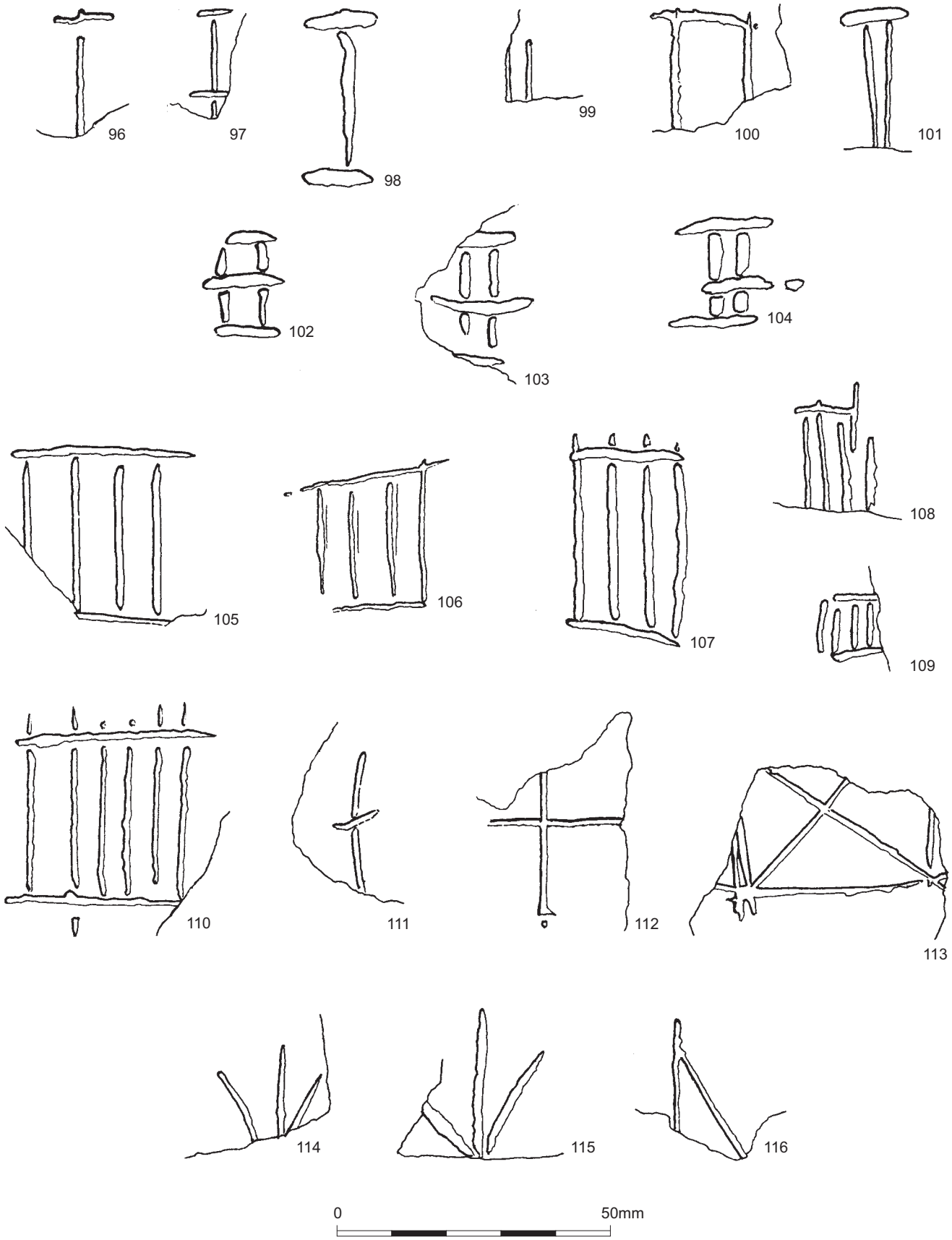


Figure 17 Springhead: pre-firing marks on north Kent/south Essex Shelly wares Nos 96–116

108. IIII; shoulder of MON 3L7 jar. Fill (2951) of early Roman pit 2954 (sub-group 300130); PRN 924.
109. IIII; shoulder of MON 3L7 jar. Mid-Roman dump layer 5682 (group 400027), above early road; PRN 594.
110. IIIII; shoulder of MON 3L7 jar (Fig 27, 296). This vessel had been repaired with glue. Early Roman layer 2592, primary use of 'Viewing platform' group 400045; PRN 514.
111. Faint +; jar body sherd. Early Roman layer 10808, property 11; PRN 454.
112. +; jar body sherd. Fill (17994) of early Roman pit 17991, on east side of the bakery complex (group 400182) on property 3; PRN 464.
113. X within a square or rectangle; jar body sherd. Fill (2926) of early Roman pit 2925 (sub-group 300130); PRN 923.
114. Downward pointing arrow; shoulder of MON 3L7 jar. Early Roman layer 10808, property 11; PRN 455.
115. Downward pointing arrow; jar body sherd. Early Roman layer 16144, group 400142, smithy on property 10; PRN 461.
116. Incomplete triangular mark; shoulder of a MON 3L7 jar. Early Roman layer 16142, group 400142, smithy area on property 10; PRN 460.

Fragmentary marks (not illus)

117. Part of single incised line; jar sherd. Fill (2759) of mid-Roman well 2706, associated with sanctuary (group 400037).
118. Four non-joining body sherds from different vessels each with part of a single incised line against the broken edge; fill (2950) of early Roman pit 2954 (sub-group 300130).
119. Part of single incised line; shoulder of MON 3L7 jar; fill (5367) of pot-oven 5368, associated with early 'bakery' 400040.

Large storage jars are also a characteristic feature of the Springhead assemblage and are the only form in these wares to be regularly found in the London assemblages (Davies *et al* 1994, 102). Rims conformed to the types illustrated by Monaghan (1987, 79–84), especially classes MON 3D1 (eg, Fig 23, 218; Fig 35, 455; Fig 44, 597), 3D3 (eg, Fig 31, 378; Fig 44, 578), 3D4 (Fig 21, 177–79; Fig 24, 238), and 3D5 (Fig 20, 156; Fig 28, 315; Fig 29, 340–1). Unusually, however numerous reconstructable profiles survive (Fig 26, 284; Fig 32, 412; Fig 36, 471; Fig 39, 495; Fig 46, 636–7; Fig 49, 708), indicating a wide diversity of size, body shape, and decoration even within these classes. All were used between the middle of the 1st century and the mid-/late 2nd century, seemingly with little typological development within this span. One recurrent feature of these vessels is the relative thinness (rarely more than 8 mm) of the vessel walls despite their considerable size, rim diameters regularly reaching 200–340 mm. These jars were presumably used as containers for a variety of local products – salt, salted fish, or meat and oysters being among the most likely (Monaghan 1987, 202; Green 1980, 65); their presence in London perhaps suggesting that it was these commodities that were traded, rather than the jars themselves. Many have thin, black pitch/resin deposits smeared around the exterior of their rims and/or shoulders. Analysis of samples from Springhead (see below) has shown this to be tar derived from silver birch bark, confirming work on the London material by Heron (Davies *et al* 1994, 102), and refuting earlier suggestions that resin/tars from other deciduous trees such as beech and cherry may have been used (Monaghan 1987, 178). The practice of applying organic substances to the surface of vessels has generally been viewed as a method of reducing the porosity of the vessel, improving its aesthetic quality (Rice 1987, 231), or improving its heat effectiveness. However, such factors are unlikely to have been applicable to the storage jars, given the location of the tar deposits on the upper part of the outside of the pot. The use of birch bark tar for a variety of purposes is now known from the Palaeolithic to medieval periods (Rajewski 1970; Grunberg 2002; Regert *et al* 2003; Mazza *et al* 2006; Heron *et al* 1991; Aveling and Heron 1999; Aveling 1997; Lucquin *et al* 2007; Regert *et al* 2003; Stacey 2004; Urem Kotsou *et al* 2002). In 2005 and 2006, the Russian Venture Fair (www.rvf.ru/engl) highlighted potential business opportunities in the development of betulin, extracted from birch bark, for use as an effective preservative, emulsifier, biostimulant, antiseptic, and insect repellent in the food and pharmacological industries. Is it possible, then, that the early Roman inhabitants of north Kent were harnessing these insect repelling, antimycotic, antibacterial, and disinfectant properties for their own benefit, smearing it around their storage jars to prolong the life of the contents? At Springhead the application of the tar varies considerably in quality and was not applied to all vessels in a uniform way, perhaps suggesting that it was applied by the purchaser, rather than potter.

Substantial parts of nine shell-tempered storage jars were found *in situ*, indicating an alternative use, or possibly re-use, for some of these large vessels. Five were found on property 3 (features 17073 (two vessels), 17174, 17449, and 17497) and one from feature 105 on property 8, all on the Roadside settlement. The other three all pre-dated the Sanctuary complex (ie, pre- *c* AD 130/40), two (features 5368 and 5405) associated with early Roman 'bakery' 400040, the third (in pit 6166) located to the south of early road 400009, on the southern limit of the Sanctuary site. These vessels were deliberately placed on their sides within shallow scoops, presumably intact, although all were subsequently truncated. All displayed evidence of exposure to high temperatures in the form of spalling and fans of heat discolouration on their interior surfaces, and often the fabric was badly laminated as well. These vessels have been interpreted as 'pot-ovens', their location and the burning apparent within them being suggestive of the use of fire or hot embers/charcoal, although little evidence of such material was recovered from the sampled fills of these jars (see Vol 1, Chap 2). A vessel

(Fig 26, 284) from feature 5405 contained a layer of burnt clay and charcoal, capped by a layer of Thameside/Upchurch sherds from a narrow-necked jar (Fig 26, 285) and, on top of these, also lying on its side, was a complete lid-seated jar (Fig 26, 283). Similarities of appearance and diameter suggest that a shell-tempered lid from pit 6166 may originally have been used with this jar; the lid measured 260–70 mm in diameter while the jar was 280 mm, perhaps to keep the heat in during use.

Over 30 such pot-ovens were excavated at Elms Farm, Heybridge, some still containing charcoal-rich fills. Most, however, were made from sandy rather than shell-tempered fabrics. Cato, in *De Agri Cultura* (cited in Frayn 1978, 29), refers to bread baked in the ashes of a fire, or under a pottery vessel known as *testu*, although using the whole pot may be a British peculiarity. A concentration of quern stones within property 3 lends weight to the possibility that the ovens were used for bread making. At both Elms Farm and Springhead, it is tempting to interpret the location of the ovens, adjacent to the temple precincts, as being involved in commercial food preparation, either for use in temple-related activities or to feed those visiting the temple. However, the ovens on property 3 pre-date the adjacent temple, although they are contemporary with the main temple complex *c* 100 m to the south-east, where previous excavations uncovered a further nine ovens, three of which were made from storage jars (Penn 1964, features 2, 4, and 6), the remainder being clay structures. This association of pot-ovens and temples has also been noted at Chelmsford (Wickenden 1992, 32, fig 19), dated to the mid-2nd century AD, while pot 'hearths' are also known from Colchester (Crummy 1984, 106, fig 94; 143, fig 124). A large storage jar, lying *in situ* on its side in a shallow scoop lined with yellow clay, was excavated at the kiln site at Oakleigh Farm (Catherall 1983, 111), and, given this description, it is tempting to interpret it as another possible pot-oven, rather than the water container (at best unlikely for a vessel found on its side) suggested in the original report.

Other less common shell-tempered forms include hooked bead rim (eg, Fig 31, 383; Fig 33, 422; Fig 43, 562) jars, accounting for 4% of jars, while facetted (eg, Fig 19, 135; Fig 25, 274; Fig 34, 453) forms comprise just 1%. An unusual vessel, with a facetted shoulder and single row of incised arcaded decoration, came from early Roman ditch 5450 and another facetted jar, with herringbone decoration on the facet and rilling on body, came from layer 2592, associated with the primary use of 'Viewing platform' 400045. Small numbers of narrow necked jars, a single narrow mouthed jar (MON 3A and 3B (Fig 24, 239) respectively), and wide-mouthed, everted rim jars (Fig 29, 328) were also found. Two pedestal bases were identified, both from the sanctuary area (contexts 2388 and 2986), one of which is 25 mm high inside the pedestal foot. Pedestal jars are generally rare in this area, although a few grog-tempered and Thameside/Upchurch greyware examples were also recorded. Extra shell on the underside of a jar base found in early Roman pit 17884 (context 17889; group 400187) on property 3 indicates that it had been placed on a shell-strewn surface whilst still wet, while the exterior surface of many of the large jars seems to have been wiped with a rag before firing.

Bowls and dishes form only a minor component of shell-tempered vessels from Springhead. High-waisted bowls (MON 4C) constitute the only pre-Conquest form, with bead rim (eg, Fig 34, 438, 441; Fig 42, 544) and cordoned bowls (Fig 32, 406) dated to the trans-Conquest period. S-profile (MON 4A), shallow, everted rim (MON 4I), and lid-seated (Fig 23, 216; Fig 31, 390; Fig 49, 690) bowls are rare occurrences in the shell-tempered wares, being far more prevalent in Thameside/Upchurch greywares. One dish form, with a flattened and slightly inturned rim (Fig 30, 359; Fig 38, 492; Fig 42, 539), is surprisingly well represented (*c* 25 examples, including complete profiles). Shelly ware examples are also known from 1st century AD deposits at Lullingstone (Pollard 1987, 208, fig 82, 286). A strainer base (MON 11) was found in a deposit (context 2831) relating to the secondary use (300186) of 'Viewing platform' 400046) while cauldrons (or 'buckets' (Rodwell 1988, 123, fig 92, 307)), seemingly a speciality of the south Essex shell-tempered ware industry during the pre- to early Flavian period (Going 1987, 10, 34), were identified by their distinctive squared (Fig 24, 243; Fig 49, 704) or triangular (Fig 45, 615; Fig 49, 682; Fig 50, 709, 711–12) rims, the unusual angle of the vessel wall, and, in two instances, the presence of looped handles (Fig 25, 281; Fig 29, 338). Unfortunately, the body sherds from these vessels seem indistinguishable from those belonging to large storage jars and no reconstructions were possible, although the more-or-less complete cauldron from Ardleigh, Essex, while perhaps of slightly earlier date, had a rounded base (Sealey 1999, 117, fig 82, 10). Measurable examples ranged from 170 mm to 280 mm in diameter.

A wide variety of lids (eg, Fig 23, 220; Fig 24, 255; Fig 28, 314; Fig 43, 564; Fig 49, 686) were relatively common among the north Kent/south Essex shell-tempered wares. Lid 'pulls' were often vented but not exclusively so. One exceptionally large lid, its diameter in the region of 420 mm, was found in a clay-lined 'tank' (5917) to the rear of sanctuary temple (400036). It was probably used with an equally large storage jar, a re-used amphora or, perhaps even a wooden barrel. Such one-off forms could be the result of the proximity of Springhead to the kilns and personal contact between consumer and potter. Fragments from another trivet or 'gridiron', again surviving as a triangular-sectioned rod (Fig 42, 557), were also found on property 11 (group 400127).

Grog-tempered wares

Overall, grog-tempered wares represent 11% of all the coarseware sherds, 14% of the weight. Two groups, both of late Iron Age and early Roman date, were identified – miscellaneous grog-tempered wares and 'Patchgrove ware', named after the site at which it was first

recognised (Ward-Perkins 1939, 176–8), although in reality, considerable overlap exists between them.

The miscellaneous grog-tempered wares encompass a range of fairly soft, handmade soapy fabrics, usually grey–brown in colour with moderate–abundant poorly-sorted grog, and occasionally, lesser amounts of quartz, flint, chalk, and/or organic matter. At least some may have been made on the north Kent marshes, perhaps around Cliffe and Cooling (Monaghan 1987, 215, fabrics G1/1 and G1/4). A wide variety of vessel forms was identified: necked, cordoned jars with both wide (Fig 19, 148) and narrow mouths (Fig 19, 138; Fig 27, 294; Fig 28, 299); pedestal jars (Fig 22, 195; Fig 23, 227); barrel (Fig 19, 141; Fig 27, 288); bead-rimmed (Fig 21, 181, 182, 190); everted rim (Fig 18, 121; Fig 20, 159; Fig 21, 184) and lid-seated jars as well as large thick-walled storage jars (Fig 20, 169; Fig 21, 187; Fig 23, 231); round-bodied bowls (Fig 18, 117; Fig 19, 136; Fig 20, 163–4); cordoned bowls; beakers (Fig 28, 325); imitation Gallo-Belgic platters (Fig 23, 225, 232; Fig 27, 286; Fig 28, 322); butt beakers (Fig 20, 158; Fig 25, 275; Fig 28 323), sometimes of exceptionally large size (eg, Fig 19, 139; Fig 20, 166); lids (Fig 19, 149; Fig 23, 235); even jugs/flagons; strainer bowls; and miniatures (Fig 27, 289). Pedestal jars, while generally rare in north-west Kent, were also found in the Pepperhill cemetery (Biddulph 2006c). Vessels often have smoothed or facet-burnished surfaces; cordons, ripples, and corrugations are common, especially on shoulders, while more rarely, decoration consists of tooled linear motifs. A few vessels with deeply scored or combed surfaces follow in the Iron Age ceramic traditions of the area. The distribution of these wares confirms Pollard's (1988, 40) view that most are of pre-Conquest date and, although still current around the Conquest, it seems unlikely that they lasted far into the 3rd quarter of the 1st century AD – at Springhead, they represent 41% of all the sherds from the late Iron Age features and deposits, falling to 9%, 3%, and 1% of those of early, mid- and late Roman date.

The 'Patchgrove ware' is generally slightly harder and characterised by a blue–grey core, blue–grey or orange–buff margins, and orange or buff surfaces (although dark-fired vessels also occur), together with a speckling of black (probably charcoal) inclusions in addition to grog and sand. A more restricted range of vessel forms was recorded, again dominated by large, thick-walled storage jars (Thompson 1982, 257–72, types C6-1 and C6-2; eg, Fig 24, 262–3; Fig 25, 280; Fig 50, 723). One almost complete example (Fig 41, 532), from pit 11078, associated with the first or second phase of the smithy (group 400140) on property 10, may have been used to hold water for quenching. Necked, cordoned jars and bowls, often with rippled or corrugated shoulders (*ibid*, B1-1, B1-2, B2-1, B2-3, B2-4 (Fig 50, 728), B3, B3-2, B3-9, C2-1, C8-1 (Fig 50, 725), D1-2), barrel (*ibid*, B5-1, B5-3), bead rim (*ibid*, C1-2 (Fig 18, 126), C4), and lid-seated jars (*ibid*, C5-1) are also common, while rarer forms include imitation Gallo-Belgic platters, bowls, cups, butt beakers (*ibid*, G1, G2-3, G3-4, G5-5, G5-6), jugs (*ibid*, G6), and lids (*ibid*, L). The percentage of Patchgrove ware remains remarkably consistent throughout the Roman period, representing 4% or 5% of all the sherds found in late Iron Age, early, mid-, and late Roman features and deposits. However, if the sherds present in each phase are expressed as a percentage of the total number of Patchgrove sherds, its distribution reflects its mid-1st century AD origin (4% of the late Iron Age groups) and *flourit* in the Flavian–Trajanic period (46% from the early Roman groups). A further 40% of the sherds occurred in mid-Roman features and deposits but evidence from other sites in west Kent (Pollard 1987, 210; 1988, 38) suggests that only the storage jars and, possibly, a few of the necked, cordoned jar forms remained current, perhaps into the 3rd century.

Other coarsewares

During the middle decades of the 1st century AD, the coarseware assemblage, dominated by the shelly, grog-tempered, and sandy fabrics noted above, was supplemented by a range of minor wares, continuing the native ceramic traditions of the area. These include: fine shell- and grog-tempered ware; early shelly fabrics containing fossil marine bivalves (M Allen, pers comm); local flint-tempered wares (Monaghan 1987, 215, fabric F1/1); a fine sand with shell and mica-tempered fabric possibly from Cooling (Pollard 1988, 50); the glauconitic Kent Greensand fabric from the Maidstone area (*ibid*, 31–3); a red-surfaced grog-tempered ware similar to that made in Highgate Wood (Davies *et al* 1994, 75); and calcareous rock-tempered wares, all known from other sites in the Medway valley and west Kent. Together, they form 9% of the number and weight of sherds from late Iron Age features and deposits, falling to just 1% and less than 0.1% respectively of those of early and mid-Roman date. Vessel forms too, were based on the indigenous pre-Roman types. Bead rim jars (MON 3E, 3F; Thompson 1982, types B5, C1; Fig 18, 125) dominate with smaller numbers of proto- (Thompson 1982, type C3) and facetted (MON 3G; Fig 34, 437) and lid-seated forms, large storage jars (Thompson 1982, types C4 and C6-1; Fig 19, 146; Fig 22, 199), everted rim jars (MON 3I1; Thompson 1982, types B1–B3 (Fig 18, 131; Fig 20, 162), C2 (Fig 22, 205)), and bowls (MON 4D, 4I), necked cordoned bowls (MON 4A (Fig 42, 534) and 4J1; Thompson 1982, types D1-1 and D1-2 (Fig 20, 160–1)), and imitation Gallo-Belgic platters (MON 7B; Thompson 1982, type G1; Fig 22, 201). Rarer forms included butt beaker copies (*ibid*, type G5-6), lids, and strainer (*ibid*, type S1) sherds. The frequency of the local flint-tempered fabrics in this assemblage was surprisingly low (Table 1), but this perhaps highlights the flowering of activity at Springhead in the post- rather than pre-Conquest period. Overall, the difficulties of distinguishing between ceramic groups of pre- and post-Conquest date in Kent are well-known (Pollard 1988, 29–33, 41) and sadly, the groups from Springhead have proved no exception to this, the earliest being

identified by the absence of imports and otherwise Romanised fabrics and forms, rather than the presence of anything diagnostic.

Slightly later, from the late 1st century AD, a few vessels in a distinctive, coarse gritty sandy fabric with predominantly oxidised surfaces were reaching the site. Forms comprise bead rim (MON 3E, 3G and 3L) and everted rim (MON 3H, 3I) jars, bowls (MON 4D0), and storage jars (MON 3D0). The fabric is likely to be of local origin (perhaps Monaghan 1987, 247, fabric S2/1), its date range extending at least into the mid-/late 2nd century.

Throughout the Roman period, coarseware 'imports' from outside Kent were very rare, together forming only a fraction of 1% of the assemblage (Table 1). Although reduced products never formed more than a minor component of the *Verulamium* region industry, a few greyware vessels reached Springhead during the late 1st and especially the 2nd centuries. As in London (Davies *et al* 1994, 52), the most common form is the moulded rim carinated bowl (Tyers and Marsh 1979, type IVA; Fig 24, 254), although a jar rim and a two-handled flagon (*ibid*, type IJ) were also recorded. Early greywares from the Alice Holt-Farnham industry, on the Surrey/Hampshire borders (Lyne and Jefferies 1979), include two necked, cordoned jars (*ibid*, class 1A) from the roadside ditch 400200 and path 400172 (between properties 3 and 4), indicating at least limited acquisition during the period *c* AD 50–150. Similarly, tiny quantities of South-east Dorset Black Burnished ware from the Wareham/Poole Harbour region, including a carinated, Durotrigian-type bowl (Seager Smith and Davies 1993, type 15) from the roadside ditch, were reaching the site prior to AD 120. This trickle, probably arriving by coastal trade to the Thames estuary and/or redistribution through the major markets in London, continued during the 2nd and into the 3rd century, evidenced by a handful of bead- and everted rim jars and flat- and incipient-flanged bowls/dishes (Seager Smith and Davies 1993, types 2, 8 (Fig 37, 475), 22, 24; Gillam 1970, types 219–221 and 226/227), as well as a plain-rimmed dish, tentatively assigned a Dorset source, from the Pepperhill cemetery (Biddulph 2006c; Booth 2006c, section 4.4.11).

After the demise of the local greyware industry in the late 3rd or 4th century, much greater quantities of both Black Burnished ware, Alice Holt greyware, and, from *c* AD 325/30 onwards, the Overwey/Tilford variant are known on Kentish sites. Pollard (1988, 146) noted that Alice Holt greywares alone represented 8–10% of all the coarsewares in his 3rd and 4th century groups from Springhead and Rochester, and 14% from the 4th century infill of the Chalk cellar. Although this increase is apparent in this assemblage (Table 1), its impact is limited by the relative paucity of late Roman groups compared with those of earlier date and the vagaries of the phasing, which is reliant on the date of features rather than that of the individual deposits contained within them (see above). Late Roman Black Burnished ware forms consist only of the three most common and widely traded products of this industry – everted rim jars (Fig 53, 809), shallow, plain rimmed dishes, and dropped flange bowls/dishes (Fig 54, 822; Seager Smith and Davies 1993, types 3, 20, and 25). Late Alice Holt vessels included narrow-mouthed jars with moulded rims, flasks (Fig 52, 773), other jars, large bead rim jars, dropped flange bowls/dishes (Fig 53, 816; Lyne and Jefferies 1979, classes 1A and B, 2, 4, and 5B), and hooked rim jars (*ibid*, class 3C) in the Overwey/Tilford fabric. Tiny amounts of south Midlands shell-tempered ware, principally from Harrold in Bedfordshire (Brown 1994), was also identified in late Roman features. Diagnostic sherds are limited to a wheel thrown base and a body sherd with horizontal rilled decoration, both probably from angular, necked jars with triangular or hooked rims. In Kent, these wares date from the last 3rd of the 4th into the 5th centuries (Pollard 1988, 148) and are also known from the Thurnham villa, Northumberland Bottom, and Hazells Road (Booth 2006c, section 4.4.11).

Although no kiln sites are known, a relatively local source is likely for the range of hand-made, gritty grog-tempered fabrics which represent 3% of the sherds (4% by weight) from the late Roman features and deposits. These wares form part of a range of similar fabrics found widely across Wessex (Fulford 1975, 286–92) and the south-east of England, possibly developed in response to the decline of the nucleated pottery industries in a changing economic and social climate (Pollard 1988, 149–50). The fabrics vary but all are dark grey, brown, or black in colour, containing grog with small amounts of sand, flint, shell, vegetable matter, and/or other rock fragments. Forms imitate the South-east Dorset Black Burnished ware 'classics' – everted rim jars (Fig 53, 814–5), shallow, plain rimmed dishes (Fig 52, 761, 765), and dropped flange bowls/dishes (Fig 52, 766) – with facet-burnish or wiped surfaces, often with a soapy finish, and lattice or other burnished line decoration. In addition, sherds from a fairly slender flagon or jug with a plain rim and at least one rod-shaped handle attached to the top of the rim and the rounded shoulder were found in pit 16664, forming part of Shrine 400147 at the junction of Watling Street and the north-western branch road. Like all the other late Roman fabrics, findspots of these grog-tempered wares at Springhead were principally associated with the demolition deposits (group 400103) on property 2.

Distribution Across the Site

Overall, the ceramic assemblage was almost equally divided between the Roadside settlement (ARC SHN02) and the Sanctuary site (ARC SPH00). Only *c* 2% of the sherds were found in other excavation areas (eg, ARC ERC01) and during the watching brief (ARC 342E02). These sherds are very much smaller (average weight 7 g) than those from the main excavation areas and 96% of them were found in mid-Roman features and deposits. Although included in the overall

quantifications, material from these areas will not be considered in detail here.

Slightly greater quantities of pottery (53% of all sherds, 56% of the weight) were recovered from the Roadside settlement than from the Sanctuary site (45% of the sherds, 43% of the weight). Sherds from the Roadside settlement were also marginally larger (19 g compared with 17 g). It is possible that this slight difference is sufficient to suggest that domestic/industrial waste from the settlement was sometimes dumped on the Sanctuary site. No buildings or other foci of activity were identified in the vicinity of the pits to the north of the Sanctuary complex (group 400053), for instance, although almost 2000 sherds were found in these features. Naturally, the extent to which earlier deposits were disturbed and re-worked by later activity will also be a major influence on sherd size. However, analysis of votive deposits at the Roman shrine of Liber Pater (otherwise known as Bacchus or Dionysius), Alba Iulia, Romania has highlighted the possibility of ritualised pot smashing within the sanctuary complex (*Current World Archaeology* 2005, 38–45). Here, a series of 3rd century 'cult pits' contained a wide range of finds including numerous unbroken ceramic money-boxes as well as vessels, very similar in shape to Cam 306 bowls, that had been deliberately smashed after their deposition in the pits (*ibid*, 42). A traditional German pre-wedding ritual (*polterabend*; J Schuster, pers comm) also involves the community smashing pots or other noisy items (although today many other forms of rubbish are included) on the doorstep of the house where the couple are partying prior to the ceremony, the smashing noise believed to ward-off evil spirits and to bring luck, while the first act of togetherness for the bridal couple was to clear up the mess before the marriage service itself. Although these examples illustrate the types of ritualised activity that may result in smaller sherds, no firm evidence (one might expect, for example, deposits containing numerous complete but fragmentary vessels, perhaps even particular vessel types repeatedly found together), of such practices was encountered at Springhead.

The proportions of the six main fabric families expressed as a percentage of the total number and weight of sherds from each excavation area and the assemblage as a whole are shown in Table 12. Some obvious differences are easily explained; the large, heavy items such as amphorae and mortaria being better represented by weight than by the sherd count, the reverse for small light sherds like the imported and British finewares, but, in general, only very minor variations are apparent. British finewares and oxidised wares are marginally more common at the expense of the coarsewares within the Roadside settlement for example, but these fluctuations are only a matter of 2–3%. Similarly, although almost twice as many mortarium sherds were found in the Roadside settlement, the importance of mortaria within the assemblages from the two main areas of the site remains remarkably consistent (0.6% of the Roadside settlement sherds, 3% of their weight; 0.4% of the sherds, 2% of the weight from the Sanctuary site). More fundamental differences between the assemblages relate to the chronology of activity in the two areas (there were no late Iron Age features and deposits within the Roadside settlement while no late Roman features were identified on the Sanctuary site), but as Table 12 clearly shows, these have only minimal effects on the overall assemblage profiles. These differences are more apparent when the assemblages are examined by phase (Table 13). In the late Iron Age groups, for example, these manifest themselves in the tiny quantities of imported finewares, amphorae, mortaria, and British finewares (mostly from upper fills) with an overwhelming reliance on coarseware fabrics. A corresponding decline in the frequency of British finewares and oxidised wares (with the exception of Oxfordshire and Hadham products) with an increase in the coarseware group is evident among the late Roman material. The greatest range in the frequency by phase is apparent among the British finewares (1%, 14%, 11%, and 6% respectively of the sherds from the late Iron Age, early, mid- and late Roman features and deposits), but this too clearly relates to the chronology of the fabrics themselves. When considered individually, all the earliest fabrics, dating to the 3rd quarter of the 1st century AD and before, are almost three times as common within the Sanctuary site as in the Roadside settlement (6889 and 2471 sherds respectively). These early coarsewares in particular dominate the assemblages from the late Iron Age features and deposits, although many of the earliest fabrics, including the Arretine sherds for example, were found residually in later features. Conversely, much greater quantities of a far wider range of late Roman fabrics were found in the Roadside settlement (438 sherds) compared with only 15 sherds from the Sanctuary site.

Vessel Classes

Excluding samian and fragments too small to be assigned to particular vessel types, rims and occasionally other highly diagnostic sherds representing a maximum of 11,158 vessels of 461 different forms were identified. The vast majority of these are represented by very few examples – only 27 forms are represented by more than 100 examples, while 320 are represented by fewer than ten. The use of multiple type series depending on fabric, together with the identification of sub-types within the broader groups of each one (eg, Monaghan 1987, classes 4F1-6 within the general MON 4F 'cordoned bowl' category), is responsible for this plethora of codes and, as the illustrations (Figs 18–54) show, the range is far smaller in reality. For ease of discussion, the forms have been divided into 12 classes: amphorae, beakers, bowls, cups, dishes, flagons (including the far less common jug and flask forms), jars, lids, miscellaneous Roman types (cauldrons, *patera*, *tazza*, etc), mortaria, platters, and storage jars. These groups are based on

Table 12 Springhead pottery: overall quantification (no and weight (g) of sherds and % of the main fabric families) of Late Iron Age and Roman pottery from the main excavation areas

	Imported fineware		Amphora		Mortaria		British fineware		Oxidised ware		Coarseware		Total	Aver wt	% overall total
Temple/sanctuary complex and associated features (ARC SPH):															
No sherds	2103	4%	653	1%	209	0.4%	6125	11%	3811	7%	42465	77%	55366	17	45%
Wt	25113	3%	50,680	5%	17,058	2%	43,314	5%	46,210	5%	753,182	80%	935,557		43%
Settlement (ARC SHN):															
No sherds	2414	4%	695	1%	404	0.6%	8213	13%	5649	9%	46,954	73%	64329	19	53%
Wt	29529	2%	61,097	5%	36,757	3%	70,656	6%	76,206	6%	934,562	77%	1,208,807		56%
Watching briefs (ARC 342E02 and ERC01):															
No sherds	30	2%	3	0.7%	5	0.2%	53	3%	55	3%	1723	92%	1869	7	2%
Wt	581	4%	125	0.9%	981	7%	445	3%	698	5%	10,746	79%	13,576		1%
Complete assemblage:															
No sherds	4547	4%	1351	1%	618	0.5%	14391	12%	9515	8%	91,142	75%	121,564	18	
Wt	55223	3%	111,902	5%	54,796	3%	114,415	5%	123,114	6%	1,698,490	79%	2,157,940		

Table 13 Springhead pottery: proportions of the main fabric families expressed as % of total no and weight of sherds from each phase, and the assemblage as a whole

Ware Group	Middle/Late Bronze Age		Late Iron Age		Early Roman		Mid- Roman		Late Roman		Saxon		Medieval		Modern		Un-phased		Whole assemblage	
	% no	% wt	% no	% wt	% no	% wt	% no	% wt	% no	% wt	% no	% wt	% no	% wt	% no	% wt	% no	% wt	% no	% wt
Imported fineware	8	4	0.4	0.2	3	2	5	4	4	3	5	3	5	3	10	7	6	4	4	3
Amphora			*	*	0.8	4	2	7	0.3	3			0.2	*	0.8	6	1	8	1	5
Mortaria	1	9	*	*	0.4	2	0.7	3	0.7	3	0.3	2	0.7	3	0.7	3	0.6	4	0.5	3
British fineware	3	0.7	1	1	14	6	11	5	6	4	8	4	14	6	10	5	10	4	12	5
Oxidised ware	17	13	4	1	8	6	7	6	4	4	6	5	11	12	8	5	8	5	8	6
Coarseware	71	73	95	97	74	80	74	75	85	83	80	86	69	77	70	73	74	75	75	79
Total no	65		2615		60,659		49,266		4386		611		537		593		2832		121,564	
wt	1107		50,209		1,114,331		843,506		81,387		6814		6255		10,952		43,379		2,157,940	
Average sherd wt	17		19		18		17		18		11		12		18		15		18	

* = less than 0.1%

broadly comparable vessel shapes and proportions (*cf* Millett 1979, 37) rather than any considerations of function; like much modern domestic kitchenware, it is probable that most Roman pots were multifunctional, or at least had different uses on different occasions.

The proportions of the 12 vessel form classes in the assemblage as a whole, and from each of the main excavation areas, are shown in Table 14. Although the importance of certain groups (cups, bowls, dishes, and platters) is slightly suppressed by the exclusion of samian, this is unlikely to have had much serious impact on the overall proportions. Again, only slight variations are apparent in the assemblages from the Roadside settlement and the Sanctuary site, with the percentages fluctuating by just a point or two, while the order of frequency remains the same. Jar forms dominate in both areas, the majority being made in coarseware fabrics. When examined by phase (Table 15), predictable changes in the importance of the various vessel classes are apparent. The importance of jars, bowls, and beakers, for example, decreases with time, while dishes become more frequent, but these trends only reflect more widely-observed patterns across southern Britain as a whole (Millett 1979, 38–9).

Jar-dominated assemblages are traditionally associated with communal dining, where individuals helped themselves from a single, central vessel (Cool 2006, 54), and are considered to be especially typical of the late Iron Age and early Roman periods. In this area of Kent, the range of flagons/flasks, beakers, and cups, forms associated with the serving and consumption of liquids, began to increase in importance *c* AD 80–120, although relatively few of these forms outlasted the 2nd century. The period from *c* AD 120/30 onwards also witnessed the gradual decline of jars as a more diverse range of open straight-sided dish forms became widespread. Methods of quantification differ, but the overall proportions of the various form groups are broadly comparable with those from other sites in the locality (Booth 2006c, 192, table 4.19; see Biddulph below). Although reaching 66% of the vessels from the late Iron Age features and deposits (groups 300026, 400015, and 400016), the overall figure of 40% jars from Springhead is, however, lower than expected. Measured by EVEs, jar representation is less than 50% at only three HS1 sites, two of which have significant late Roman components (Booth 2006c, 192), while the third, the Pepper Hill cemetery, shows a specially selected assemblage bias towards drinking-related forms (Biddulph 2006c). Even at the Northfleet villa (see Biddulph below), again predominantly of late Roman date, jars represent approximately 49% of the vessels by EVE. At least in part, this relative paucity of jars at Springhead may result from a probable functional overlap with the jar-like, wide-mouthed bowls (MON 4), blurring the distinction between the two categories. Alone, these wide-mouth forms (MON 4A-D and 4F) account for almost half the total number of bowls (595 examples, 47%) and 90% of all those in the coarseware fabrics, and would perhaps be more appropriate for communal dining, their wider mouths providing easier access to their contents, than the relatively restricted jar forms. The remaining bowls predominantly consist of a wide range of finer types, often of more Continental style (eg, Marsh 1978, types 13, 29, 31, 33–37, 42, 44; MON 4G, 4H, 4J, and 5B), as well as a few late Roman types from the Oxfordshire industry (Young 1977, types C45, C49, C51, C78, P24, and W54).

All the dish forms present in the late Iron Age and early Roman features and deposits belong to the straight-sided types developed in the local Thameside/Upchurch industry from *c* AD 110/20 onwards (MON 5A, C–F, and 5O), together with a few similar forms in south-east Dorset Black Burnished ware (Seager Smith and Davies 1993, WA 20, 22, and 25). Most were from the upper fills of these earlier features, but their presence highlights the limitations of the Springhead phasing system as these forms are definitely intrusive in these period groups. By the mid-Roman period, the straight-sided forms represent 24% of the vessels from each of the main areas, rising to 42% and

Table 14 Springhead pottery: proportions of the main vessel classes in the assemblage as a whole and from each of the main excavaton areas, expressed as % of total identifiable vessels, mostly rims

Vessel class	Whole assemblage	Temple/sanctuary complex & assoc features	Settlement
Amph	0.1	0.1	0.1
Beaker	9.0	9.0	10.0
Bowl	1.0	11.0	12.0
Cup	0.4	0.3	0.5
Dish	17.0	16.0	18.0
Flagon	2.0	2.0	3.0
Jar	42.0	43.0	40.0
Lid	6.0	6.0	5.0
Misc forms	0.4	0.5	0.2
Mortaria	1.0	1.0	1.0
Platter	4.0	4.0	3.0
Storage jars	7.0	7.0	7.0
Total no	11161	4863	6220
as % of total sherds	9.0	9.0	10.0

Table 15 Springhead pottery: proportions of the main vessel classes in the Late Iron Age and Roman features and deposits, expressed as % of total identifiable vessels, mostly rims

Vessel class	Late Iron Age	Early Roman	Mid-Roman	Late Roman
Amphora		0.1	0.1	
Beaker	10.0	11.0	8	6.0
Bowl	10.0	16.0	9	4.0
Cup	0.6	0.6	0.2	0.2
Dish	5.0	6.0	24	42.0
Flagon		3.0	2	3.0
Jar	66.0	39.0	43	40.0
Lid	0.6	7.0	4	0.5
Misc forms		0.4	0.2	0.1
Mortaria		0.9	2	2.0
Platter	2.0	6.0	2	
Storage jars	6.0	10.0	5	3.0
Total no	157	4920	5011	627
% total sherds	6.0	8.0	10	14.0

surpassing jars among the late Roman groups from the settlement although, with the exception of the flanged bowls (MON 5A), the majority were probably residual by this time. Together, the plain and decorated pie-dishes (MON 5C and D), the 'dog-dishes' and grooved dishes (MON 5E and F) account for 93% (1736 examples) of all dish forms and may have been used together, as casserole 'sets', rather like modern pyrex. These vessels, together with smaller numbers of everted rim jars (MON 3J; 842 examples; 18% of all the jars) form the mainstay of the 'BB2' industry, lasting into the early decades of the 3rd century, their distribution reaching the Antonine Wall.

The drinking vessels (beakers and cups) and associated containers (flagons, flasks, and jugs) together represent 12% of the forms. This compares with almost 38% in the highly specialised Pepper Hill cemetery assemblage (Biddulph 2006c; Booth 2006c, 195, table 4.19), but is close, despite the absence of samian and differing chronological ranges, to the figures from other HS1 sites (*ibid*, 195) and the Northfleet villa (see Biddulph below). The Springhead beakers most commonly occur among the British finewares, especially in the local Fine Greyware fabric. Overall, they are dominated by the biconical forms (MON 2G) which accounts for 39% of the total, a ratio of approximately 2:1 over the poppy-head types (MON 2A), the next most common form. Overall, the smaller numbers of cups are divided almost equally among the local fine-, coarse-, and oxidised wares, although the proportions vary quite widely between the two main excavation areas, while the imported examples are artificially lowered by the absence of samian. Naturally enough, the flagons are always most common among the oxidised wares.

Amphorae and mortaria were never frequent at Springhead but lids, their diameters suggesting that they were mostly used with jars, represent 5% of the vessels overall, and are predominantly made of coarseware fabrics. Although equally important in both main excavation areas, they are poorly represented among the vessels from both the late Iron Age and the late Roman features and deposits, and less common in the mid-Roman groups than those of early Roman date, confirming Monaghan's (1987, 166) suggestion that they were a predominantly 1st century AD form. As Monaghan also pointed out, they were considerably less frequent than the main lid-seated jar and jar/bowl forms (MON 3L and 4C1.2), occurring at a rate of approximately one lid to every four jars. Similarly, the distribution of platters and the large storage jars by phase highlights their position as predominantly 1st–early 2nd century forms, the platters being replaced by the various straight-sided dishes developed during the 2nd century. The use of ceramic storage jars, however, seems to have suffered a terminal decline from around the second quarter of the 2nd century, as, with the exception of one or two Thameside/Upchurch greyware jars (eg, Fig 48, 655), large ceramic vessels did not occur again, their role presumably being fulfilled by containers of other material types, such as barrels or baskets.

'Special' vessels?

The miscellaneous forms largely consist of a group of well-known but comparatively uncommon vessels, often interpreted as having particular religious or ritual significance. These include *tazze*, triple-vases, *unguentaria*, *paterae*, and the various forms of deliberately-made strainers (as opposed to vessels perforated after firing), as well as miniature examples of otherwise 'standard' forms. Cauldrons and the ceramic 'gridirons' or trivets may also be added to this group, while *tettine* (small, spouted vessels, MON 13) belong here too, although none has been identified at Springhead. Some of these forms, such as the *tettine*, *tazze*, and miniatures, seem to have been especially favoured for deposition in graves (five *tettine* and one *unguentarium* were found in the Pepper Hill cemetery, for example; see Booth 2006c, section 4.5, 196) but, in general in Roman Britain, these forms are found only in very small numbers on any one site and, as in many things archaeological, it is their rarity that is at least in part responsible for the religious/ritual interpretation placed upon them. The large assemblage from Springhead, where together these forms occur at least in tens rather than just single figures, which encompasses an obvious range of different functions, from domestic settlement to industrial activities as well as ritual/religious complexes, is clearly an ideal springboard from which to examine these forms and the contexts in which they occur.

Sherds from just three *tazze* were found at Springhead; two (one internally scorched) in *Verulamium* region whiteware, from segment 6666 (context 6660) of early roadside ditch 400009 and consolidation layer 5500 within the Sanctuary temple area (group 400033). A tentatively identified example in a very gritty Greyware fabric (Fig 54, 824) was found in late Roman layer 16687 (property 4) in the Roadside settlement. These vessels are generally interpreted as libation cups, lamps, lamp holders, or incense burners (internal surfaces are commonly scorched), their high base cavities perhaps suggesting that they were mounted on poles or stands (Davies *et al* 1994, 51). Examples have occasionally been found within sanctuaries and, more commonly, in burials, perhaps providing evidence of graveside rituals (Eckardt 2002, 96, 106–9). However, it is highly probable that they were also used in purely domestic contexts (Woodfield 2005, 209), especially if they were associated with lighting or if incense was perhaps used in a medicinal role. Outside London and the major centres such as Colchester, these vessels are most common on military sites and they form part of the standard range of forms made for and by the army. *Tazze* occur in contemporary depictions of Mithraism and examples have been found on a variety of Roman sites associated with eastern deities such as Cybele and Mithras, the latter much beloved by the military (Eckardt 2002, 98). Consequently, their presence has

been used to point to religious activity among the military on the sites where they occur but, again, these vessels were not an exclusively military form. Examples have been found in Britain in association with other lamps and burnt oak and/or pine cones – although pine cones too are known to have been associated with the eastern cults (*ibid*, 96); there are also documentary references to burning pine cones during childbirth (R McBride, SGRP Conference 2003, Newcastle), a far more exclusively female activity.

Part of a triple vase (Cam 494; Fig 46, 645), another form often assigned a ritual significance (M Green 1976, 47), was found near the base of the mid-Roman ritual shaft 2856 (context 6619). Triple vases were manufactured at a variety of centres throughout the Roman period, although they were perhaps most common during the 2nd century (Gillam 1970, 34; Davies *et al* 1994, 51). This example was made in Hoo white-slipped red ware and the form is previously unknown in this fabric. An example from Lullingstone, however, was also made in a sandy white-slipped ware (Pollard 1987, 272, fig 86, 299), while a similar 'orange' vessel, originally part of at least a pair, now in the Guildhall Museum, Rochester, was probably collected from the banks of River Medway (Monaghan 1983, 203, fig 1, 5). Their function remains uncertain (Bird *et al* 1978, 229), but they may have been used to mix different liquids (Davies *et al* 1994, 51), or to hold offerings such as flowers, eggs, incense, or liquids placed before household or public shrines, or have been placed in graves (Philpott 1991, 109–10). The number three seems to have had magical, perhaps apotropaic, significance to both the Romans and the native inhabitants of the British Isles and the use of these vessels may be associated with various triads of deities. Mars, for example, was often to be found with Jupiter and Quirinus in urban cults and with Jupiter and Janus in more rural ones (Macdonald 1977, 35), while there are numerous sculpted depictions of triads of 'Celtic' gods, such as the *suleviae*, the three mothers, or the *genii cucullati*, three hooded males.

Although only one bowl of the Springhead triple vase survives, the possibility of some ritual usage or symbolism is a tempting interpretation, especially as numerous structured deposits of dog and other animal carcasses, as well as re-deposited human bone and nailed boots/shoes, were found in shaft 2856. Sherds from complete or semi-complete Thameside/Upchurch greyware vessels, one possibly containing the remains of a nailed boot or shoe (SF 9215), were found in the basal fills (6619, 6620, 5285, and 5284) of shaft 2856 but, unfortunately, excavation constraints prevented the detailed recording of these lowest layers and it is unclear whether or not the pots formed part of the special deposits. Certainly, there was nothing exceptional about the other pottery from this pit (Figs 46–7), which was dominated by fabrics and forms contemporary with its infilling in the last decades of the 2nd century or early 3rd century, together with a few earlier, residual sherds. At just 14 g, the average sherd weight is below that for the Sanctuary site as a whole and, like the triple vase, most of the sherds represent only small parts of whole vessels. Other material types included shell, slag, building materials, and a host of bits and pieces which may not have had any great 'ritual' significance either. Exactly why there should be such apparently undifferentiated domestic debris, much of which had been lying around for some time prior to its deposition, in an otherwise 'ritual' feature, is unclear, but there is no unequivocal evidence that ceramics played any significant part in these 'structured' deposits.

The three small, low-waisted, oxidised ware jars of form Cam 389 (Fig 30, 360; Fig 45, 616; Fig 48, 660) were also comparatively unusual finds. The form predominantly belongs within the 2nd century and has received a variety of interpretations. The most common is as unguent jars (*unguentaria*), containing cosmetic, perfumed, or medicinal oils or pastes, but Wheeler and Wheeler (1936, 191, fig 32, 45 and pl lix) found numerous examples during the excavation of the Triangular Temple at *Verulamium* where '… they undoubtedly were employed for a ritual purpose' (Frere 1972, 264), while the form is commonly found in burials (Anderson-Stojanovic 1987), including one from Pepper Hill (Booth 2006c, section 4.5, 196). However, Frere's excavations at *Verulamium* (1972, 264) found them in industrial contexts, associated with metalworking; other suggestions have included their use in hypocausts (Bird *et al* 1978, 361), while the form is sometimes referred to as an amphora stopper (their small capacity perhaps being offered to prospective purchasers as a sample of the amphora's contents). All three Springhead vessels were found without their rims; this is common at other sites too and is perhaps related to the way these vessels were sealed, the rims being knocked off to open them. One (Fig 30, 360) was found in the spring itself, one was from the mid-Roman deposits post-dating rectangular structure 400042 (layer 2674, Fig 45, 616) in the Sanctuary complex while the third (Fig 48, 660) was found among the pre-temple infill deposits (context 12133, group 400107) on property 2. Locally, a complete example from the Northfleet villa (see Biddulph below, Fig 63, 68) was found in a late 1st or 2nd century pit.

A short, stubby handle (Fig 49, 702) with incised decoration probably from a small, saucepan-like vessel, in an oxidised sandy fabric, was found in mid-Roman layer 17833 on property 3. Such ceramic *paterae* or skillets represent (albeit rather poor) copies of *trullea* – the flat-based, hemispherical bowls with long elaborated handles made of silver and copper alloy that often occur with jugs as part of a sets, apparently used for washing hands in both domestic and religious contexts (Cool 2006, 47) and are frequently seen with jugs carved onto altars (Marsh 1978, 137). A sister form to these metal pans, shallow dishes again with long elaborate handles are often associated with bathing (Cool 2006, 47, fig 6.5). Sherds from two ceramic copies of this form (Marsh 1978, 164–5, type 31) were also identified at Springhead – one, in the local Fine Greyware fabric, was

also from property 3 (early Roman layer 17779, group 400197) and the other, in mica-dusted ware, from segment 16655 of the early Roman roadside ditch 3 (context 16641, 300545). Examples are known from purely secular contexts (eg, Biddulph 2007, fig 3.11, 37), but there is no evidence from these vessels themselves to suggest whether they were used for culinary purposes or in religious/ritual practices, for handwashing or, for example in the pouring or collecting of libations (Woodfield 2005, 209) associated with household or public shrines. However, it may be significant that two of the three Springhead examples were associated with property 3, if indeed the activities centred here were involved in the baking of temple offerings or in the preparation of food for communal consumption associated with temple activities.

Overall, fragments from 15 strainers were recognised, comprising nine examples of the deliberately manufactured, strainer/colander bowl (MON 11; Thompson 1982, 559, type S1) with numerous pre-firing perforations through a rounded or flat base, and six spouted strainer bowls (Hull 1963, 187, Cam forms 322 and 323; Marsh 1978, 181–4, type 46). Although manufactured in a wide range of fabrics at many different centres throughout the Roman period (eg Davies *et al* 1984, 159, fig 138, 885; Lyne and Jefferies 1979, 46–7, fig 33; Woodward 1987, 91, fig 50, 184; Young 1977, 228, fig 84, R80), strainer/colander bowls are never common finds, although they do represent part of the standard range of Romanised forms. The upper part of these vessels is often indistinguishable from other, solid-based bowls made by the same industries and, although no direct connection has been established, it is possible that these forms, in the early Roman period at least, represent translations into ceramics of the long-handled metal strainers characteristic of the late Iron Age in Britain and in areas beyond the frontiers of the Empire (Cool 2006, 144). All the Springhead examples are represented by base sherds only, but the fabrics suggest that the form was present from the inception of the town, around the middle of the 1st century AD. The first examples occur in fine shell- and grog-tempered ware (context 11470, fill of segment 11468 early Roman Roadside ditch 300385), grog-tempered ware (context 11068, segment 11339, early Roman Roadside ditch 300451), and sandy ware (in layer 11436 in property 11). Two examples of later 1st–early 2nd century date are both from property 3, from early Roman layers 19075 (group 400178) and 19398 (group 400186), in the fine local oxidised ware and an unassigned oxidised fabric respectively. Sherds from two strainer/colander bowls were found in early Roman layer 2831, representing part of the secondary use (group 400046) of 'Viewing platform' 2, one of north Kent/south Essex shell-tempered ware and one of Thameside/Upchurch greyware, while other Thameside examples were found in early Roman layer 5544 (group 400039) associated with one of the 'bakery' structures pre-dating the Sanctuary and unphased pit 2940 (context 2939). Such vessels could have been used for a variety of domestic, culinary, and even industrial purposes and, indeed, may have been multi-functional, serving to filter out any sort of watery liquid, but the scarcity of the form across the province, at least during the early Roman period, perhaps hints at something more specialised than simply straining vegetables.

The spouted strainer bowls have traditionally been associated with the consumption of wine, to remove the lees, or in the preparation of spiced or perfumed beverages described by writers such as Apicius and Pliny. Although copied from bronze versions, there are no prototypes for the spouted bowls in the Roman world and no consistent association between them and wine amphorae has been noted in Britain (Sealey 1999, 122–4). Evidence from eastern England, however, has suggested that they were used to make an infused native or 'Celtic' beer (*ibid*, 123) although alternatives, such as the preparation of herbal infusions or serving of mead, cannot be completely excluded. At Springhead, the five spouted strainers occur in finer fabrics than the strainer/colander bowls and all are likely to be of late 1st or early 2nd century date. The most complete, represented by seven joining sherds of *Verulamium* region whiteware from early Roman pit 16471 on property 5 (Fig 38, 481), has horizontal strap handles under the rim, the upper surface of which is rilled, while three joining sherds from a sharply carinated biconical vessel in Upchurch Painted ware were found residually among the deposits post-dating the mid-Roman structure 600639 on property 3 (sub-group 300640, group 400188). The third example, consisting of a body sherd in an unassigned whiteware fabric from early Roman pit 2925 pre-dating the Sanctuary complex (group 300130), was more tentatively identified, and may just belong to a deep bowl with a vertical flange (*cf* Marsh 1978, 170, type 37). Sherds from two mica-dusted ware spouted bowls were found in early Roman pit 10338 in the circular building on property 11 and in mid-Roman colluvial layer 5600 in the spring. Two joining pieces from a mica-dusted ware ring (Fig 41, 531) were found in layer 11267 and early Roman pit 11240 (context 11302) associated with the first or second phase of the smithy on property 10. Simple rings attached to handles are known on cauldron-shaped vessels from Colchester (Symonds and Wade 1999, Cam 302, fig 6.82, no 819), perhaps representing suspension loops, while evidence from other mica-dusted ware vessels from London suggests that they may also be associated with the spouted strainer bowls (Marsh 1978, 184, type 47).

Sealey (1999, 123) also identified a functional link between the spouted strainer bowls and cauldrons in which the beer or mead could be prepared. Nine cauldrons were identified, all in the north Kent/south Essex shell-tempered fabric, including four from the Sanctuary site, all found close to the springs: early Roman circular structure 400028 (Fig 24, 243), early Roman 'bakery' 400039 (Fig 25, 281), early Roman pit 3546 (Fig 29, 338), and mid-Roman well 2706 (Fig 45, 615). Within the Roadside settlement, examples were

found in mid-Roman layer 17043 on property 3 (Fig 49, 682), middle Roman layer 17439 forming part of the channel fills (group 400175) on property 4 (Fig 49, 704), and watching brief (ARC 342E02) layer 200wb (Fig 50, 709), while rims from two vessels were found in mid-Roman layer 10405 on property 11 (Fig 50, 711–12). Sadly, cauldrons were not found in any of the same contexts as strainers, but broad connections between the forms associated with the early 'bakery' on the Sanctuary site and on properties 3 and 11 may be of relevance here. The cauldrons and strainers, then, may reflect at least a limited taste for spiced/infused beer at Springhead, although their scarcity at this site, as across the province as a whole (Cool 2006, 147), implies that this was enjoyed only by certain sections of the population, perhaps at particular times or in association with certain activities. As both Cool (*ibid*, 147) and Sealey (1999, 122) point out, the preparation of this drink points to the continuation of the native, Iron Age traditions, owing little or nothing to wine and the Roman world, but rather harking back to the 'good old days' of a British aristocratic elite, feasting, and display, perhaps though at a lower level within the social hierarchy, the elaborate metal vessels previously used being downgraded into ceramic forms by the mid-/late 1st century AD.

Thirteen miniature vessels were found at Springhead, all but two on the Sanctuary site. Although some are more carefully finished than others, all are made in the local pottery fabrics and mimic standard, full-sized forms of later 1st–early 2nd century date (MON 9). Miniature vessels are a feature of many temple sites and ritual deposits (eg, Wheeler and Wheeler 1936, 191–2, pl lix; Green 1976, 43 and catalogue; Woodward and Leach 1993, 140–5; Howe *et al* 2001, 349) while, as noted above, the form is sometimes found in graves. Green (1981, 266) has suggested that the act of miniaturisation was an expression of, and an essential part of, ritual, the size of the object enhancing its cult significance in the Romano-Celtic world and beyond. One of the Springhead miniatures, a short-necked, biconical flask in the local Fine Greyware fabric (Fig 22, 207) was deliberately deposited, together with the Central Gaulish hair-pin beaker (Fig 22, 206), in cenotaph 6104 (group 400025). However, it is unclear whether a small area of damage just beneath the shoulder of this little flask was intentional, prior to its deposition in the burial to send the vessel into a world beyond the temporal, for instance, or accidentally caused, perhaps during firing or use; the Central Gaulish vessel was undamaged.

Two miniatures were associated with the primary use of 'Viewing platform' 400045: a tiny proto-bead rim jar (Thompson 1982, 569, S5) in grog-tempered ware from early Roman pit 2727 (Fig 27, 289) and a sherd from a Thameside/Upchurch greyware jar with a more everted rim (Monaghan 1987, 162, MON 9A4) from gully 2942. Part of a second miniature flask in the local Fine Greyware fabric was found in roadside ditch 1 (Fig 31, 366) but all the other miniatures were made in Thameside/Upchurch greyware. Of the others from the Sanctuary site, seven (from terrace/cut 5491 associated with the early road (300017); post-hole 5706, to the east of enclosing ditch 400017; layer 5780 – surface finds from the temple area; layer 6115 (Fig 24, 237) from the clay-floored circular building 400028; pits 2236 (Fig 44, 585) and 2958 in the alignment (300073) forming the boundary beyond the north end of the portico building (group 400023); and natural feature 2998) are based on bead rim jar forms (MON 9A3). The two other vessels from the Roadside settlement comprise a rim from a tiny cup-mouthed flagon (MON 1E) from mid-Roman pit 10201 within the circular building 400124 on property 11 and an almost complete bead rim jar (Fig 50, 724) from an overburden layer (context 16001).

Although most of the miniatures differ only in size from the standard products of the local industries and could, therefore, be seen as children's toys or potters' samples, their close association with the Sanctuary site implies that their usage was allied to the activities carried out there. The Uley vessels, for example, were interpreted as containing small, perhaps symbolic, quantities of items such as incense, cereal grains, wine, or beer offered to the various deities worshiped in the shrines (Henig 1993, 112), while at least some of those from Surrey (Howe *et al* 2001, 349) may have contained cannabis (*Surrey Archaeological Society Bulletin* 2003). However, despite their association with the Sanctuary site, only the flask from cenotaph 6104 was deposited in anything approaching a structured or special manner, all the others occurring in features and deposits containing apparently normal domestic debris.

Although not strictly vessels, pieces from at least two ceramic 'gridirons' or trivets were found, one (Fig 42, 557) in the north Kent/south Essex shell-tempered ware from layers 11681 and 10819, pre-dating the earliest phase of the circular structure on property 11 (group 400127) and two non-joining fragments in a sandy ware (Fig 27, 295) from early Roman ditch 2174 associated with the primary use of 'Viewing platform' 400045. These items were presumably copied from iron gridirons but these were not common in Roman Britain either; one is known from Lullingstone (Meates 1987, 107, fig 49, 307) while a recent survey listed only eight other examples (Crummy 2005b), although many more may have been recycled in antiquity or, upon excavation, fragments may have been ignored, mis-identified or simply labelled 'bar'. Crummy concluded that metal gridirons were never standard pieces of domestic kitchen equipment at any social or cultural level in civilian Roman Britain, her examples having either strong military associations or being from hoards (*ibid*, 62, table 1), while the Lullingstone example was found re-used as a wedge, supporting the coffin in the temple mausoleum (Meates 1979, fig 32b). Ceramic 'gridirons' do not seem to have been any more frequent; such items were presumably very fragile and subject to thermal shock so, if in common usage, many fragments might be expected from a wide range of sites. An albeit rapid search of the Kentish literature has revealed only eight pieces from

Canterbury, probably of 'Belgic' or early Roman date (Barford *et al* 1995, 1183), although the unglamorous nature of the material and the relatively low level of publication applied to most sites in the county perhaps precludes against their frequent appearance in reports. Elsewhere, examples are known from a small rural settlement at Shedfield, Hampshire (Holmes 1989, fig 7.7), among the debris from the Alice Holt pottery kilns (*ibid*, 38; Birbeck *et al* 2008) and from settlements associated with pottery, salt production, and other industries at Wytch Farm (Cleal 1991, fig 66, 16–19, 21, 25–6) and Bestwall Quarry (Lyne forthcoming, fig 129, 21), Dorset, while other examples were found at Orton Longueville (Rollo 2001, 75, fig 43, 193) and Chesterton (Perrin 1999, 124, fig 74, 501) in Cambridgeshire. An unpublished piece from East Hanney, Oxfordshire is housed in Reading Museum (P Booth, pers comm). All the pieces are well-burnished and made in fabrics consistent with the locally-produced pottery. There are few indications of function from any of these sites but the underside of one of the Dorset pieces (Cleal 1991, fig 66, 25) was heavily sooted, indicating its use in some activity involving fire. Three of the pieces from Canterbury were associated with an apsidal building in St George Street (Frere and Stow 1983, 178, fig 69) and this, together with the example(s) from 'Viewing platform' 400045, as well as the overall rarity of these items, strongly hints at more specialised, non-domestic functions, perhaps even associated with the preparation of 'Celtic' beer.

When considered together, the distribution of the 'special' vessels is remarkably even between the two main areas of the site: 21 from the Roadside settlement and 26 from the Sanctuary site, while they are marginally more frequent among material from the early Roman features and deposits. Although still only representing a fraction of 1% of the total assemblage and, therefore, a random distribution might be expected, certain feature groups show distinct clusterings. On the Roadside settlement six were found on property 3 and five on property 11, while on the Sanctuary site four were associated with the primary (400045) and two with the secondary (400046) use of 'Viewing platform 2'; three were associated with the earliest of the sequence of 'bakeries' (400037 and 400039), two with circular structure 400028, and a further two were from pit alignment 300073. However, the precise significance of this is uncertain, for although ritual/religious activities may have taken place in these areas, the distribution of these rare forms might simply be a matter of weight of numbers because the greatest quantities of pottery were also found here. Some sort of ritual/religious purpose seems appropriate for at least some of these vessels, especially the miniatures, the *unguentaria*, and the various forms perhaps connected with the preparation of Celtic beer. However, it is perhaps naïve to expect any more obvious spatial patternings at a time, and in a culture, where religion and its associated rites and rituals formed an intimate and inseparable part of daily life and where more everyday vessels may well have sufficed in similar roles. One example of this may be the small, well-worn 'pie-dish' (Fig 30, 361) found in the spring. The complete state and context of this vessel suggested that it may have represented an offering of some kind, although its physical appearance did not differ from the multitude of similar vessels found in purely domestic situations.

Although not numerous, the distribution of the samian form 42 and 46 vessels at Springhead may lend additional strength to the argument that these forms too had a ritual/religious significance. One form 42 (D2) dish and three form 46 cups accompanied burials in the Pepper Hill cemetery (Bird 2006), while the 'sacred pool' in the main temple complex to the south excavated by Penn also contained one form 42 and one form 46 (Penn 1960, fig 8, table 8). Bird suggested that these forms may have been chosen especially for burial and other ritual uses, the barbotine leaf decoration on the form 42 vessels perhaps recalling the wreaths sometimes placed on the head of the deceased. The form 46 cups were, however, completely plain, so, if chosen for special uses, Bird suggested that the criteria for their selection might be related to their shape.

Considering the samian form 42 and 46 vessels from all production centres together, certain differences in their distribution are apparent. Five of the seven plain cups (form 46) are from the Roadside settlement (two from property 3, one from property 11 and two from unassigned contexts), while the other two were both associated with the 'Viewing platforms' (400044 and 400055) on the Sanctuary site. Conversely, five of the 11 barbotine decorated forms (four of the five form 42 D2 dishes from the site, and one form 42 E1 cup), were associated with the Sanctuary site. The fifth dish was in a pit in property 11, while the other five cups are from properties 2 (forms 42 D1 and E1) and 9 (two of form 42 D1) and an unassigned context (form 42 D1), all on the Roadside settlement. It is notable then, that of the 18 examples of these forms, 13 are from the same areas as most of the other specialised forms and where ritual/religious activities, or at least the preparations for them, might have taken place.

Table 17 Springhead pottery: proportions of the assemblage (% by sherd) count recovered by phase on properties on the north-east side of Watling Street

Phase	Prop 2	Prop 3	Prop 4	Prop 5	Prop 6	Prop 7	Prop 8
Early Roman	15	49	30	45	14	41	77
Mid-Roman	44	48	44	46	86		20
Late Roman	36	2	25	3		10	
Post-Roman/unphased	5	1	*	6	*	49	2
Total no of sherds	7339	9763	4144	1996	994	564	431

Feature Groups

The pottery found in each of the major feature groups is summarised by ware group and, where more than 99 rims were present, by vessel form class in *Table 16*. Like all other aspects of the assemblage, these groups are remarkably uniform, with chronology again the major governing factor in assemblage composition and with only those features containing the smallest quantities of material deviating to any substantial degree from the norm. Overall, the recovery of sherds across the site broadly reflects the differential survival of the archaeological features and deposits themselves, with the greatest quantities of pottery being from areas with the deepest stratigraphy and best preservation which, naturally enough, were the focus of excavation. Alone, the five most prolific groups (properties 2, 3, 10, 11, and 'Viewing platform' 400045–6) account for approximately one-third of the whole assemblage (by sherd count), rising to 47% if all elements of the Sanctuary complex itself are considered together. In this area of the Sanctuary site, it is notable that the smallest sherds were recovered from the mid-Roman colluvial deposits in the spring. This, coupled with the range of 'ordinary' fabrics and forms present (dominated by coarseware jars and dishes as opposed to more exotic vessels), suggests that most are naturally derived rather than being deliberately selected and deposited in this area in any ritualistic way, although the *unguentaria* and complete 'pie-dish' (Fig 30, 360 and 361) noted above may provide exceptions to this. Within the Roadside settlement, the smallest sherds were recovered from property 6, although almost two thirds of the pottery from this area is derived from a single pit (16470; 599 sherds, 5009 g), with approximately 90% of these by sherd count (527 pieces) being from its chronologically mixed upper fill (layer 16747) and possibly, therefore, derived from elsewhere. The reduction in assemblage size across properties 3–8 also amply illustrated the fall-off of activity in these zones and, when examined by phase (Table 17), the contraction of the settlement on the north-east side of the road through time. It must, of course, be remembered here that there was only limited investigation of the early Roman deposits on property 2 because the temple structure itself was preserved *in situ*. Furthermore, the surprisingly large quantity of unphased sherds from property 7 is predominantly from the pre-building soils (300527) found beneath building 300522, assigned only a general 'Roman' date (though probably early).

Late Roman activity was more or less confined to property 2 (76% of all sherds assigned to this period were found here), concentrated in the abandonment layers around the 'platform' within the central part of the former temple. The ceramics indicate limited occupation continuing into the late 4th or early 5th century. The late Roman deposits on property 4 consisted of layers 16687 and 16863, the upper fills of tank 16731 (contexts 16734 and 16735), and slot 17022, while features 82 and 146 on property 7 also belonged to this period. This reduction in activity from around the middle of the 3rd century is comparable with the situation noted elsewhere in Kent (Booth 2006c, 192), coinciding with the demise of the Thameside/Upchurch industry (Monaghan 1987, 228–30), although the reasons for it remain unclear. There was, however, no evidence for the contemporary usage of Roman and Anglo-Saxon pottery on the site. Only small quantities of Roman pottery were found in the features and deposits assigned a Saxon date (predominantly groups 300131, 400063, and 40064) and, at an average of only 11 g, they are considerably smaller than those from the preceding period groups. In all, 22 fabrics are represented but there is no particular emphasis on the white, colour-coated, or red firing fabrics sometimes seen amongst Roman pottery from Saxon features (Plouviez 1985, 84). Only the Thameside/Upchurch greywares, north Kent/south Essex shell-tempered, Fine Greyware, and grog-tempered wares are present in quantities of 40 sherds or more (239, 166, 42, and 40 sherds respectively). Rims are slightly scarcer than average too (52 or 8.5% by sherd count), but are dominated by jars (48%) and dishes (25%). Overall, the range of this material is chronologically mixed, while none of the characteristically latest wares or vessel forms is included, suggesting that it resulted from the accidental disturbance of earlier deposits.

Illustrated catalogue of feature groups

Late Iron Age

(Fig 18)

Pit 3010, 300025, 400010, Processional way and enclosure:

117. Wide-mouthed bowl (Thompson 1982, type D1-4); Grog-tempered ware; (3029); PRN 825.
118. Plain jar with internally thickened rim (Thompson 1982, type C3); Grog-tempered ware; (3029); PRN 826.
119. Necked, shouldered jar; post-firing perforations for staple/rivet repair; Sandy fabric; (3029); PRN 828.
120. Cordoned bowl with an inward leaning neck (MON 4F3); Thameside/Upchurch greyware; (3012); PRN 829.
121. Small, plain everted rim jar (Thompson 1982, type C2-2); Grog-tempered ware; (3011); PRN 830.
122. Bead rim jar (MON 3E1; North Kent/south Essex shelly ware; (3051); PRN 831.
123. Bead rim jar (MON 3E1); Early Shelly Ware; (3019); PRN 840.
124. Butt beaker (Thompson 1982, type G5-6); Grog-tempered ware; (3019); PRN 842.

Pit 3272, 300037, 400015, Late Iron Age enclosure and associated features:

125. Lid-seated jar with a grooved rim (MON 3L2); Flint-tempered ware; (3273); PRN 865.

Pit 3335, 300037, 400015, Late Iron Age enclosure and associated features:

126. Rounded jar with bead rim (Thompson 1982, type C1-2); Patchgrove ware; (3339); PRN 749.
127. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (3339); PRN 752.

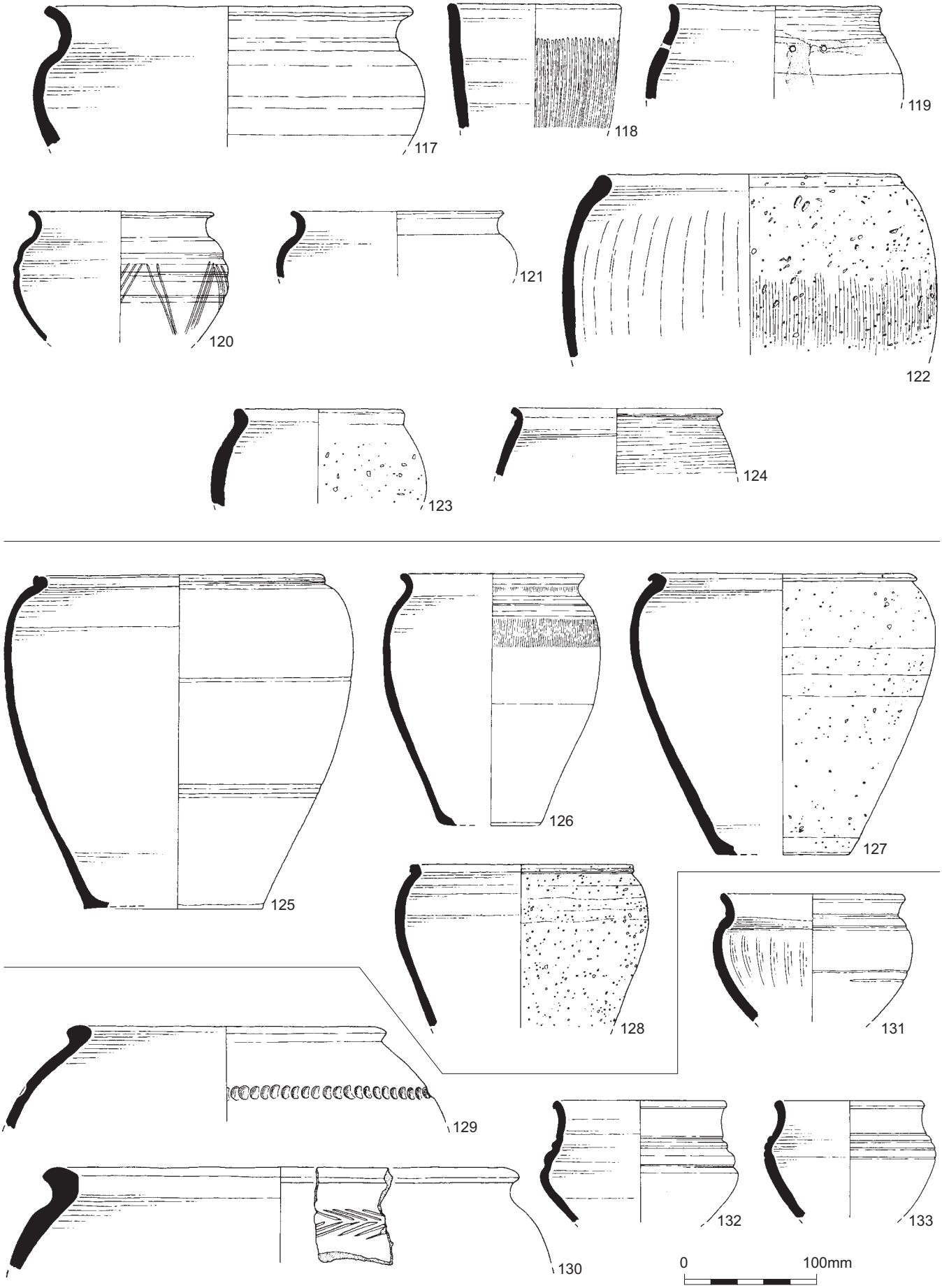


Figure 18 Springhead: pottery groups, Nos 117–33

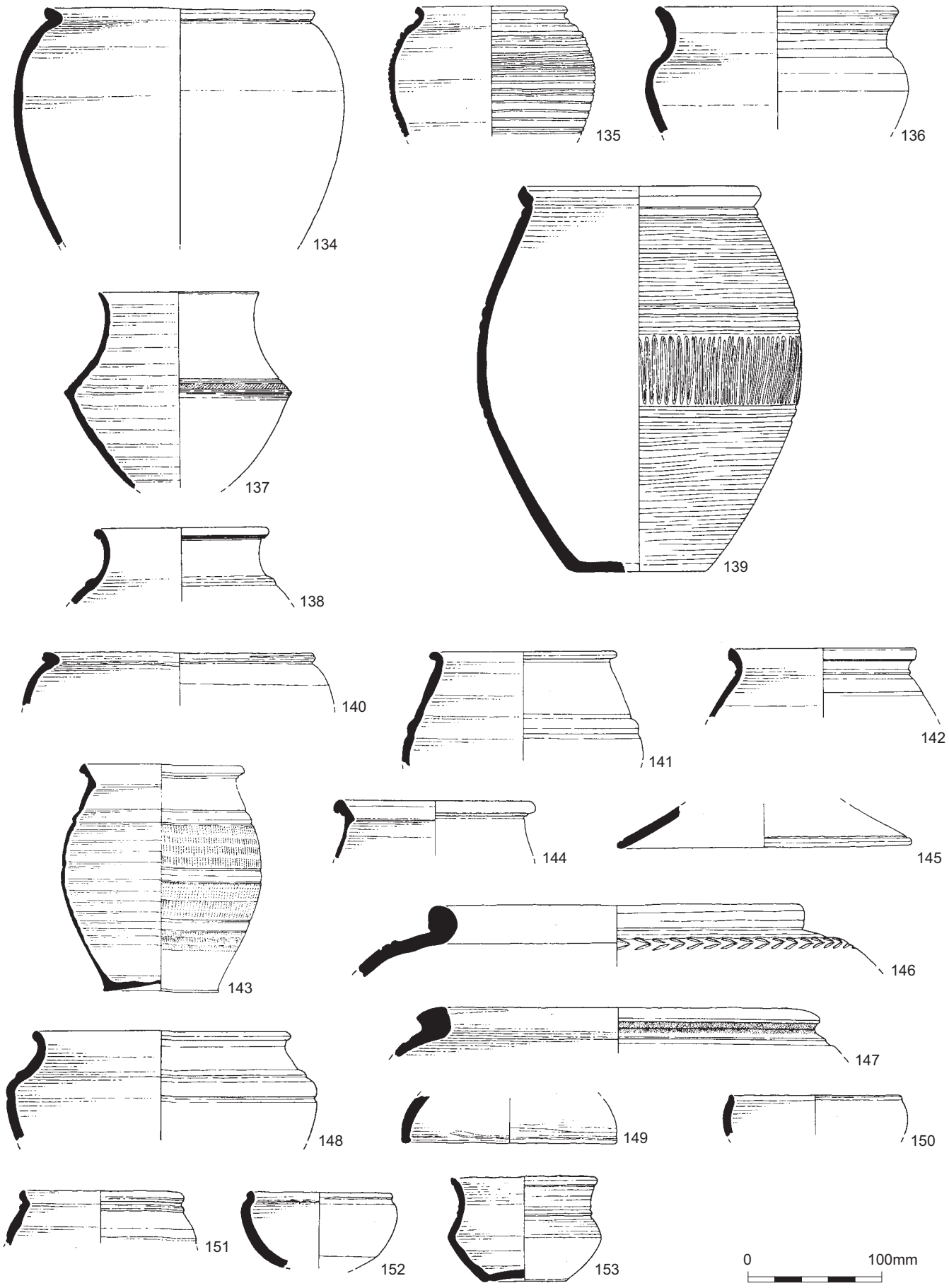


Figure 19 Springhead: pottery groups, Nos 134–53

128. Jar with internally thickened and flattened bead rim (MON 3E3); North Kent/outh Essex shelly ware; (3339); PRN 751.

Pit 3680, 300040, 400016, Late Iron Age enclosure and associated features:

129. Bead rim jar (MON 3E1); Sandy fabric; (3685); PRN 802.
130. Storage jar with a facetted shoulder (MON 3D4); Sandy fabric; (3685); PRN 803.
131. Everted rim necked jar (Thompson 1982, type B1-1); Flint-tempered ware; (3685): PRN 804.
132. Round bowl with rippled, cordoned shoulder (Thompson 1982, type D2-4); Grog-tempered ware; (3685); PRN 805.
133. Round bowl with rippled, cordoned shoulder (Thompson 1982, type D2-4); Grog-tempered ware; (3685); PRN 806.

(Fig 19)

Pit 3680, 300040, 400016, Late Iron Age enclosure and associated features (contd):

134. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (3685); PRN 809.

Pit 3864, 300040, 400016, Late Iron Age enclosure and associated features:

135. Facetted jar with a subtle facet (MON 3G3); North Kent/south Essex shelly ware; (3865 and 3866); PRNs 810 and 811.
136. Bowl with an offset, cordoned neck (Thompson 1982, type D1-1); Grog-tempered ware; (3866); PRN 812.
137. Biconical beaker (MON 2G1); Fine Greyware; (3865 and 3867); PRNs 813 and 814.

Pit 3686, 300040, 400016, Late Iron Age enclosure and associated features:

138. Tall, narrow cordoned jar (Thompson 1982, type B3-2); Grog-tempered ware; 3687); PRN 808.
139. Decorated butt-beaker with offset neck (Thompson 1982, type G5-5); Grog-tempered ware; (3687); PRN 807.

Pit 3931, 300040, 400016, Late Iron Age enclosure and associated features:

140. Jar with internally thickened and flattened bead rim (MON 3E3); North Kent/south Essex shelly ware; (3932); PRN 753.
141. Bead-rimmed barrel jar (Thompson 1982, type B5-3); Grog-tempered ware; (3932); PRN 754.
142. Butt beaker (Thompson 1982, type G5-6); Grog-tempered ware; (3932); PRN 755.
143. Butt beaker; Whiteware; (3339, 3932 and 3933) of pits 3335 and 3931; PRNs 747, 756 and 757.
144. Butt beaker; Whiteware; (3933); PRN 758.
145. Lid (MON 12); Sandy fabric; (3937); PRN 759.
146. Large storage jar (Thompson 1982, type C6-1); Fine shell and grog-tempered ware; (3933); PRN 760.
147. Storage jar with a facetted shoulder (MON 3D4); North Kent/south Essex shelly ware; (3933); PRN 761.
148. Wide-mouthed everted rim jar (Thompson 1982, type B3); Grog-tempered ware; (3933); PRN 762.
149. Lid (Thompson 1982, type L); Grog-tempered war; (3933); PRN 763.
150. Platter probably copying Gallo-Belgic form Cam 16 (Thompson 1982, type G1-10); Grog-tempered ware; (3933); PRN 764.
151. Butt beaker (Thompson 1982, type G5-6); Grog-tempered ware; (3933); PRN 765.
152. Plain round-bodied bowl/cup with bead rim (Thompson 1982, type D3-1); Grog-tempered ware; (3933); PRN 766.
153. Carinated cup (Thompson 1982, type E1-1); Grog-tempered ware; (3933); PRNs 767 and 768.

(Fig 20)

Pit 3931, 300040, 400016, Late Iron Age enclosure and associated features (contd):

154. Round-bodied bowl; North Kent/south Essex shelly ware; (3932 and 3933); PRNs 769 and 770.
155. Storage jar with a facetted shoulder (MON 3D4); North Kent/south Essex shelly ware; (3397 and 3938); PRNs 771 and 772.
156. Necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (3938); PRN 773.
157. Base from a pedestal jar (Monaghan 1987, class 3C); Greyware; (3938); PRN 774.
158. Butt beaker (Thompson 1982, type G5-6); Grog-tempered ware; (3938); PRN 775.
159. Everted rim necked jar (Thompson 1982, type B1-1); Grog-tempered ware; (3937); PRN 776.

Ditch 6621:

160. Bowl with an offset, cordoned neck (Thompson 1982, type D1-1); perforated base Fine shell- and grog-tempered ware; (6629); PRN 900.
161. Necked, cordoned bowl (Thompson 1982, type D2-1); Fine shell- and grog-tempered ware; (6629); PRN 901.
162. Jar with a corrugated everted rim (Thompson 1982, type B2-1); Fine shell- and grog-tempered ware; (6629); PRN 902.
163. Bowl with an offset, cordoned neck (Thompson 1982, type D1-1); Grog-tempered ware; (6629); PRN 903.
164. Bowl with an offset, cordoned neck (Thompson 1982, type D1-1); Grog-tempered ware; (6629); PRN 904.
165. Platter copying Gallo-Belgic form Cam 16 (Thompson 1982, type G1-10); Grog-tempered ware; (6629); PRN 905.
166. Decorated barrel-shaped butt-beaker (Thompson 1982, type G5-2); Grog-tempered ware; (6629); PRN 906.
167. Jar with rippled or corrugated neck (Thompson 1982, type B2-4); Grog-tempered ware; (6629); PRN 908.
168. Butt beaker (Thompson 1982, type G5-6); Grog-tempered ware; (6629); PRN 907.
169. Large, plain everted rim jar (Thompson 1982, type C2-1); Grog-tempered ware; (6629); PRN 909.
170. Storage jar base; perforated North Kent/south Essex shelly ware; (6629); PRN 910.

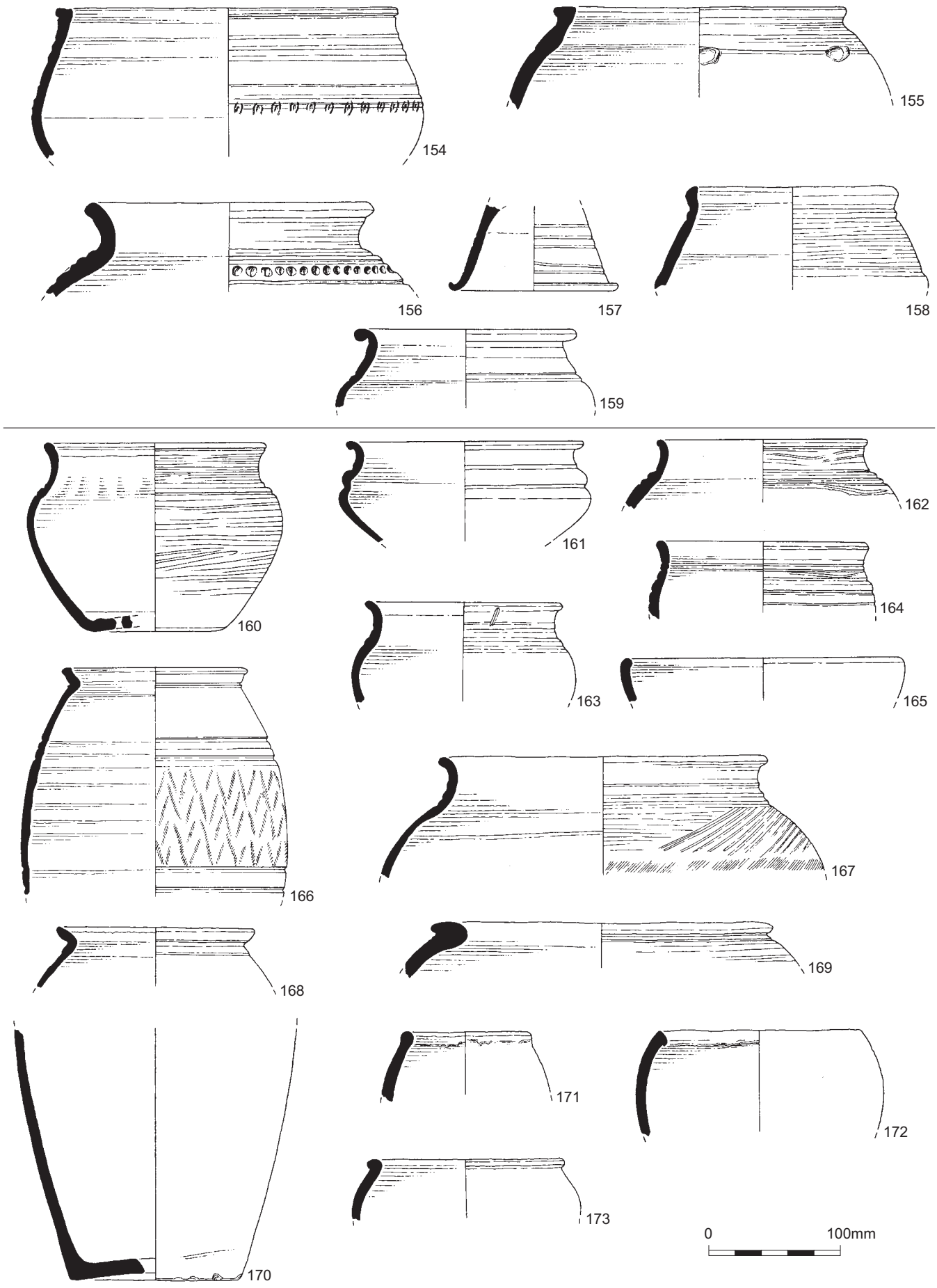


Figure 20 Springhead: pottery groups, Nos 154–73

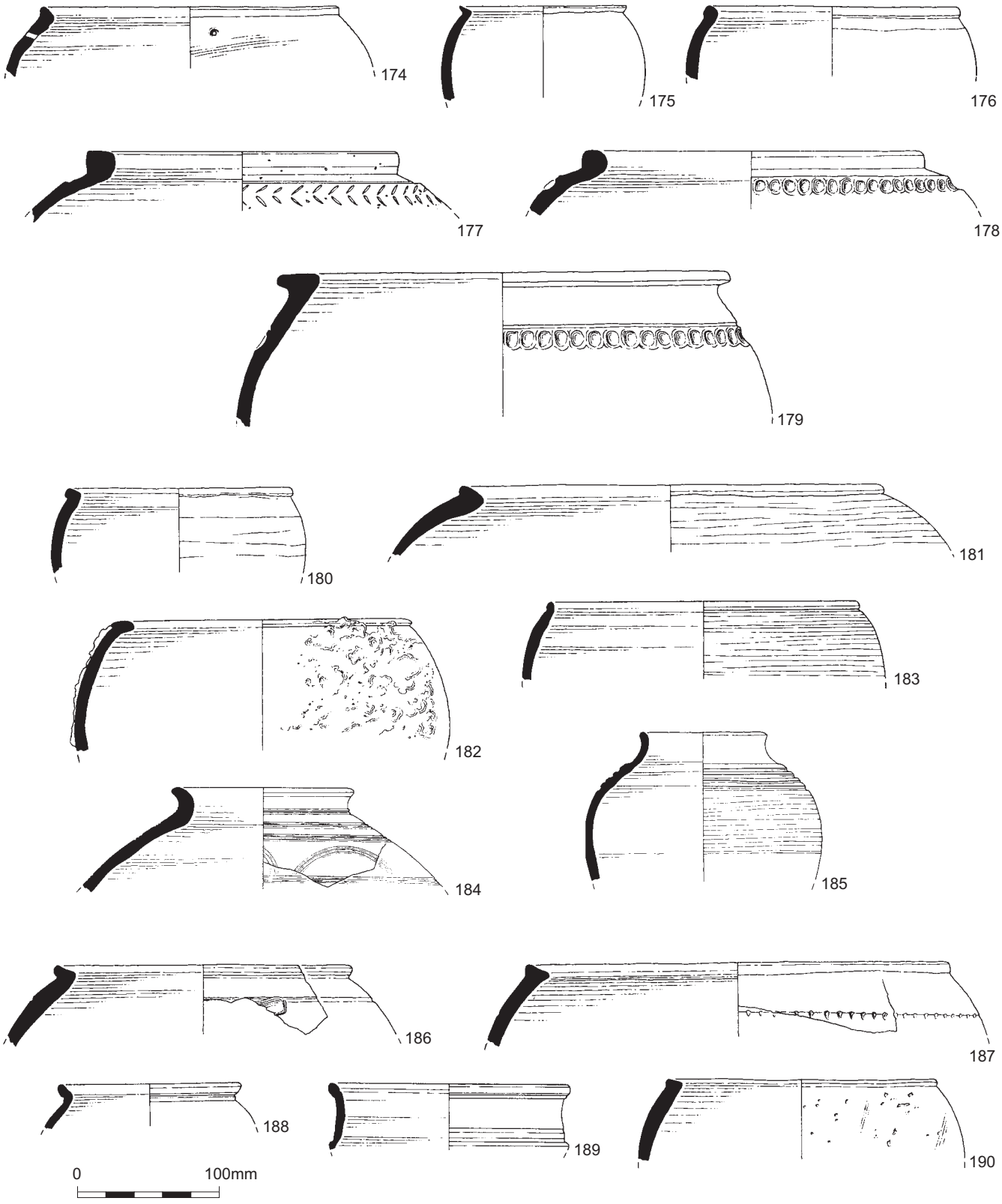


Figure 21 Springhead: pottery groups, Nos 174–90

171. Plain jar with internally thickened rim (Thompson 1982, type C3); Shelly Ware (Early); (6629); PRN 911.
172. Plain jar with internally thickened rim (Thompson 1982, type C3); Shelly Ware (Early); (6629); PRN 912.
173. Bead rim jar (MON 3E1); Shelly Ware (Early); (6629); PRN 913.

(Fig 21)
Ditch 6621 (contd):
174. Jar with a flattened hook rim (MON 3F3); post-firing perforation for staple/rivet repair; Shelly Ware (Early); (6629); PRN 914.
175. Jars with a flattened hook rim (MON 3F3); Shelly Ware (Early); (6629); PRN 915.
176. Jar with square bead rim (MON 3E7); Shelly Ware (Early); (6629); PRN 916.
177. Storage jar with a facetted shoulder (MON 3D4); North Kent/south Essex shelly ware; (6629); PRN 917.
178. Storage jar with a facetted shoulder (MON 3D4); North Kent/south Essex shelly ware; (6629); PRN 918.
179. Storage jar with a facetted shoulder (MON 3D4); North Kent/south Essex shelly ware; (6629); PRN 919.

Pit 3013, 300026, 300026, Late Iron Age enclosure and associated features:
180. Bead rim jar (MON 3E1); North Kent/South Essex shelly ware; (3986); PRN 815.
181. Rounded jar with bead rim (Thompson 1982, type C1-2); Grog-tempered ware; (3986); PRN 817.
182. Rounded jar with bead rim (Thompson 1982, type C1-2); Grog-tempered ware; (3986); PRN 816.
183. Jar with a small bead rim which may have been re-shaped from a broken cordon; Grog-tempered ware; (3986); PRN 818.
184. Large globular jar with an everted rim (Thompson 1982, type B1-7); Grog-tempered ware; (3014); PRN 832.
185. Butt beaker (Thompson 1982, type G5-6); Grog-tempered ware; (3014); PRN 837.

Sunken featured building 3053, 300027, 400011
186. Storage jar with a facetted shoulder (MON 3D4); North Kent/South Essex shelly ware; (3054): PRN 833.
187. Large storage jar (Thompson 1982, type C6-1); Grog-tempered ware; (3054): PRN 834.
188. Butt beaker (Thompson 1982, type G5-6); Grog-tempered ware; (3054): PRN 835.
189. Wide-mouthed everted rim jar (Thompson 1982, type B3); Grog-tempered ware; (3054): PRN 836.
190. Wide-mouthed, straight-sided jar with bead rim (Thompson 1982, type C1-3); Grog-tempered ware; (3054); PRN 838.

Early Roman
(Fig 22)
Ditch 6666, 300021, 400009, Early road and associated features:
191. Flagon rim fragment; *Verulamium* region whiteware; (6660); PRN 877.
192. Cam 198; *Verulamium* region whiteware; (6660); PRN 878.
193. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (6660); PRN 879.
194. Jars with internally thickened and flattened bead rim (MON 3E3); North Kent/south Essex shelly ware; (6660); PRN 880.
195. Pedestal base; Grog-tempered ware; (6660); PRN 881.

Ditch 6333, 300018, 400009, Early road and associated features:
196. Necked storage jars with everted rim (MON 3D5); North Kent/south Essex shelly ware; (6334); PRN 683.

Ditch 6307, 300020, 400009, Early road and associated features:
197. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (6308); PRN 661.
198. Cordoned, rilled, bead rim jar (MON 3L10); North Kent/south Essex shelly ware; (6308); PRN 662.
199. Round-shouldered jar (Thompson 1982, type C4); Fine shell- and grog-tempered ware; (6308); PRN 663.
200. Storage jar base with post-firing perforations; North Kent/south Essex shelly ware; (6308); PRN 665.
201. Imitation Gallo-Belgic platter, based on Cam 1 (Thompson 1982, type G1-1); Fine shell and grog-tempered ware; (6308); PRN 664.
202. Lid-seated necked bowl (MON 4C1.2); Thameside/Upchurch greyware; (6308); PRN 666.
203. Butt beaker (Thompson 1982, type G5-6); Grog-tempered ware; (6308); PRN 667.

Post-hole 5147, 300067, 400012, Sanctuary complex, portico building:
204. Lid-seated jar with a grooved bead rim (MON 3L7); pre-firing maker's mark (Fig 17, 102); North Kent/south Essex shelly ware; (5146); PRN 520.

Pit 2837, 300072, 400022, Sanctuary complex, portico building:
205. Small, plain everted rim jar (Thompson 1982, type C2-2); Fine shell- and grog-tempered ware; (2839); PRN 588

Cenotaph 6104, 300078, 400025, Early road and associated features:
206. 'Tear-drop and hairpin' beaker (Greene 1979, fig 18, 1); Central Gaulish colour-coated ware; (6103); PRN 685 (Pl 2).
207. Miniature flask (MON 9B); Fine Greyware; (6102); PRN 686.

Grave 6345, 300079, 400025, Early road and associated features:
208. Flagon; *Verulamium* region whiteware; (6355); PRN 687.
209. Round-shouldered footring bowl (MON 4B4); Fine Greyware; (6355); PRN 688.

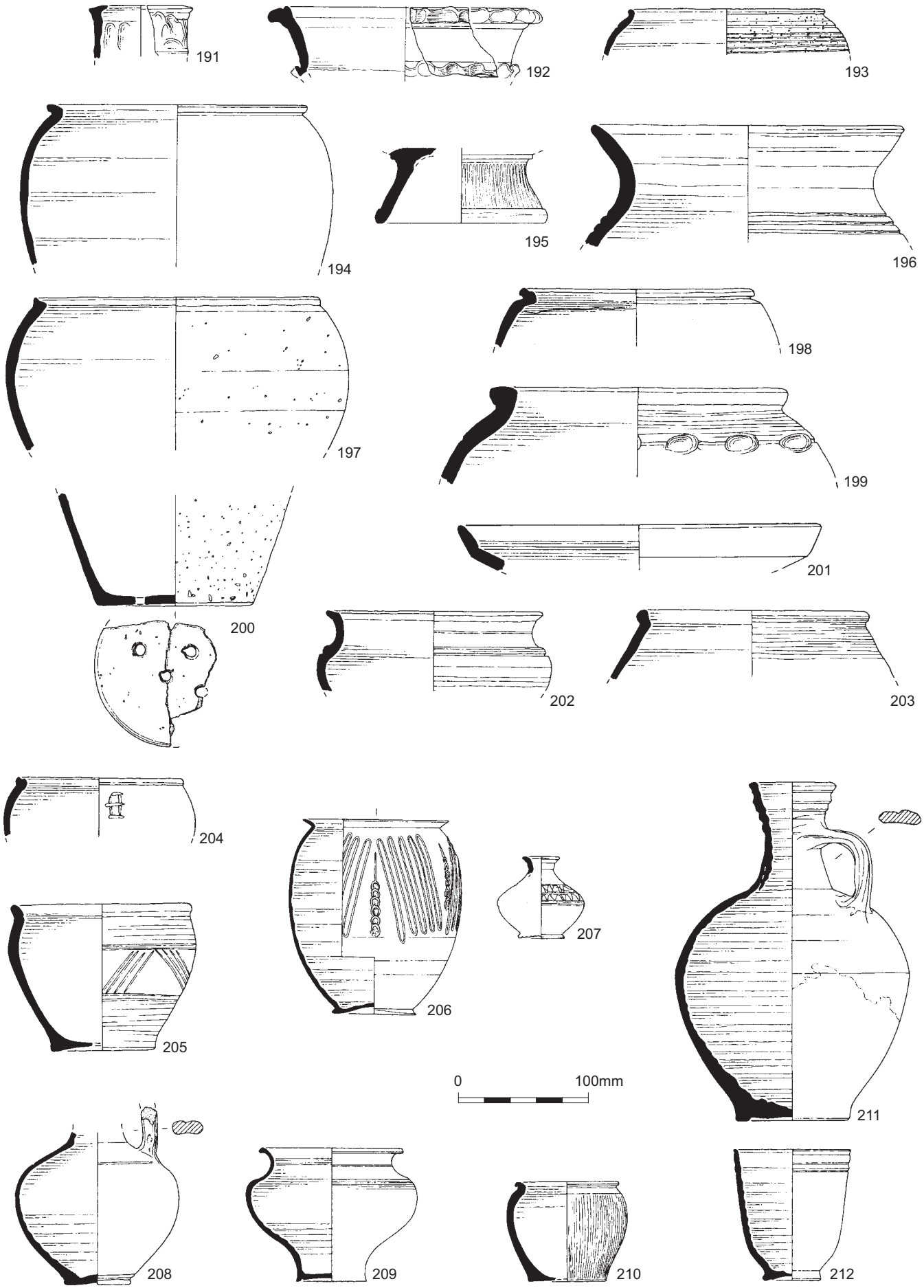


Figure 22 Springhead: pottery groups, Nos 191–212

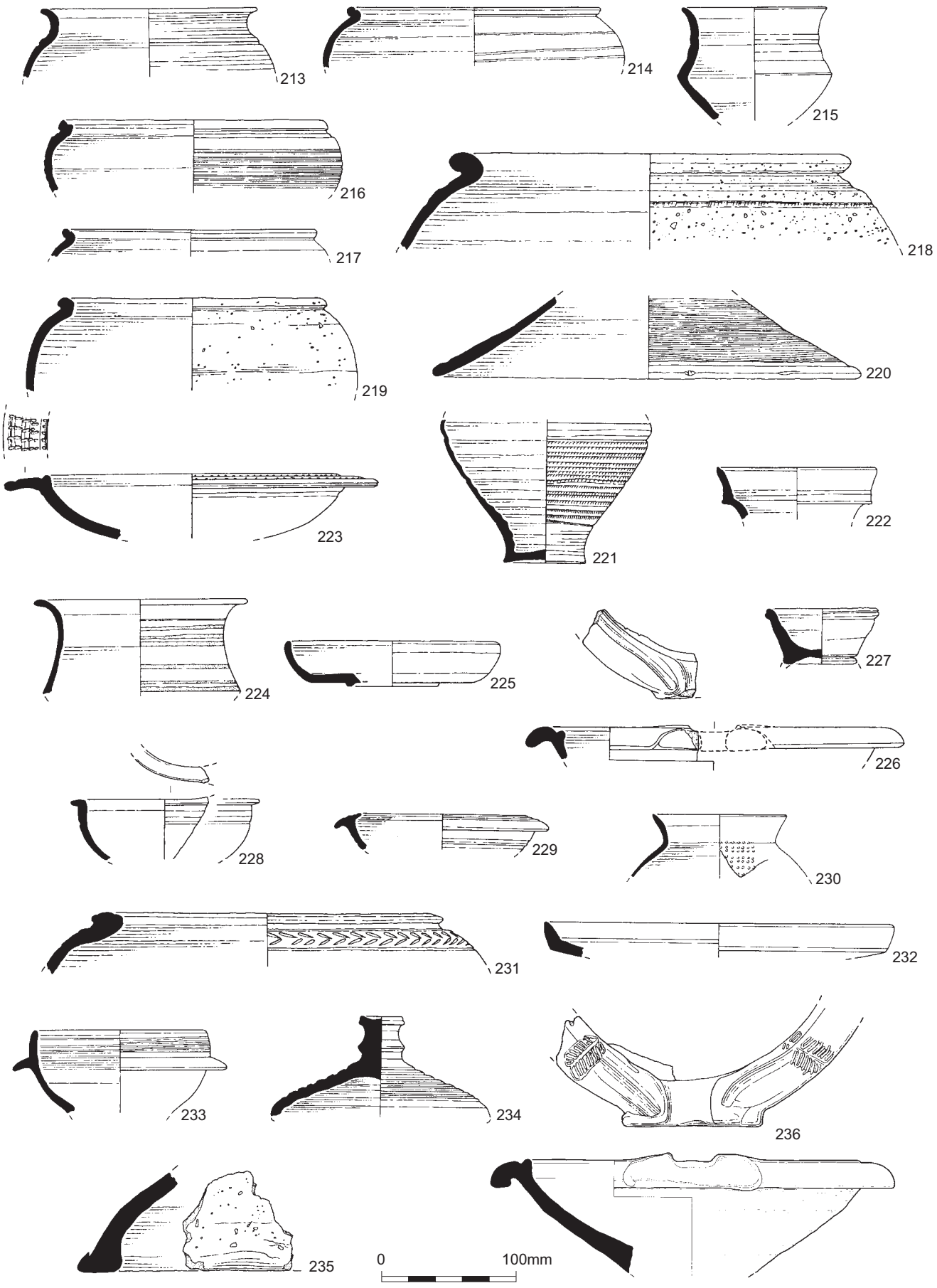


Figure 23 Springhead: pottery groups, Nos 213–36

Grave 3170, 300264, 300264, Pits to the north of the Sanctuary complex:

210. Bead-rimmed jar (Thompson 1982, type C1-1); Grog-tempered ware; (3171); PRN 876.

Grave 6608, 300079, 400025, Early road and associated features:

211. Ring-necked flagon (MON 1E2); Hoo ware; (6609); PRN 684.
212. Straight-walled girth beaker (MON 2F3); Local fine oxidised ware; (6609); PRN 704.

(Fig 23)

Layer 6163, 300087, 400027, Post-road, pre-sanctuary deposits:

213. Cordoned bowl with a cursive profile (MON 4F2); Thameside/Upchurch greyware. PRN 650.
214. Lid-seated jar with a grooved bead rim (MON 3L7); Thameside/Upchurch greyware. PRN 651.
215. Small bowl/cup with a rippled shoulder (Thompson 1982, type D2-4); Grog-tempered ware. PRN 652.
216. Round-bodied, lid-seated bowl (MON class 4L2); North Kent/south Essex shelly ware. PRN 653.
217. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware. PRN 654.
218. Storage jar with everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware. PRN 655.
219. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware. PRN 656.
220. Lid (MON 12); North Kent/south Essex shelly ware. PRN 657.
221. Jar or beaker base; Fine Greyware. PRN 658.
222. Cup copying Gallo-Belgic form Cam 56 (Thompson 1982, type G3-1); Grog-tempered ware. PRN 659.

Layer 6161, 300087, 400027, Post-road, pre-sanctuary deposits:

223. Fine, flanged dish with high, undulating flange (MON 5B2); Fine Greyware. PRN 645.
224. Squat, wide-mouthed biconical beaker (MON 2G2); Thameside/Upchurch greyware. PRN 646.
225. Platter copying Gallo-Belgic form Cam 16 (Thompson 1982, type G1-10): Grog-tempered ware. PRN 647.
226. Mortarium rim; Wiggonholt whiteware. PRN 648.
227. Pedestal base, inverted, trimmed and re-used as small bowl or dish; Grog-tempered ware. PRN 649.

Layer 6035, 300087, 400027, Post-road, pre-sanctuary deposits:

228. Fine, flanged dish (MON 5B); Hoo ware. PRN 637.
229. Fine, flanged dish (MON 5B5); Fine Greyware. PRN 638.
230. Poppyhead beaker (MON 2A3); Fine Greyware. PRN 639.
231. Large storage jar (Thompson 1982, type C6-1); Grog-tempered ware. PRN 640.
232. Platter copying Gallo-Belgic form Cam 2 (Thompson 1982, type G1-2); Grog-tempered ware. PRN 641.
233. Fine, flanged dish (MON 5B1); Fine Greyware. PRN 642.
234. Lid (MON 12); Thameside/Upchurch greyware. PRN 643.
235. Lid (Thompson 1982, types L1-10); Grog-tempered ware. PRN 644.

Terrace 5491, 300082, 400009, early road and associated features and middle Roman layer 6064, 300104, 400027, post-road, pre-sanctuary deposits:

236. Stamped (Fig 14, 81) mortarium (Hull 1963, 190, fig 107, 497, Cam 497); Colchester whiteware; (5496 and 6064); PRNs 535 and 597.

(Fig 24)

Layer 6115, 300091, 400028, Pre-Sanctuary structures and deposits:

237. Miniature bead rimmed jar (MON 9A3); Thameside/Upchurch greyware. PRN 565.
238. Large storage jar with a facetted shoulder (MON 3D4); North Kent/south Essex shelly ware. PRN 566.
239. Narrow-mouthed jar (MON 3B; North Kent/south Essex shelly ware. PRN 567.
240. Fine, flanged dish (MON 5B6); Hoo ware. PRN 568.
241. Sharply carinated cup (MON 6D); Fine Greyware. PRN 569.
242. Lid-seated jar with a grooved rim (MON 3L2); Thameside/Upchurch greyware. PRN 570.

Layer 6131, 300091, 400028, Pre-Sanctuary structures and deposits:

243. Cauldron (Going 1987, 34, fig 17, L1 1.1); North Kent/south Essex shelly ware. PRN 595.

Pit 6285, 300088, 400028, Pre-Sanctuary structures and deposits:

244. Fine, flanged dish (MON 5B6); White-slipped red ware; (6286); PRN 675.
245. Carinated bowl (MON 4H2); Upchurch painted ware; (6286); PRN 676.

Layer 6022, 300093, 400029, Pre-Sanctuary structures and deposits:

246. Simple round-bodied bowl; Thameside/Upchurch greyware. PRN 613.
247. Squat, wide-mouthed biconical beaker (MON 2G2); Thameside/Upchurch greyware. PRN 614.
248. Girth beaker (MON 2F3); Upchurch painted ware. PRN 615.
249. Handle; Cologne colour-coated ware. PRN 616.
250. Bead rimmed jar (MON 3E5); Thameside/Upchurch greyware. PRN 617.
251. Lid-seated jar with a grooved bead rim (MON 3L7); maker's mark (Fig 17, 104) on shoulder; North Kent/south Essex shelly ware. PRN 618.
252. Round-bodied, lid-seated bowl (MON 4L2); perforated Thameside/Upchurch greyware. PRN 619.
253. Lid-seated jar, ledge at top of rim (MON 3L9); Thameside/Upchurch greyware. PRN 620.
254. Bowl with a moulded flange (Tyers and Marsh 1979, 571, fig 240, IVA); *Verulamium* region grey ware. PRN 621.

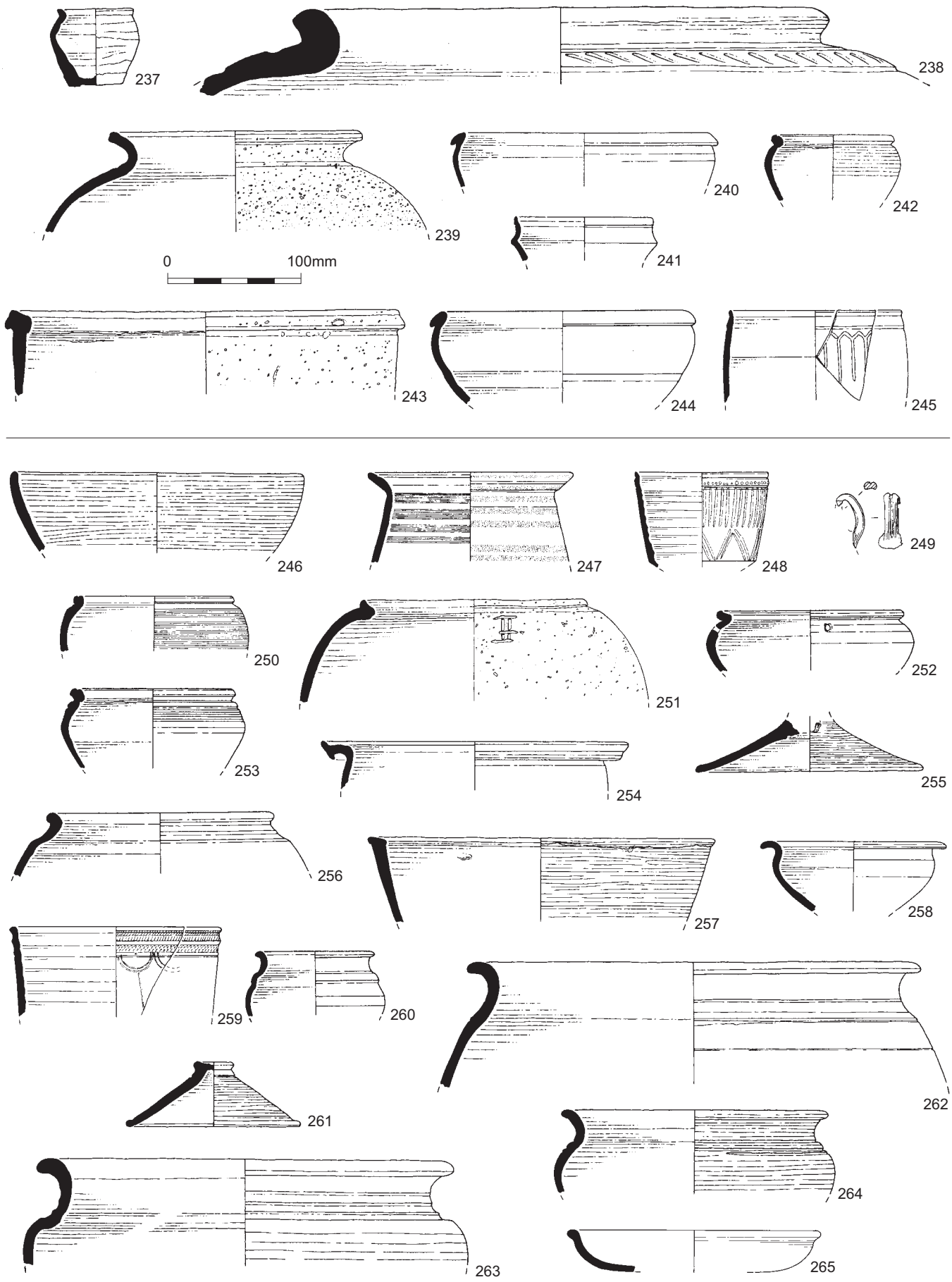


Figure 24 Springhead: pottery groups, Nos 237–65

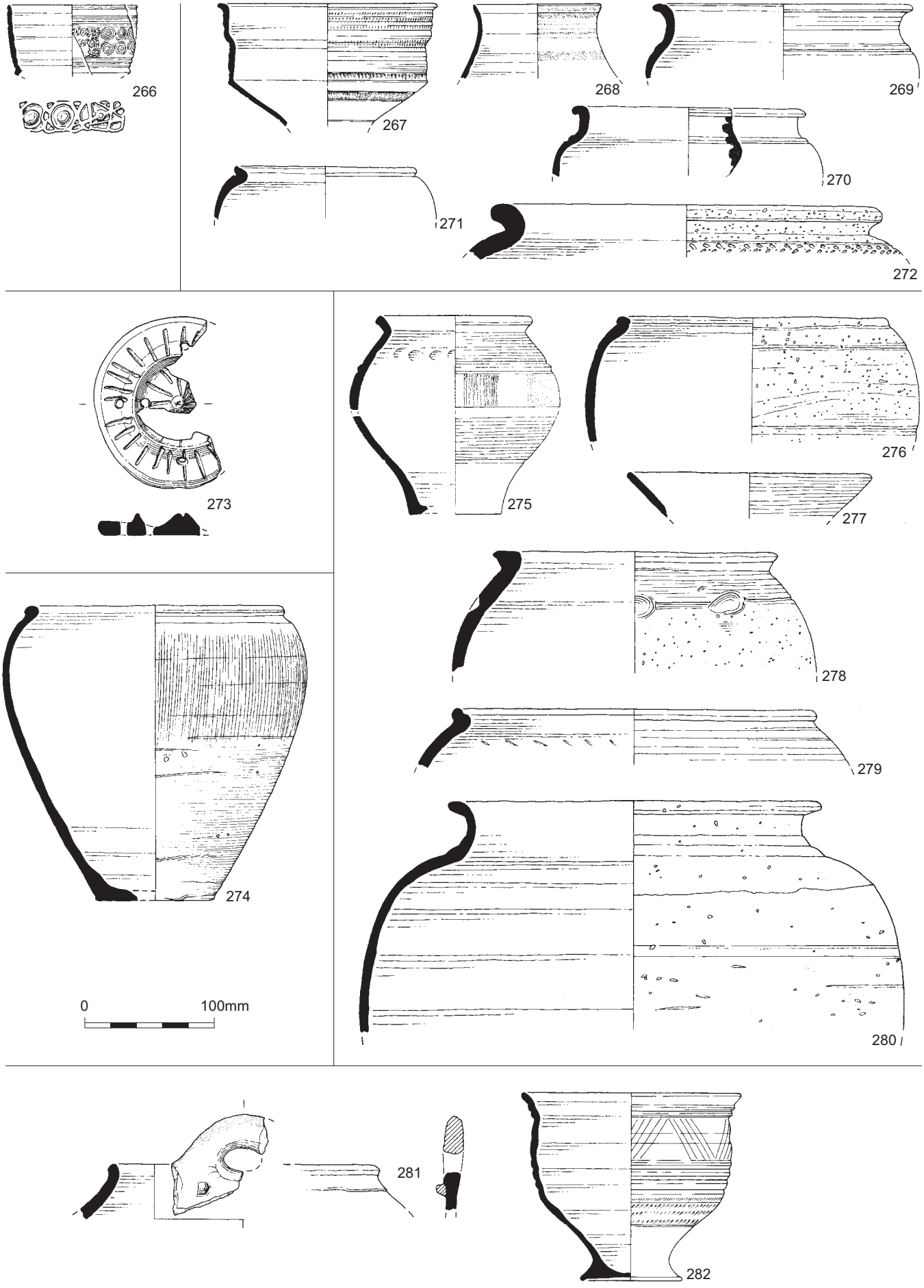


Figure 25 Springhead: pottery groups, Nos 266–82

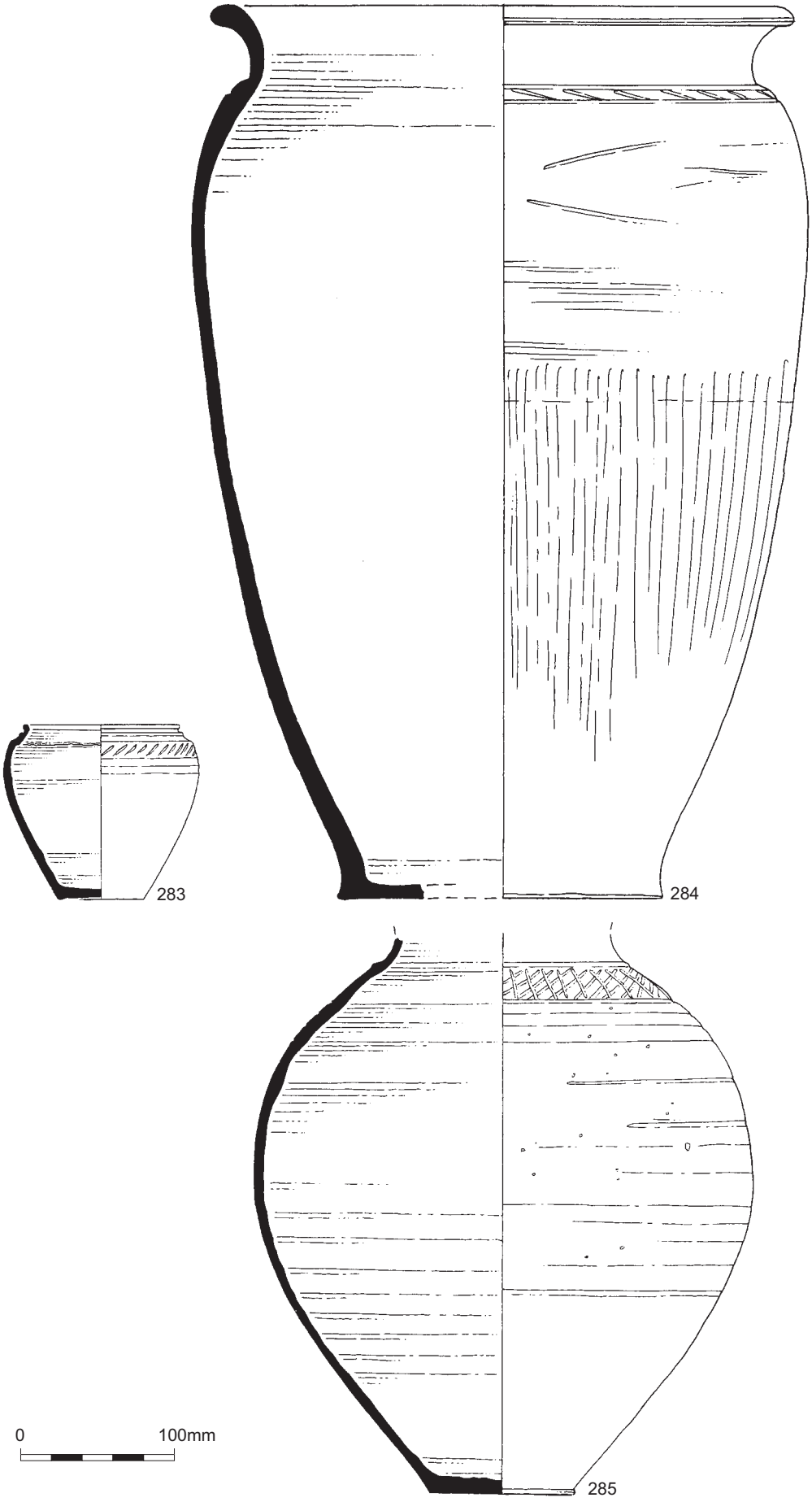


Figure 26 Springhead: pottery groups, Nos 283–85

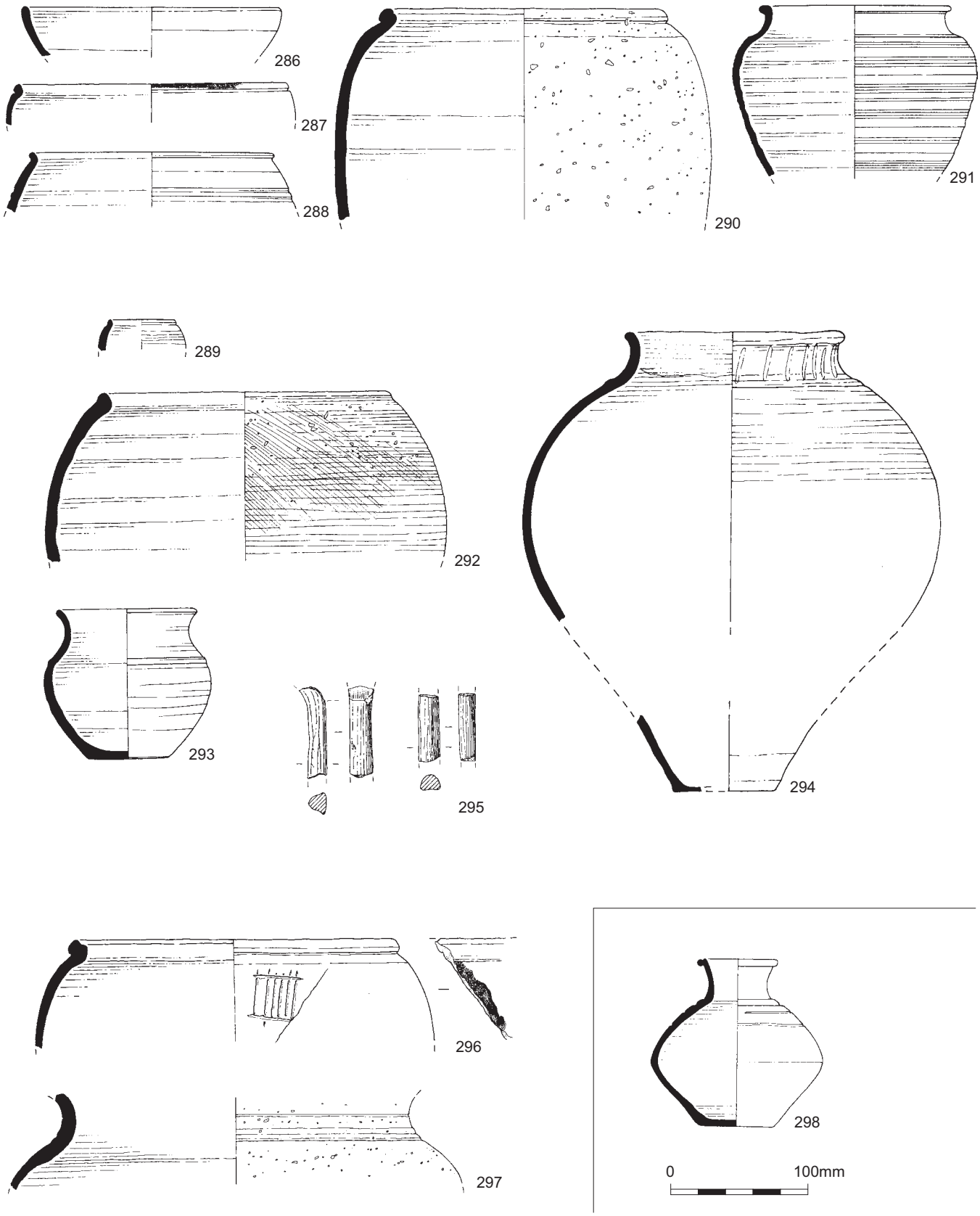


Figure 27 Springhead: pottery groups, Nos 286–98

255. Lid (MON 12); North Kent/south Essex shelly ware. PRN 622.
256. Shouldered bowl with plain rim (MON 4D1); Thameside/Upchurch greyware. PRN 623.
257. Flat-rimmed dish (MON 5O0); Thameside/Upchurch greyware. PRN 624.
258. Fine, flanged dish (MON 5B3); Fine Greyware. PRN 626.
259. Carinated bowl (MON 4H2); Fine Greyware. PRN 627.
260. Fine bowl with incised grooves (MON 4J3); Fine Greyware. PRN 628.
261. Lid (MON 12); Thameside/Upchurch greyware. PRN 629.
262. Large jar (Thompson 1982, type C6-1); Patchgrove ware. PRN 630.
263. Large jar (Thompson 1982, type C6-1); Patchgrove ware. PRN 631.
264 S-profile bowl (MON 4A3); Thameside/Upchurch greyware. PRN 632.
265. Bead rim bowl with footring base (MON 7A2); Fine Greyware. PRN 625.

(Fig 25)
Layer 6356, 300099, 400031, colluvial deposits:
266. Group 2 bowl (Rodwell 1978, 234); Stamped London Ware. PRN 682.

Layer 6023, 300114, 400034, Pre-Sanctuary structures and deposits:
267. Carinated bowl (MON 4H1); Fine Greyware. PRN 819.
268. Biconical beaker (MON 2G1); Fine Greyware. PRN 820.
269. Lid-seated, necked bowl (MON 4C1.2); Thameside/Upchurch greyware. PRN 821.
270. Lid-seated, necked bowl (MON 4C1.2) with glue repair; Thameside/Upchurch greyware. PRN 822.
271. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware. PRN 823.
272. Large storage jar with everted and rolled rim (MON 3D1); North Kent/south Essex shelly ware. PRN 824.

Post-hole 5755, 300124, 400036, Sanctuary complex temple:
273. Cheese press lid (MON 10A); Thameside/Upchurch greyware; (5758); PRN 589.

Pit 5452, 300132, 400037, Pre-sanctuary bakeries:
274. Bead rim jar with shoulder facet (MON 3G3); North Kent/south Essex shelly ware; (5453); PRN 591.

Pit 5668, 300138, 400038, Pre-sanctuary bakeries:
275. Decorated butt-beaker (Thompson 1982, type G5-5); Grog-tempered ware; (5482); PRN 599.
276. Bead rim jar (MON 3E3); North Kent/south Essex shelly ware; (5482); PRN 600.
277. Straight-walled platter (Thompson 1982, type G1-1); Grog-tempered ware; (5482); PRN 601.
278. Storage jar with facetted shoulder (MON 3D4); North Kent/south Essex shelly ware; (5482); PRN 602.
279. Lid-seated jar with grooved rim (MON 3L2); North Kent/south Essex shelly ware; (5482); PRN 603.
280. Large storage jar (Thompson 1982, type C6-1): Patchgrove ware; (5482); PRN 604.

Layer 5414, 300148, 400039, Pre-sanctuary bakeries:
281. Cauldron (Going 1987, 34, fig 17, L1 1.1); North Kent/south Essex shelly ware. PRN 543.

Layer 5544, 300148, 400039, Pre-sanctuary bakeries:
282. Carinated bowl (MON 4H1); Local fine oxidised wares. PRN 596.

(Fig 26)
Pot-oven 5406, feature 5405, 300149, 400040, Pre-sanctuary bakeries:
283. Lid-seated jar (MON 3L9); Thameside/Upchurch greyware; (5407); PRN 592.
284. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware. PRN 920.
285. Tall, narrow-necked jar with a single cordon (MON 3A3); Thameside/Upchurch greyware; (5408); PRN 921.

(Fig 27)
Pit 2727, 300182, 400045, Viewing platform 2:
286. Platter copying Gallo-Belgic form Cam 16 (Thompson 1982, type G1-10); Grog-tempered ware; (2726); PRN 571.
287. Bead-rim jar (Thompson 1982, type C1-2); Grog-tempered ware; (2727); PRN 572.
288. Grooved, barrel jar (Thompson 1982, type B5-5); Grog-tempered ware; (2727); PRN 573.
289. Miniature bead rim jar (Thompson 1982, type S5); Grog-tempered ware; (2726); PRN 574.
290. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (2726); PRNs 575 and 576.
291. Rilled jar with an everted rim (Thompson 1982, type C7-1); Sandy fabric; (2726); PRNs 577, 578 and 579.
292. Plain jar with internally thickened rim (Thompson 1982, type C3); North Kent/south Essex shelly ware; (2726); PRNs 580 and 581.
293. Round jar with rippled neck (Thompson 1982, type B2-4); Grog-tempered ware; (2726); PRNs 586 and 587.
294. Tall, narrow-mouthed, cordoned jar (Thompson 1982, type B3-8); Grog-tempered ware; (2725 and 2726) of pit 2727 and (2722) of pit 2724; PRNs 582, 583, 584 and 585.

Ditch 2174, 300192, 400045, Viewing platform 2:
295. Ceramic trivet or gridiron fragments; Sandy fabric; (2182); PRN 993.

Layer 2592, 300180, 400045, Viewing Platform 2:
296. Lid-seated jar with grooved bead rim (MON 3L7); maker's mark on shoulder (Fig 17, 110); vessel repaired with glue; North Kent/south Essex shelly ware. PRN 514.

297. Necked jar; repaired with glue; Patchgrove ware. PRN 516.

Layer 2598, 300189, 400047, Viewing platform 2:
298. Narrow-necked jar (MON 3A); Thameside/Upchurch greyware. PRN 551.

(Fig 28)
Pit 2266, 300216, 400053, to the north of the Sanctuary complex:
299. Tall, narrow-necked jar with a neck cordon (Thompson 1982, type B3-9); Grog-tempered ware; (2268); PRN 866.
300. Bead rim bowl with footring base (MON 7A2); Fine Greyware; (2268); PRN 867.
301. Necked bowl with lid-seated rim (MON 4C1.2); Thameside/Upchurch greyware; (2268); PRN 869.
302. Lid-seated jar with grooved rim (MON 3L2); Thameside/Upchurch greyware; (2268); PRN 870.
303. Lid-seated jar with grooved rim (MON 3L2); Thameside/Upchurch greyware; (2268); PRN 871.
304. Lid-seated jar with grooved rim (MON 3L2); Thameside/Upchurch greyware; (2268); PRN 873.
305. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (2268); PRN 874.

Pit 3114, 300213, 400053, to the north of the Sanctuary complex:
306. Round-shouldered footring bowl (MON 4B4); Hoo ware; (3117); PRN 726.
307. Carinated bowl (MON 4H); Local fine oxidised ware; (3119); PRN 727.
308. Carinated bowl (MON 4H); Fine Greyware; (3119); PRN 728.
309. Necked bowl with lid-seated rim (MON 4C1.2); Thameside/Upchurch greyware; (3119); PRN 729.
310. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (3119); PRN 730.
311. Globular beaker with sharply-everted rim (MON 2H2); Local fine oxidised ware; (3119); PRN 731.
312. Narrow-necked jar (MON 3A); Fine Greyware; (3119 and 3120); PRNs 723 and 733.
313. Biconical beaker (MON 2G1); post-firing scratched graffito X on neck (Fig 57, 857); Fine Greyware; (3120); PRN 734.
314. Lid (MON 12); North Kent/south Essex shelly ware; (3120); PRN 735.
315. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (3119 and 3120); PRNs 736 and 737.
316. Tall, narrow-necked jar with cordon at neck/shoulder junction (MON 3A3); Thameside/Upchurch greyware; (3119 and 3120); PRNs 738 and 739.
317. Lid-seated jar with ledge at top of everted rim (MON 3L9); Thameside/Upchurch greyware; (3120 and 3121); PRNs 740 and 741.
318. Cordoned bowl (MON 4F); Thameside/Upchurch greyware; (3121); PRN 742.
319. S-profile bowl with single neck cordon (MON 4A3); Thameside/Upchurch greyware; (3121); PRN 743.

Pit 3306, 300215, 400053, to the north of the Sanctuary complex:
320. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (3347); PRN 790.
321. Lid-seated jar with a grooved bead rim (MON 3L7); North Kent/south Essex shelly ware; (3348); PRN 791.
322. Straight-walled platter copying the Gallo-Belgic form Cam 1 (Thompson 1982, type G1-1); Grog-tempered ware; (3348); PRN 792.
323. Decorated butt-beaker (Thompson 1982, type G5-5); Grog-tempered ware; (3347 and 3348); PRNs 793 and 794.
324. Plain everted rim jar (Thompson 1982, type B4-2); Grog-tempered ware; (3348); PRN 795.
325. Beaker copying Gallo-Belgic forms (Thompson 1982, type G3-4); Grog-tempered ware; (3347 and 3348); PRNs 796 and 797.

(Fig 29)
Pit 2401, 300223, 400055, to the east of Viewing Platform 2:
326. Everted rim jar (Thompson 1982, type B1-1); Grog-tempered ware; (2403); PRN 800.
327. Bowl with offset neck (Thompson 1982, type D1-1); Grog-tempered ware; (2403); PRN 801.

Pit 3546, 300245, 400062, Features in the south and south-east corner of the site:
328. Wide-mouthed, everted rim jar (MON 3I4); North Kent/south Essex shelly ware; (3547); PRN 777.
329. Large necked jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (3547); PRN 778.
330. Lid-seated jar with a grooved bead rim (MON 3L7; North Kent/south Essex shelly ware; (3547); PRN 779.
331. Shouldered bowl with plain rim (MON 4D1); Thameside/Upchurch greyware; (3547); PRN 780.
332. Necked bowl with lid-seated rim (MON 4C1.2); Thameside/Upchurch greyware; (3547); PRN 781.
333. Lid (MON 12); Thameside/Upchurch greyware; (3567); PRN 786.
334. Dish with flattened, slightly inturned rim MON 5E4); Thameside/Upchurch greyware; (3567); PRN 787.
335. Jar with double facet (MON 3G5); Thameside/Upchurch greyware; (3547); PRN 782.
336. Facetted jar with a subtle facet (MON 3G3); Greyware; (3567); PRN 788.
337. Jar with square bead rim (MON 3E7); North Kent/south Essex shelly ware; (3546 and 3547); PRNs 783 and 784.
338. Handle, probably from a cauldron; incised decoration; North Kent/south Essex shelly ware; (3567); PRN 785.
339. Handle from small flagon or flask; Central Gaulish lead glazed ware; (3567); PRN 789.

Pit 3199, 300029, 300029, Features east of enclosure 400017:
340. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (3036); PRN 839.
341. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (3036); PRN 841.
342. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (3036); PRN 843.

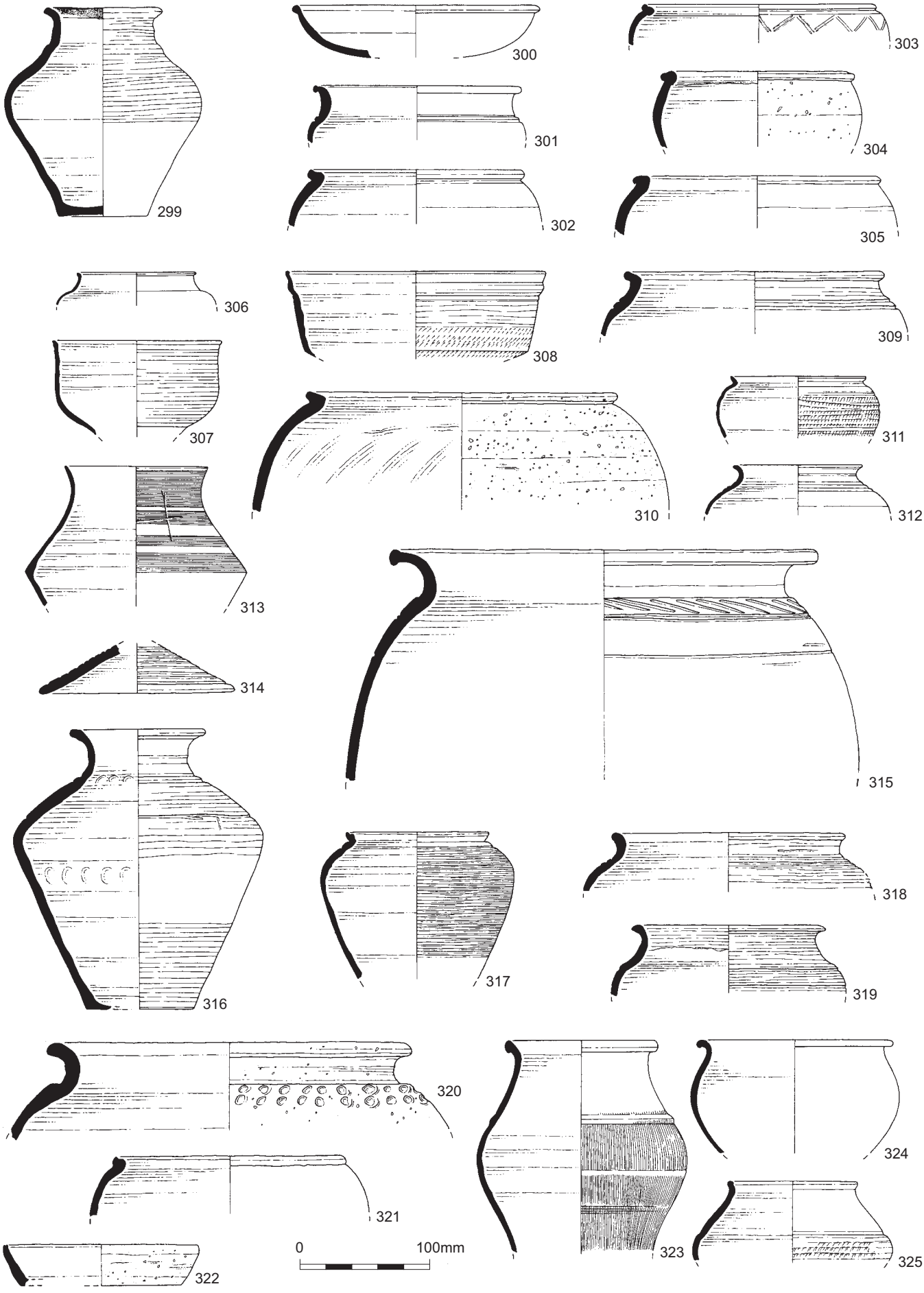


Figure 28 Springhead: pottery groups, Nos 299–325

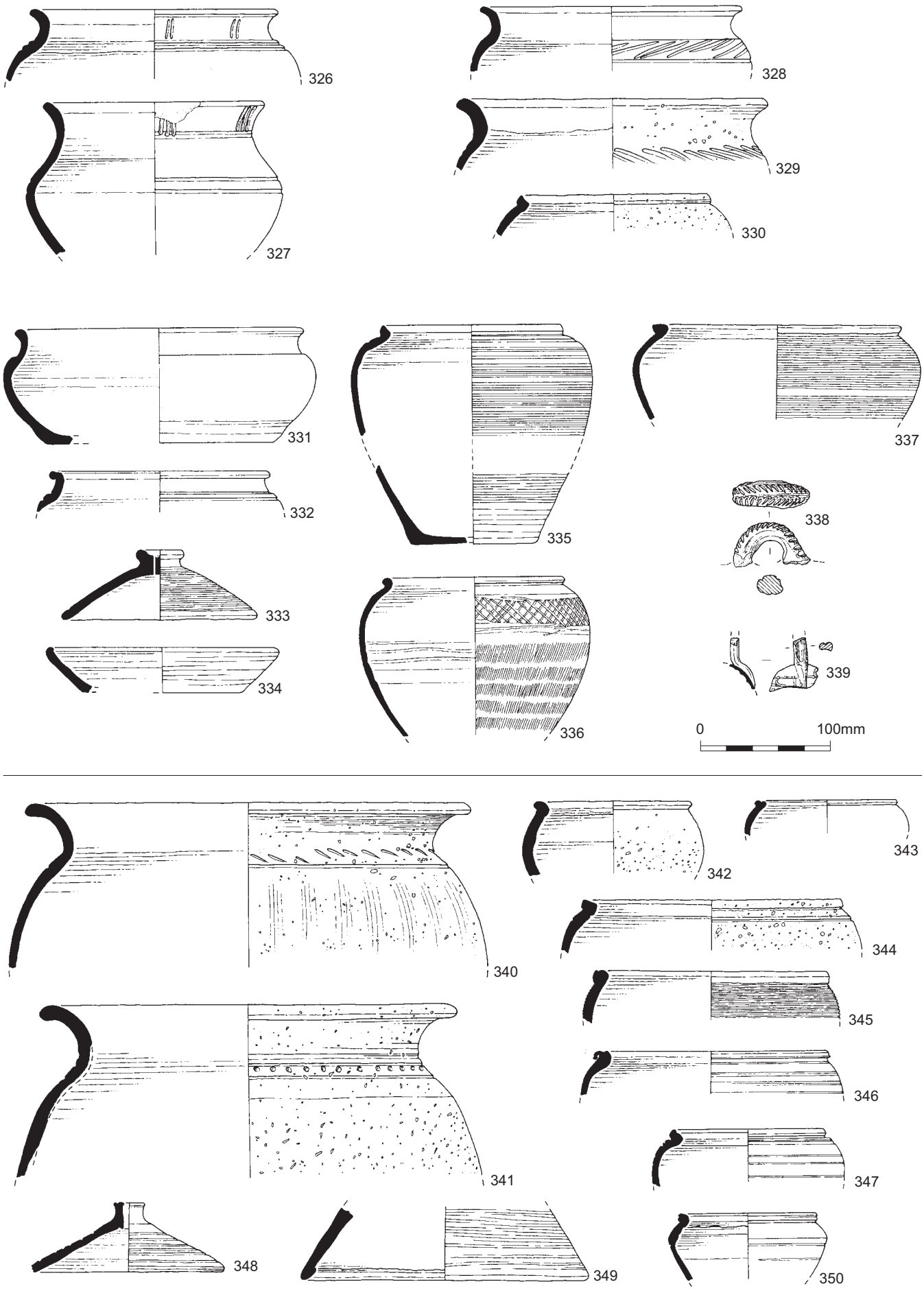


Figure 29 Springhead: pottery groups, Nos 326–50

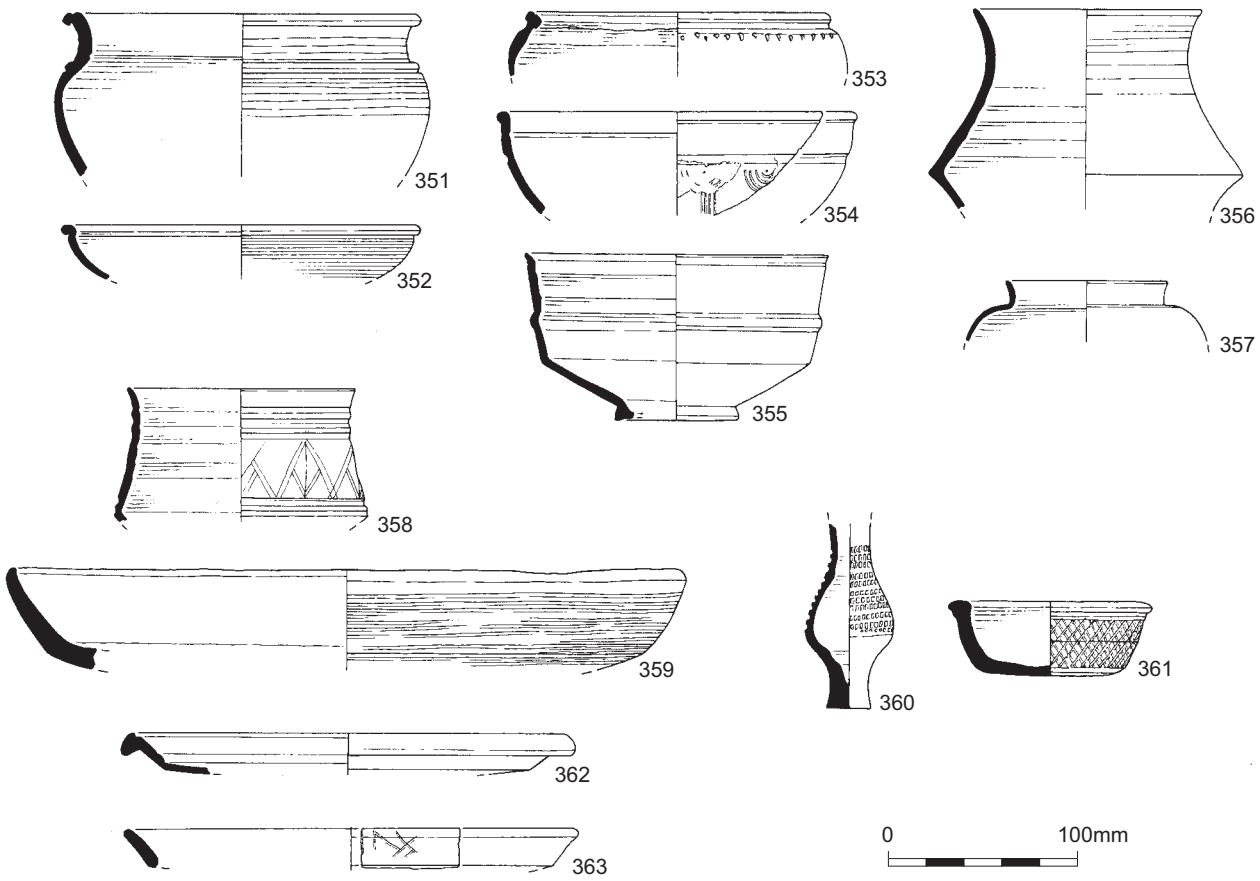


Figure 30 Springhead: pottery groups, Nos 351–63

343. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (3036); PRN 845.
344. Jar with a thickened, flattened bead rim (MON 3E3); North Kent/south Essex shelly ware; (3036); PRN 844.
345. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (3036); PRN 847.
346. Lid-seated jar with a grooved rim (MON 3L2); Thameside/Upchurch greyware; (3036); PRN 848.
347. Lid-seated jar with ledge at top of everted (MON 3L9); Thameside/Upchurch greyware; (3036); PRN 852.
348. Lid (MON 12); Thameside/Upchurch greyware; (3036); PRN 849.
349. Lid (MON class 12); Thameside/Upchurch greyware; (3036); PRN 851.
350. High-shouldered bead rim bowl (MON 4E1); Thameside/Upchurch greyware; (3036); PRN 854.

(Fig 30)

Pit 3199, 300029, 300029, Features east of enclosure 400017 (contd):

351. Necked bowl with lid-seated rim (MON 4C1.2); Thameside/Upchurch greyware; (3036); PRN 856.
352. Bead rim bowl with footring base (MON 7A2); Fine Greyware; (3036); PRN 859.
353. Bead-rim jar (Thompson 1982, type C1-2); Grog-tempered ware; (3036); PRN 857.
354. Carinated bowl (MON 4H2); Fine Greyware; (3036); PRN 860.
355. Carinated bowl (MON 4H1); Local fine oxidised ware; (3036); PRN 861.
356. Biconical beaker (MON 2G1); Fine Greyware; (3036); PRN 858.
357. High-shouldered beakers with an everted rim (Tyers and Marsh 1979, 569, fig 239, IIIB); Mica-dusted ware; (3036); PRN 862.

Layer 5641, 300009, 300009, Channel fills:

358. Carinated bowl (MON 4H1); Fine Greyware. PRN 593.

Channel 1001, 300015, 400007, Channel contexts:

359. Dish with flattened, slightly inturned rim (MON 5E4) North Kent/south Essex shelly ware; (6379); PRN 679.
360. *Unguentaria*, surface rouletted (Symonds and Wade 1999, 485, Cam 389); Oxidised ware; (6379); PRN 680.
361. Decorated 'pie-dish' with rounded rim (MON 5D1); (6378); PRN 681.

Unstratified, Sanctuary site:

362. Cam 5 platter (Hawkes and Hull 1947, 217, pl xlix, 5a); *Terra Rubra*. PRN 705.
363. Cam 2B platter (Hawkes and Hull 1947, 216, pl xlix, 2b) with post-firing, scratched graffito (Fig 57, 854); *Terra Nigra*. PRN 893.

(Fig 31)
Ditch 10194, 300387, 400121, Roadside Ditch 1:

364. Biconical beaker (MON 2G1); Fine Greyware; (10209); PRN 236.
365. Biconical beaker (MON 2G1); Fine Greyware; (10209); PRN 237.
366. Miniature flask (MON 9B); Fine Greyware; (10209); PRN 238.
367. Fine flanged dish (MON 5B2); Fine Greyware; (10209); PRN 239.
368. Fine cordoned bowl (MON 4J1); Fine Greyware; (10211); PRN 240.
369. Globular beaker (MON 2I6); Fine Greyware; (10211); PRN 241.
370. Fine, flanged dish (MON 5B4); Fine Greyware; (10211); PRN 242.
371. Butt beaker (MON 2B2); Fine Greyware; (10208); PRN 243.
372. Globular beaker (MON 2H); Fine Greyware; (10208); PRN 244.
373. Fine, flanged dish (MON 5B6); Fine Greyware; (10208); PRN 245.
374. Cup, imitating samian form 27 (MON 6C); Fine Greyware; (10208); PRN 246.
375. Jar with thickened, flattened bead rim (MON 3E3); North Kent/south Essex shelly ware; (10208); PRN 247.
376. Cordoned bowl (MON 4F); Thameside/Upchurch greyware; (10208); PRN 248.
377. Round-shouldered jar with inset below bead rim (Thompson 1982, type C4); Grog-tempered ware; (10208); PRN 249.
378. Storage jar with everted bead rim (MON 3D3); North Kent/south Essex shelly ware; (10209); PRN 250.
379. Lid-seated jar with a grooved bead rim (MON 3L7); North Kent/south Essex shelly ware; (10209); PRN 251.
380. Lid-seated jar with everted rim (MON 3L1); North Kent/south Essex shelly ware; (10209); PRN 252.
381. Lid-seated jar with everted rim (MON 3L1); Thameside/Upchurch greyware; (10209); PRN 253.
382. Lid-seated jar, ledge formed by a sloping rim (MON 3L8); North Kent/south Essex shelly ware; (10209); PRN 254.
383. Jar with a flattened hooked rim (MON 3F3); North Kent/south Essex shelly ware; (10209); PRN 255.
384. S-profile bowl (MON 4A3); Thameside/Upchurch greyware; (10211) PRN 256.
385. Necked bowl with lid-seated rim (MON 4C1.2); Thameside/Upchurch greyware; (10211) PRN 257.
386. Carinated platter (MON 7B2); Thameside/Upchurch greyware; (10209); PRN 258.
387. Lid-seated jar, ledge at top of rim (MON 3L9); Thameside/Upchurch greyware; (10211); PRN 259.
388. Lid-seated jar, ledge at top of rim (MON 3L9); Thameside/Upchurch greyware; (10211); PRN 260.
389. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (10211); PRN 261.
390. Lid-seated bowl with grooved rim (MON 4L2); North Kent/south Essex shelly ware; (10211); PRN 262.
391. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (10211); PRN 263.
392. Lid-seated bowl with grooved rim (Monaghan 1987, class 4L2); Thameside/Upchurch greyware; (10209); PRN 264.
393. Cordoned bowl (MON 4F2); Thameside/Upchurch greyware; (10209); PRN 265.
394. Lid (MON 12); Thameside/Upchurch greyware; (10209); PRN 266.
395. Cordoned bowl (MON 4F); Thameside/Upchurch greyware; (10208); PRN 267.
396. Butt beaker (MON 2B2); Thameside/Upchurch greyware; (10208); PRN 268.
397. Carinated bowl (MON 4H1); Upchurch painted ware; (10209); PRN 269.
398. S-profile bowl (MON 4A1); Upchurch painted ware; (10208); PRN 270.
399. Tall, narrow-necked jar with cordon at neck/shoulder junction (MON 3A3); Thameside/Upchurch greyware; (10209) and (10211); PRNs 271 and 272.
400. Platter with curving wall (Marsh 1978, 154, fig 6.10 and 6.11, 24); Mica-dusted ware; (10209); PRN 273.

(Fig 32)
Ditch 10198, 300387, 400121, Roadside Ditch 1:

401. Ring-necked flagon (MON 1E2); Hoo ware; (10217) and (10219); PRNs 283 and 284.
402. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (10217); PRN 286.
403. Lid-seated jar with a sloping rim (MON 3L8); North Kent/south Essex shelly ware; (10217); PRN 285.
404. Jar with thickened, flattened bead rim (MON 3E3); North Kent/south Essex shelly ware; (10217); PRN 287.
405. Jar with a flattened hooked rim (MON 3F3); North Kent/south Essex shelly ware; (10217); PRN 288.
406. Cordoned bowl (MON 4F2); North Kent/South Essex shelly ware; (10219); PRN 289.
407. S-profile bowl (MON 4A); Thameside/Upchurch greyware; (10217); PRN 290.
408. Lid (MON 12); Thameside/Upchurch greyware; (10217); PRN 291.
409. Lid-seated jar with grooved rim (MON 3L2); Thameside/Upchurch greyware; (10219); PRN 292.
410. Globular beaker (MON 2H2); Fine Greyware; (10219); PRN 293.
411. Biconical beaker (MON 2G1); Fine Greyware; (10219); PRN 294.

Ditch 10233, 300387, 400121, Roadside Ditch 1:

412. Large necked storage jar with everted rim (MON 3D5); post-firing scratched graffito on shoulder (Fig 59, 887); North Kent/south Essex shelly ware; (10235); PRN 223.
413. Biconical beaker (MON 2G1); Fine Greyware; (10240); PRN 224.
414. Collared flagon (MON 1E5); Hoo ware; (10240); PRN 225.

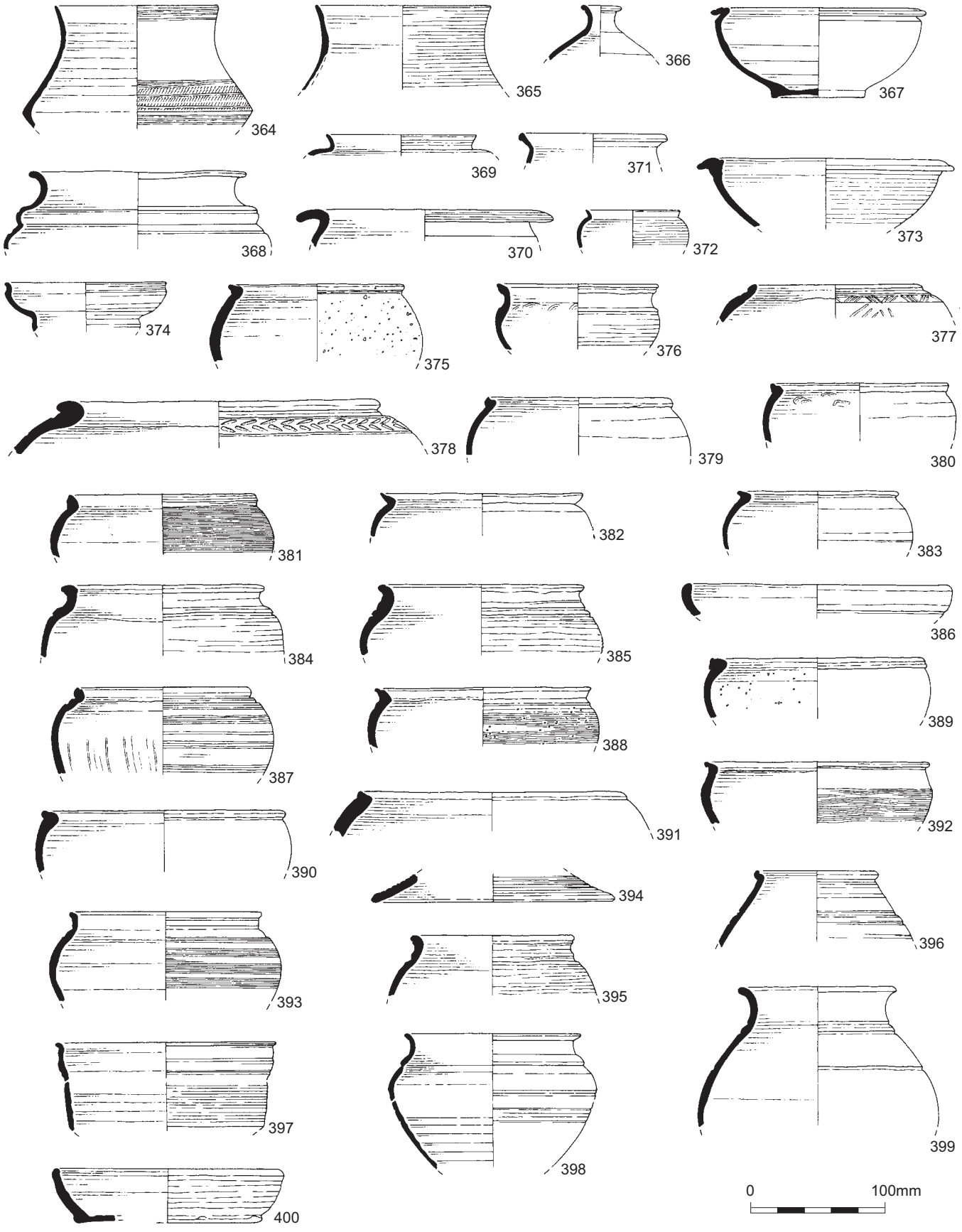


Figure 31 Springhead: pottery groups, Nos 364–400

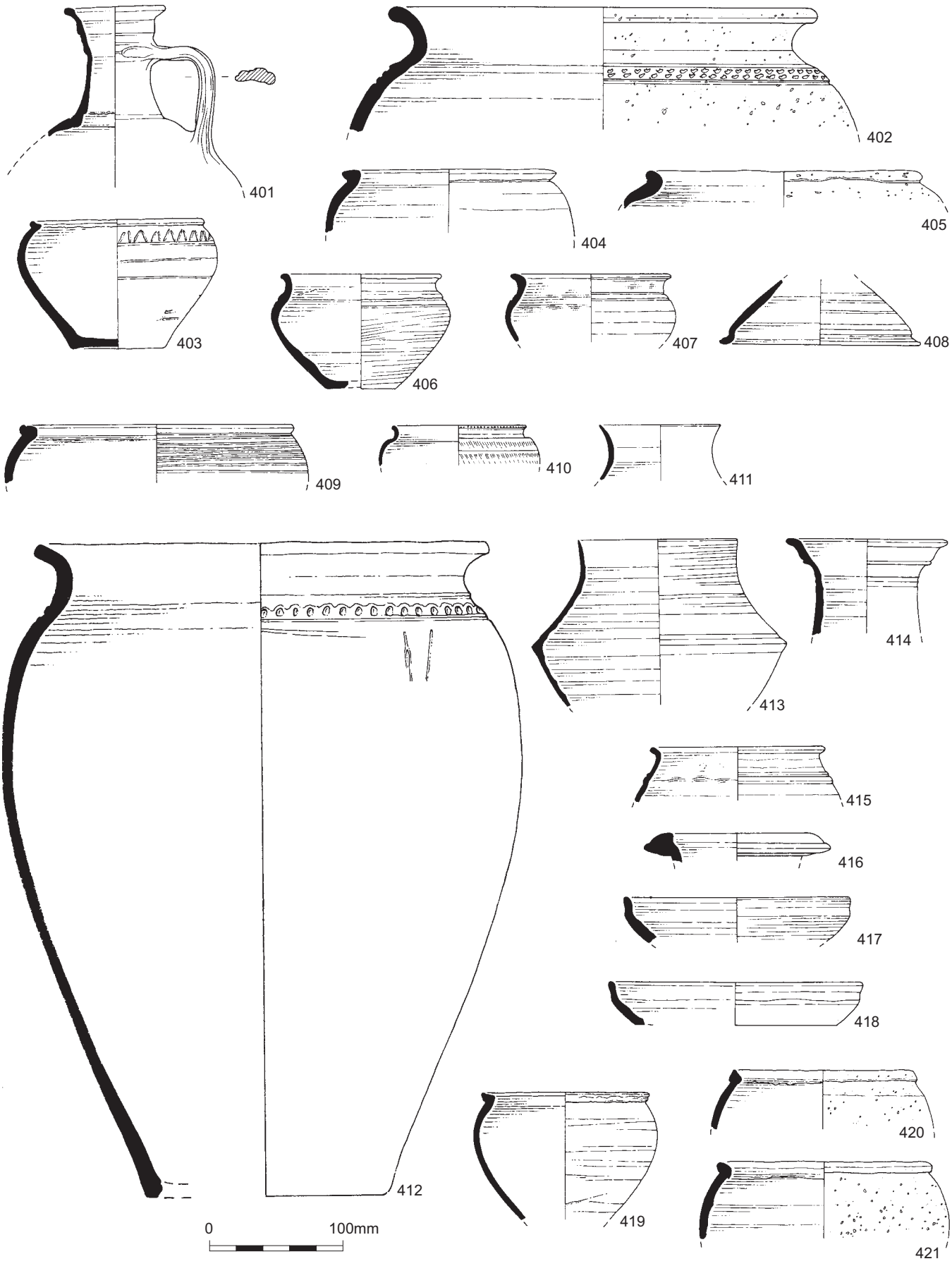


Figure 32 Springhead: pottery groups, Nos 401–21

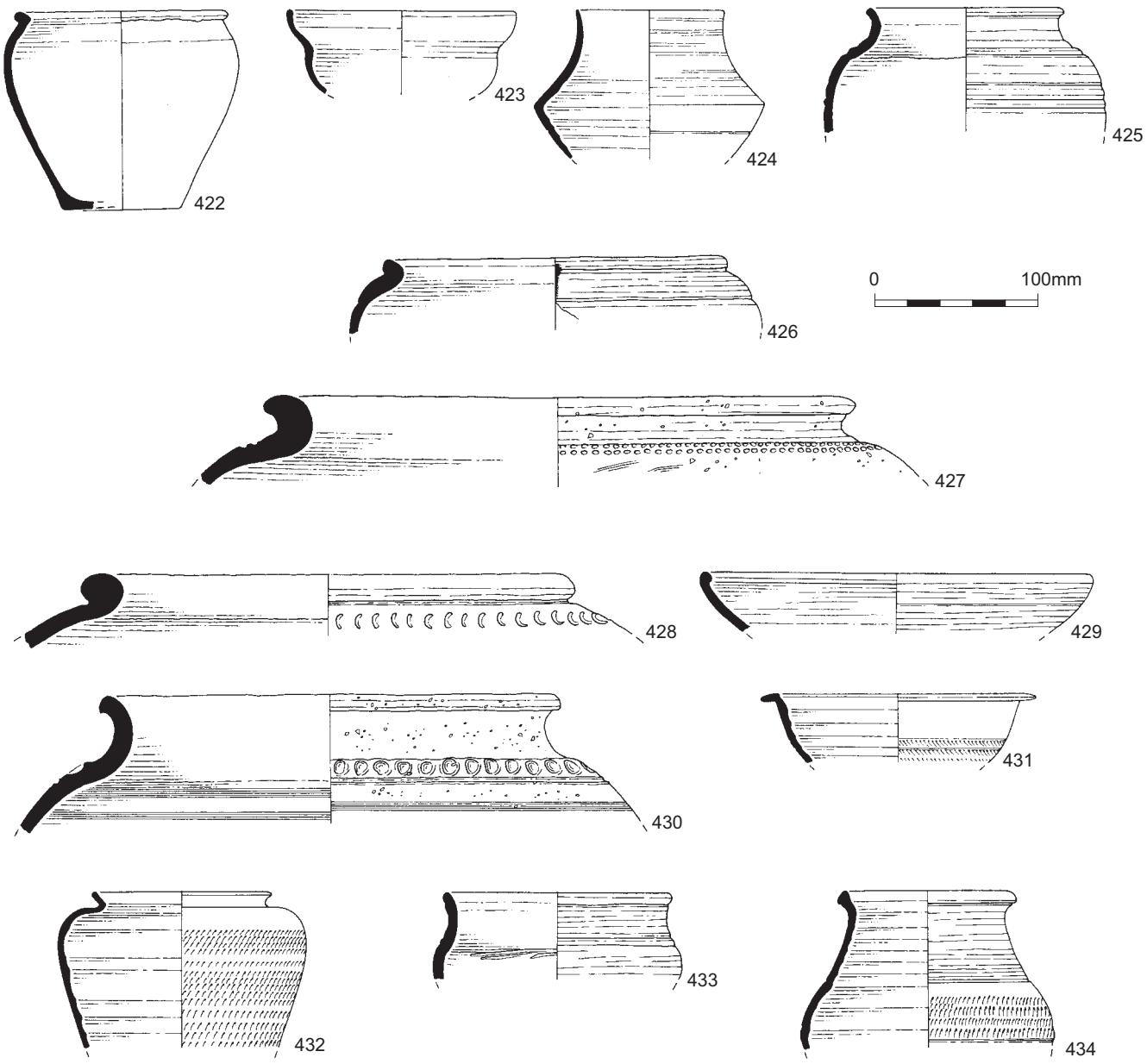


Figure 33 Springhead: pottery groups, Nos 422–34

415. Cordoned bowl (MON 4J); Fine Greyware; (10240); PRN 226.
416. Large, double-handled flagon (Tyers and Marsh 1979, 553, fig 233, IJ); *Verulamium* region whiteware; (10240); PRN 227.
417. Internally ridged platter (MON 7D); Fine Greyware; (10240); PRN 228.
418. Internally ridged platter (MON 7D); Fine Greyware; (10241); PRN 232.
419. Jar with a pointed bead rim (MON 3F4); North Kent/south Essex shelly ware; (10240); PRN 229.
420. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (10240); PRN 230.
421. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (10240); PRN 231.

(Fig 33)

Ditch 10233, 300387, 400121, Roadside Ditch 1 (contd):

422. Hooked bead rim jar (MON 3F2); North Kent/south Essex shelly ware; (10240); PRN 233.
423. Cup imitating samian form 27 (MON 6C); Upchurch painted ware; (10241); PRN 234.
424. Biconical beaker (MON 2G1); Fine Greyware; (10241); PRN 235.
425. Everted rim necked jar (Thompson 1982, type B1-1); Grog-tempered ware; (10186); PRN 281.
426. Facetted jar (MON 3G3); Thameside/Upchurch greyware; (10186); PRN 280.
427. Large storage jar with everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware; (10186); PRN 282.

Ditch 10274, 300387, 400121, Roadside Ditch 1:

428. Large storage jar with everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware; (10345); PRN 309.
429. Dish with flattened, inturned rim (MON 5E4); Thameside/Upchurch greyware; (10345); PRN 312.
430. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (10345); PRN 310.
431. Flanged bowl (MON 5B); Fine Greyware; (10345); PRN 313.
432. Globular beaker with everted rim (MON 2H2); Fine Greyware; (10345); PRN 314.
433. Shouldered bowl with plain rim (MON 4D1); Oxidised ware; (10341) and (10349); PRNs 315 and 316.
434. Butt beaker; Whiteware; (10345) and (10349); PRNs 317 and 318.

(Fig 34)

Ditch 19449, 300630, 400184, Roadside ditch 3:

435. Large storage jar (Thompson 1982, type C6-1); Grog-tempered ware; (19435); PRN 398.
436. Flagon; Oxidised ware; (19427); PRN 399.
437. Facetted jar with bead rim (MON 3G1); Flint-tempered ware; (19435) and (19433); PRNs 397 and 400.

Ditch 19544, 300627, 400185, Roadside ditch 3:

438. High-shouldered bead rim bowl (MON 4E1); post-firing perforation through the base; North Kent/south Essex shelly ware; (19463); PRN 432.

Ditch 19514, 300631, 400185, Roadside ditch 3:

439. Hooked-flange mortarium (Davies *et al* 1994, 7, HOF); *Verulamium* region whiteware mortaria; (19510); PRN 414.
440. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; (19510); PRN 417.
441. High-shouldered bead rim bowl (MON 4E1); North Kent/south Essex shelly ware; (19510); PRN 415.
442. High-shouldered bead rim bowl (MON 4E1); North Kent/south Essex shelly ware; (19510); PRN 416.
443. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (19510); PRN 418.
444. Jar with a thickened, flattened bead rim (MON 3E3); North Kent/South Essex shelly ware; (19510); PRN 419.
445. Cordoned bowl (MON 4F2); Thameside/Upchurch greyware; (19510); PRN 420.
446. Cordoned bowl (MON 4F2); Thameside/Upchurch greyware; (19510); PRN 421.
447. Straight-walled beaker (MON 2F3; Local fine oxidised ware; (19510); PRN 422.
448. Carinated bowl (MON 4H2); Upchurch painted ware; (19510); PRN 423.
449. Cup based on Ritt 12 samian form; Thameside/Upchurch greyware; (19510); PRN 424.
450. *Patera* handle; Hoo ware; (19509) PRN 426.
451. Cordoned bowl (MON 4J1); Fine Greyware; (19509) and (19510); PRNs 427 and 428.
452. Jar with a pointed bead rim (MON 3F4); North Kent/south Essex shelly ware; (19509); PRN 430.
453. Facetted jar with internally bevelled rim (MON 3G0.2); North Kent/south Essex shelly ware; (19509); PRN 431.
454. Large storage jar with everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware; (19509); PRN 429.

(Fig 35)

Beam slot 19249, 300606, 400177, Property 3:

455. Large storage jar with everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware; (19247); PRN 401.
456. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (19247); PRN 402.
457. 'Native' carinated bowl (MON 4G4); Local fine oxidised ware; (19247); PRN 403.
458. Carinated bowl (MON 4H1); Fine Greyware; (19247); PRN 404.
459. Small jar with a hooked bead rim (MON 3F0); Thameside/Upchurch greyware; (19247); PRN 405.
460. Internally ridged platter (MON 7B2); Thameside/Upchurch greyware; (19247); PRN 406.
461. Lamp; Oxidised ware; (19246); PRN 275.

Pit 19233, 300610, 400178, Property 3:

462. Wide-mouthed, everted rim jar (MON 3I1); Coarse, gritty, predominantly oxidised ware; (19234); PRN 279.

Layer 17572, 300676, 400196, Property 3:

463. Base from a 'London ware'-style carinated bowl; Fine Greyware. PRN 191.
464. Fine cordoned bowl (MON 4J2); Fine Greyware. PRN 192.
465. Bead rim bowl with footring base (MON 7A2); PRN 193.
466. Fine, flanged dish (MON 5B4); Thameside/Upchurch greyware. PRN 194.
467. Fine, flanged dish (MON 5B4); Thameside/Upchurch greyware. PRN 195.
468. 'Poppy-head' beaker (Tyers and Marsh 1979, 569–70, fig 239, IIIF); Highgate C ware; PRN 190.

Layer 17779, 300681, 400197, Property 3:

469. Ring-necked flagon (MON 1E2); Hoo ware. PRN 179.
470. Fine, flanged dish (MON class 5B2); Fine Greyware. PRN 188.

(Fig 36)

Pot-oven 17073, 300650, 300650, Property 3:

471. Large storage jar with everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware; (17074); PRN 452.

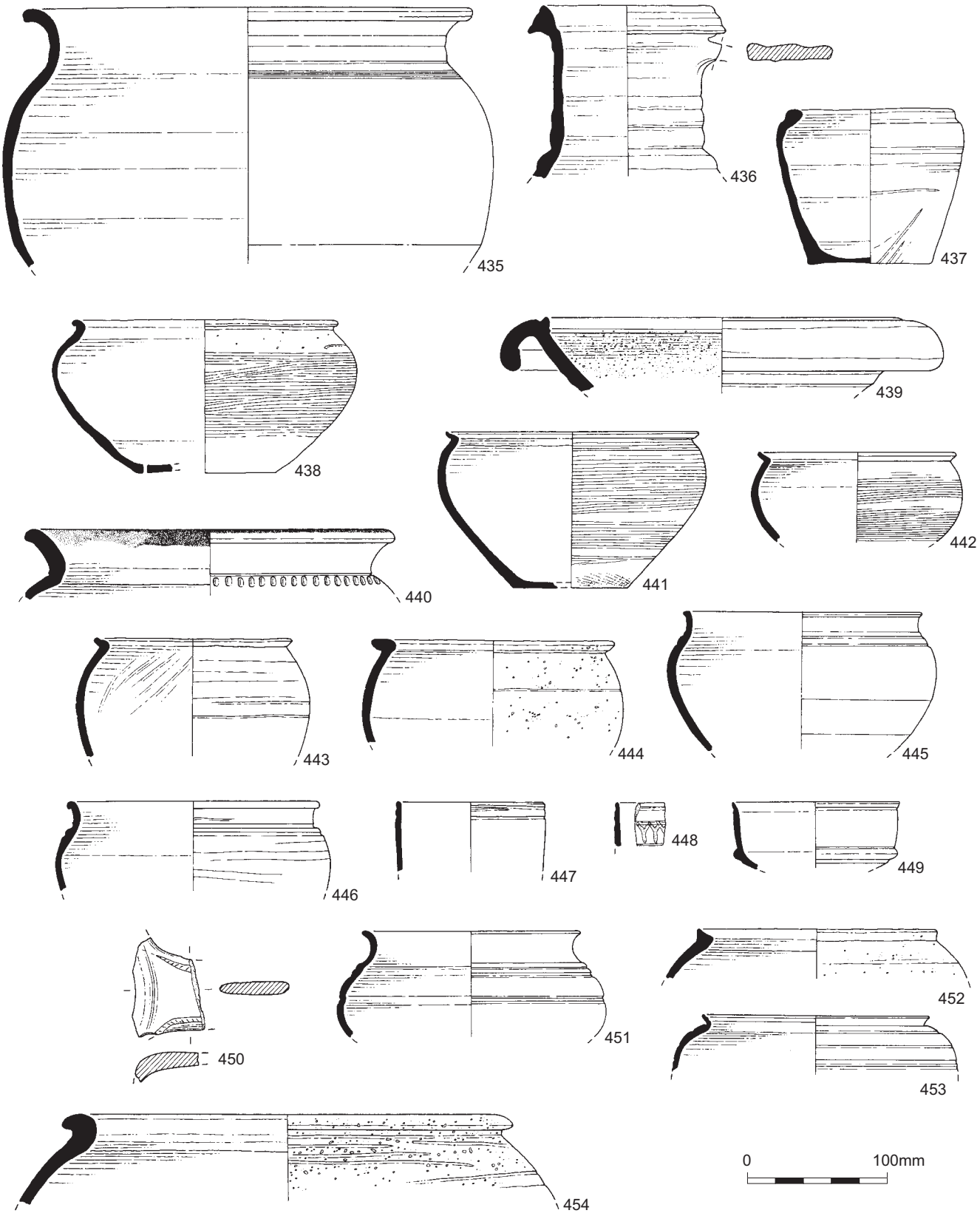


Figure 34 Springhead: pottery groups, Nos 435–54

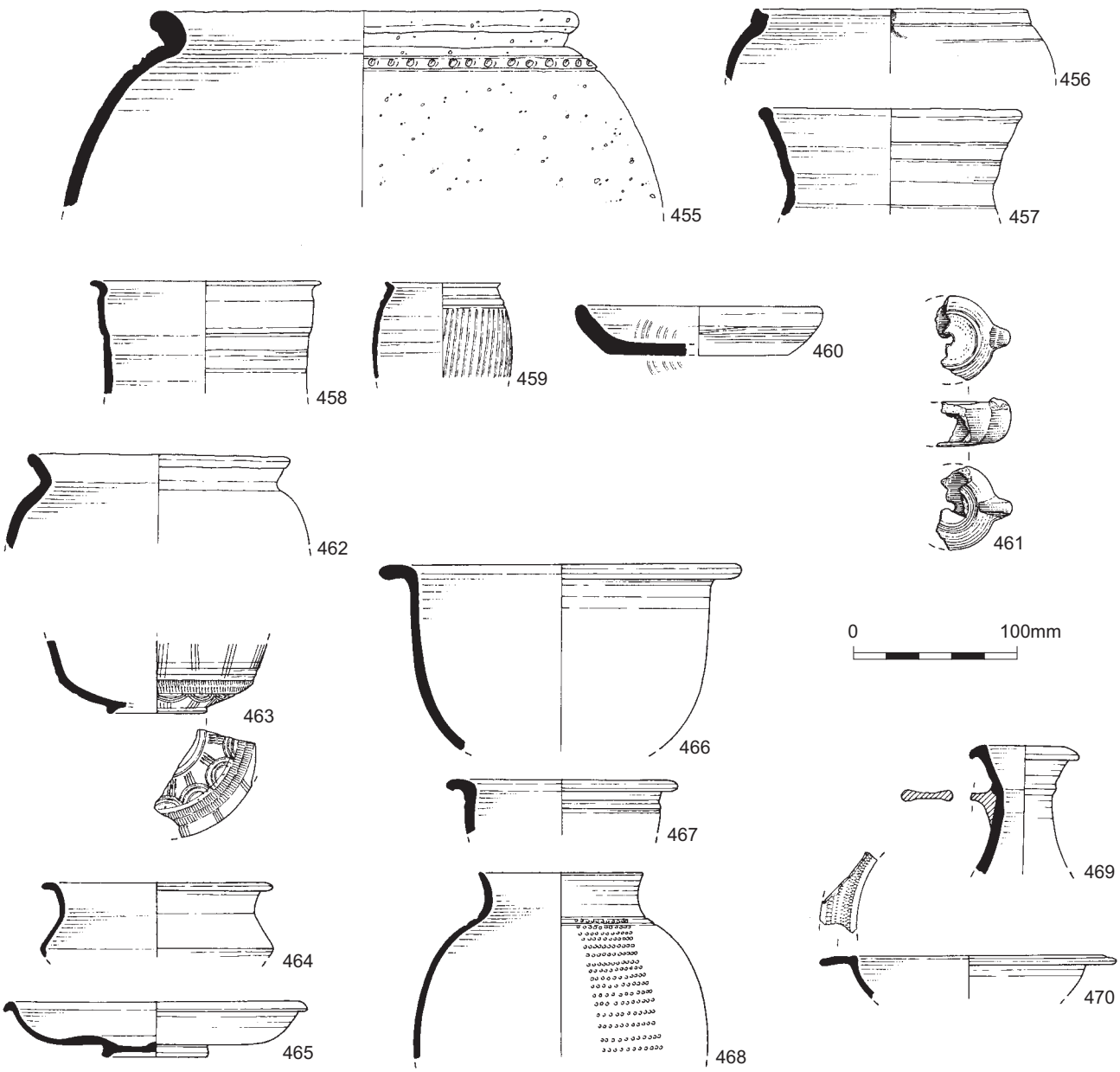


Figure 35 Springhead: pottery groups, Nos 455–70

(Fig 37)
Pit 16902, 300579, 400168, Property 4:

472. Tall, narrow-necked jar (MON 3A3); post-firing perforations through wall; Thameside/Upchurch greyware; (16894) and (16899); PRNs 1005 and 1006.
473. Narrow-necked jar with cordoned shoulders (MON 3A2); Thameside/Upchurch greyware; (16894); PRN 1007.
474. Lid-seated jar with a grooved rim (MON 3L2); Thameside/Upchurch greyware; (16894); PRN 1008.
475. High-shouldered jar with developed or pulled bead rim (Seager Smith and Davies 1993, 231, type WA 8); South-east Dorset Black Burnished Ware; (16894); PRN 1009.
476. S-profile bowl (MON 4A2); Thameside/Upchurch greyware; (16894); PRN 1010.
477. 'Native' carinated bowl (MON 4G1); warped Fine Greyware; (16894) and (16899); PRNs 1011 and 1012.
478. Biconical beaker (MON 2G1); Fine Greyware; (16894); PRN 1013.
479. Mortarium, Cam 497 (Hull 1963, 190, fig107, 497); Colchester whiteware fabric; (16894); PRN 1014.
480. Everted rim jar (Thompson 1982, type B1-1); Grog-tempered ware; (16899); PRN 1015

(Fig 38)
Pit 16471, 300548, 400162, Property 5:

481. Spouted strainer bowl (Marsh 1978, 181, fig 6.20 and 6.21, 46); *Verulamium* region whiteware; (16472); PRN 330.
482. Lid (MON 12); Thameside/Upchurch greyware; (16472); PRN 332.
483. Lid (MON 12); Thameside/Upchurch greyware; (16472); PRN 333.
484. High-waisted bowl (MON 4C); Thameside/Upchurch greyware; (16472); PRN 335.

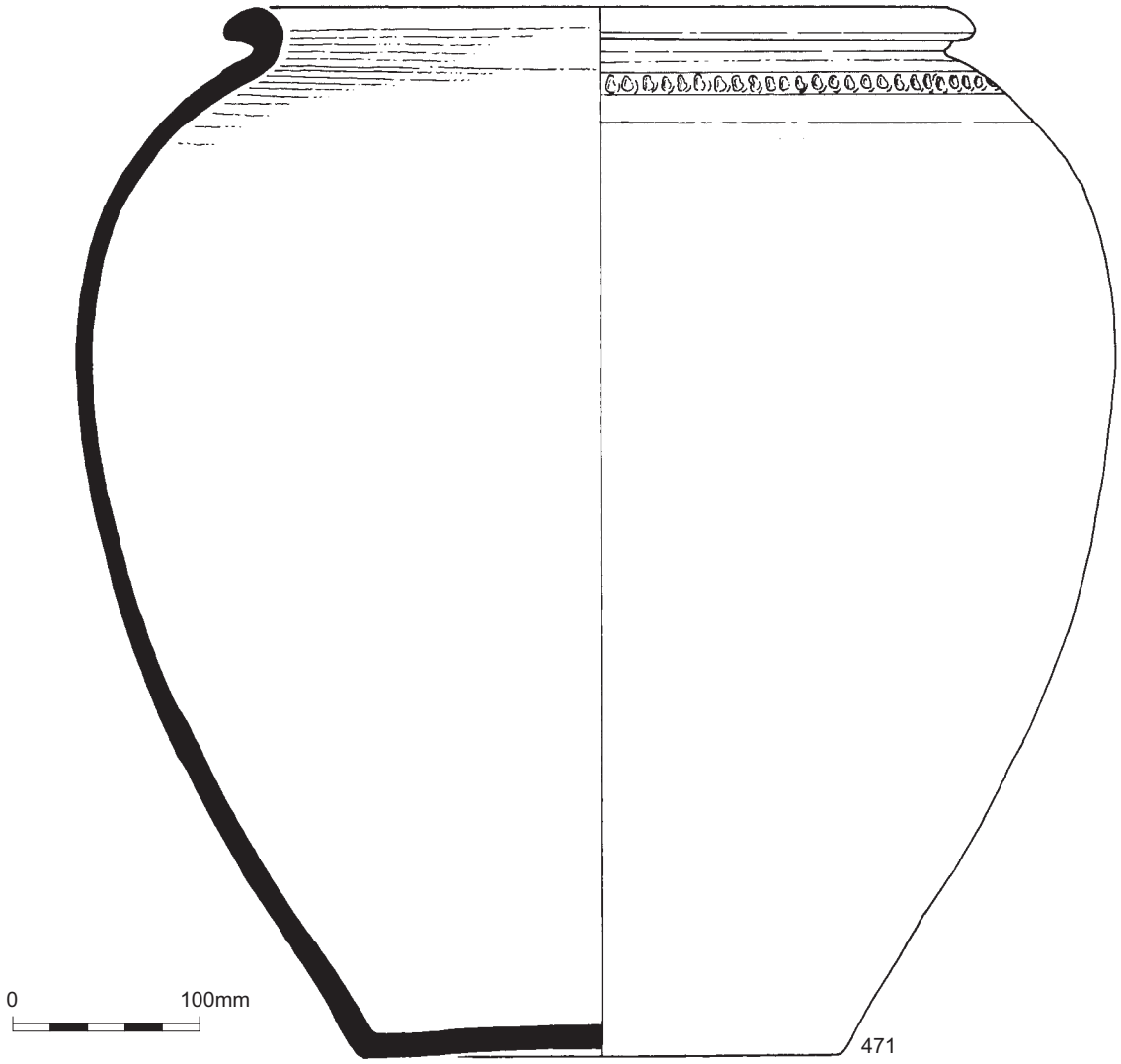


Figure 36 Springhead: pottery groups, No 471

485. Large, double-handled flagon (Tyers and Marsh 1979, 553, fig 233, IJ); *Verulamium* region whiteware; (16472); PRN 331.
486. Lid (MON 12); Thameside/Upchurch greyware; (16472); PRN 334.
487. Dish with flattened, inturned rim (MON 5E4); Thameside/Upchurch greyware; (16472); PRN 336.
488. Lid-seated jar, ledge formed from an internal bead (MON 3L10); Thameside/Upchurch greyware; (16472); PRN 337.
489. Fine, flanged dish (MON 5B5); Thameside/Upchurch greyware; (16472); PRN 338.
490. Butt beaker (MON 2B2); Thameside/Upchurch greyware; (16472); PRN 339.
491. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; (16472); PRN 340.
492. Dish with flattened, inturned rim (MON 5E4); Thameside/Upchurch greyware; (16472); PRN 341.
493. Lid-seated jar, ledge formed from an internal bead (MON 3L10); North Kent/south Essex shelly ware; (16472); PRN 342.
494. Hooked-flange mortarium (Davies *et al* 1994, 7, HOF); stamped (Fig 13, 71); *Verulamium* region whiteware; (16472); PRN 444.

(Fig 39)
Pot-oven 105, 300537, 400158, Property 8:
495. Large storage jar with an everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware; (105); PRN 1004.

(Fig 40)
Layer 16144, 300472, 400140, Property 10:
496. Hooked-flange mortarium (Davies *et al* 1994, 7, HOF); stamped (Fig 13, 62); *Verulamium* region whiteware. PRN 374.
497. Cup imitating samian form 33 (MON 6A); Upchurch painted ware. PRN 375.
498. Cup imitating samian form 27 (MON 6C); Local fine oxidised ware. PRN 376.
499. Cup imitating samian form 27 (MON 6C); Local fine oxidised ware. PRN 377.

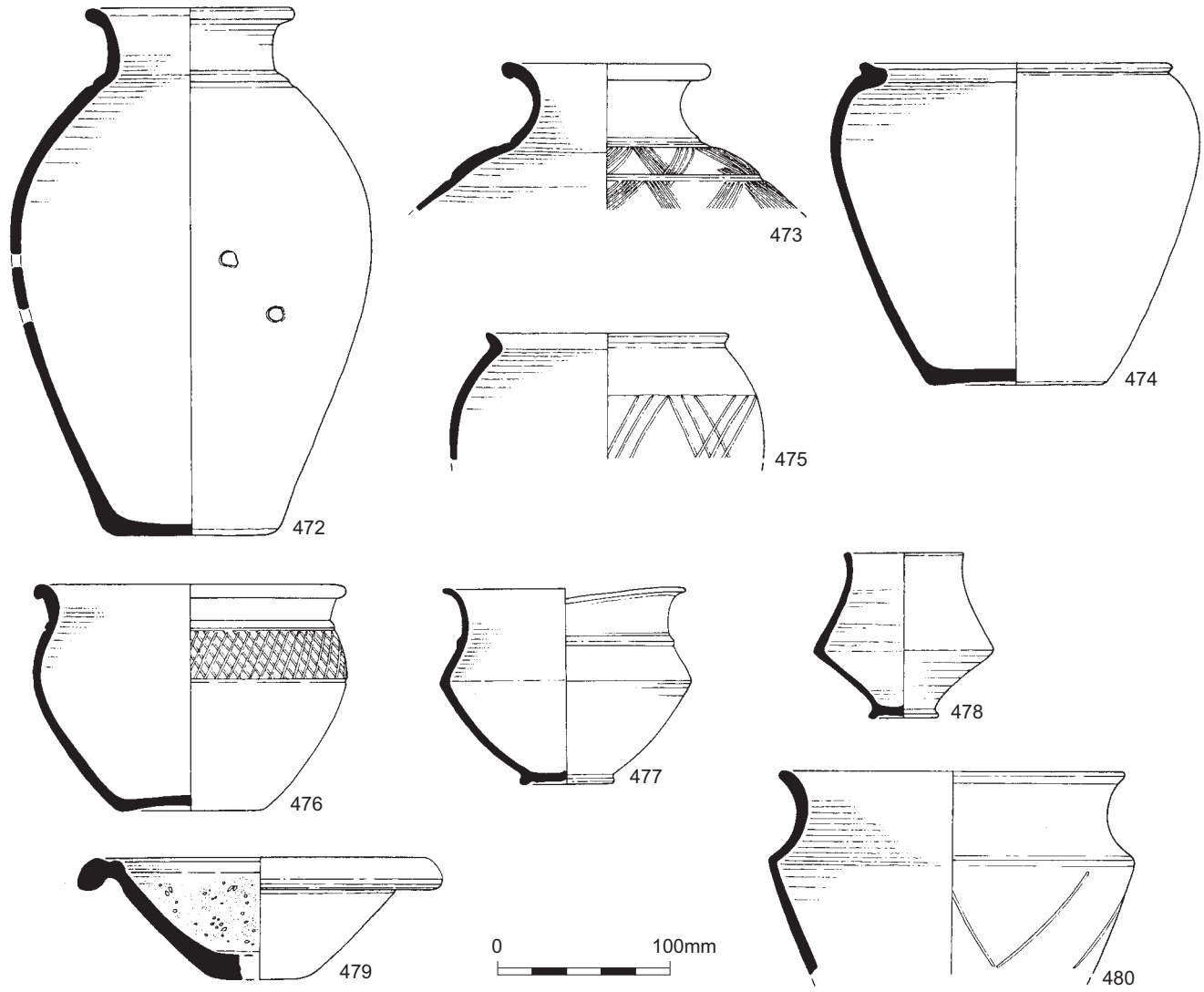


Figure 37 Springhead: pottery groups, Nos 472–480

500. Dish with bead rim and footring base (MON 7A1); Local fine oxidised ware. PRN 378.
501. 'Native' carinated bowl (MON 4G2); Local fine oxidised ware. PRN 379.
502. Lid-seated jar, ledge at top of everted rim MON 3L9); Thameside/Upchurch greyware. PRN 381.
503. Dish with flattened, inturned rim (MON 5E4); Thameside/Upchurch greyware; PRN 382.
504. High-shouldered bead-rim jar (MON 3E0); Thameside/Upchurch greyware; PRN 383.
505. S-profile bowl (MON 4A3); Thameside/Upchurch greyware; PRN 384.
506. Lid-seated jar with grooved rim (MON 3L2); Thameside/Upchurch greyware; PRN 385.
507. Lid-seated jar with grooved rim (MON 3L2); Thameside/Upchurch greyware; PRN 386.
508. Cordoned bowl (MON 4J1); Fine Greyware; PRN 387.
509. Fine, flanged dish (MON 5B3); Fine Greyware; PRN 388.
510. Large necked storage jar with everted rim (MON 3D5); North Kent/south Essex shelly ware; PRN 389.
511. High-shouldered bead rim bowl (MON 4E1); North Kent/south Essex shelly ware; PRN 390.
512. Lid-seated bowl, with grooved rim (MON 4L2); North Kent/south Essex shelly ware; PRN 391.
513. Platter with beaded rim (MON 7A3); North Kent/south Essex shelly ware; PRN 392.
514. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; PRN 393.
515. Lid-seated jar with everted rim (MON 3L1); North Kent/south Essex shelly ware; PRN 394.
516. Lid-seated jar with a grooved bead rim (MON 3L7); North Kent/south Essex shelly ware; PRN 395.
517. Jar with rippled shoulder (Thompson 1982, type B2-1); Grog-tempered ware; PRN 396.
518. Flanged dish (MON 5A5); Thameside/Upchurch greyware; PRN 380.

Ditch 16148, 300473, 400138, Property 10:

519. Large handle with impressed decoration; Hoo ware; PRN 278.

Layer 11257, 300457, 400139, Property 10:

520. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; PRN 319.

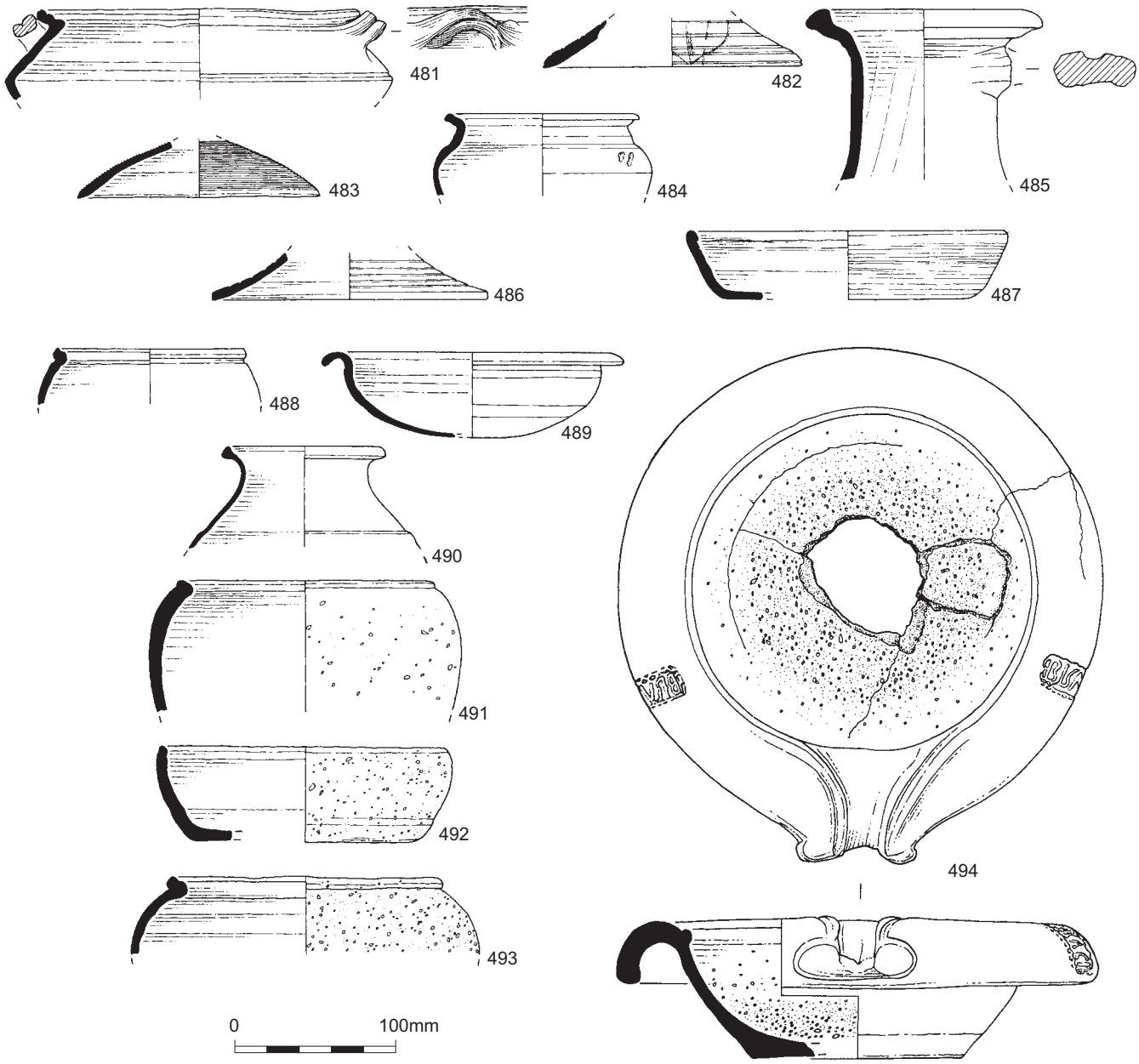


Figure 38 Springhead: pottery groups, Nos 481–494

521. Bead rim jar (MON 3E8); North Kent/south Essex shelly ware; PRN 320.
522. Bead rim jar (MON 3E1); North Kent/south Essex shelly ware; PRN 321.
523. Jar with internally thickened, flattened bead rim (MON 3E3); North Kent/south Essex shelly ware; PRN 322.
524. Jar with a double facet (MON 3G5); Thameside/ Upchurch greyware; PRN 323.
525. Lid-seated jar with everted rim (MON 3L1); Thameside/Upchurch greyware; PRN 324.
526. Internally ridged platter (MON 7B1); Fine Greyware; PRN 325.
527. Fine, flanged bowl (MON 5B6); Fine Greyware; PRN 326.
528. Butt beaker (MON 2B2); Fine Greyware; PRN 327.
529. Bead rim jar (MON 3E1); Fine Greyware; PRN 328.
530. Fine, flanged bowl (MON 5B2); Oxidised ware; PRN 329.

(Fig 41)

Pit 11240, 300465, 400141 and Layer 11267, Property 10:

531. Ring handle probably from a spouted wine strainer; Mica-dusted ware; (11302) and (11267); PRNs 276 and 277.

Pit 11078, 300466, 400141, Property 10:

532. Large storage jar (Thompson 1982, type C6-1); Patchgrove ware; (11079); PRN 494.

(Fig 42)

Pit 10657, 300396, 400124, Property 11:

533. Carinated bowl (MON 4H2); Upchurch painted ware; (10665); PRN 300.
534. S-profile bowl (MON 4A4); Flint-tempered ware; (10665); PRN 301.
535. Lid-seated jar with a grooved rim (MON 3L2); Thameside/Upchurch greyware; (10665); PRN 302.

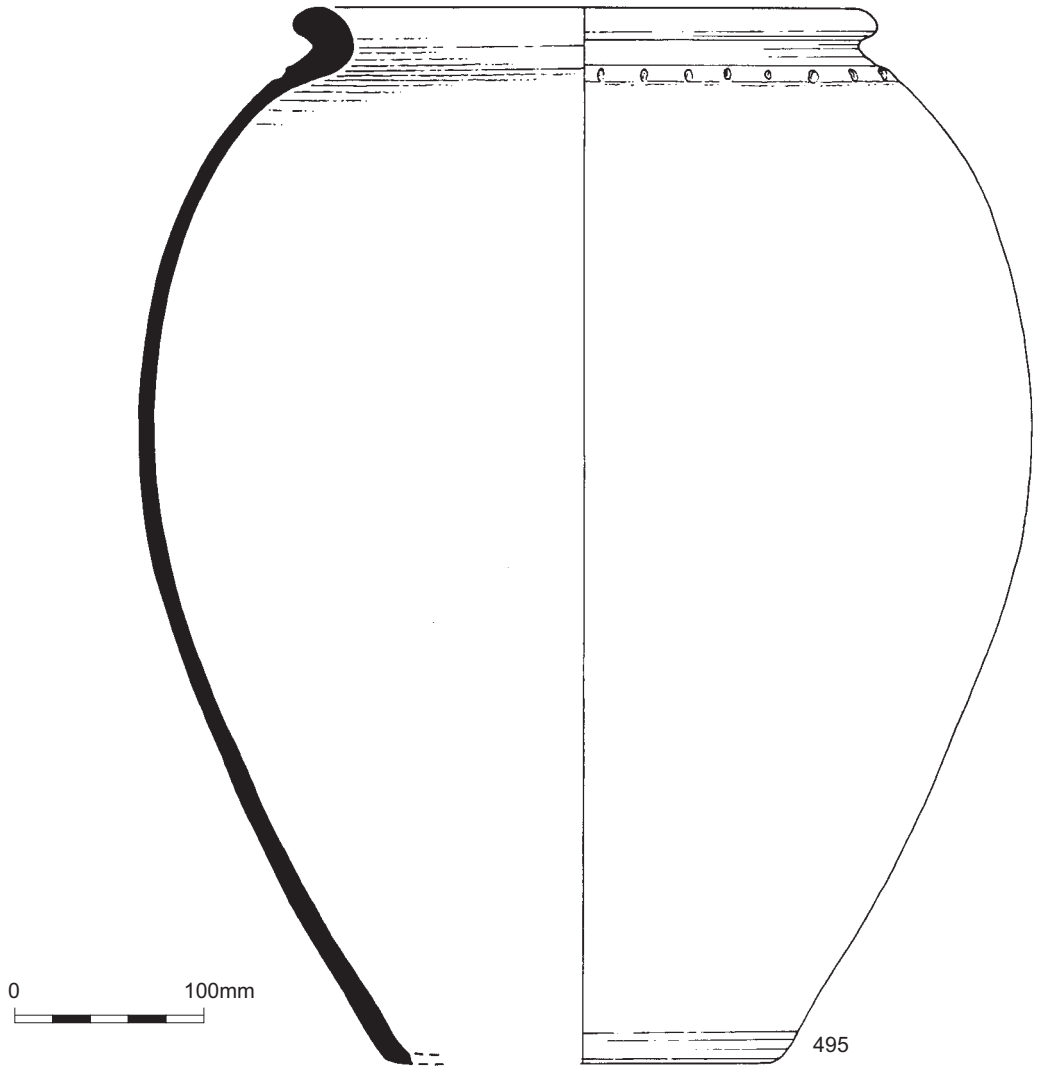


Figure 39 Springhead: pottery groups, No 495

536. Lid-seated jar, ledge at top of everted rim (MON 3L9); Thameside/Upchurch greyware; (10665); PRN 303.
537. Fine, flanged dish (MON 5B6); Thameside/Upchurch greyware; (10665); 304.
538. Lid-seated jars with a grooved bead rim (MON 3L7); North Kent/south Essex shelly ware; (10665): PRN 305.
539. Dishes with flattened, inturned rim (MON 5E4); North Kent/south Essex shelly ware; (10665); PRN 306.
540. Bead rim bowl with footring base (MON 7A2); Fine Greyware; (10665); PRN 307.
541. Biconical beaker (MON G1); Fine Greyware; (10665); PRN 308.

Layer 10819, 300407, 400127, Property 11:

542. Lid-seated jar with a grooved bead rim (MON 3L7); North Kent/south Essex shelly ware; PRN 343.
543. Lid-seated jar with a grooved bead rim (MON 3L7); North Kent/south Essex shelly ware; PRN 344.
544. High-shouldered bead rim bowl (MON 4E1); North Kent/south Essex shelly ware; PRN 346.
545. Large storage jar with everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware; PRN 345.
546. Jar with a double facet (MON 3G5); Thameside/Upchurch greyware; PRN 349.
547. Jar with a flattened hook rim (MON 3F3); North Kent/south Essex shelly ware; PRN 347.
548. Lid (MON 12); Thameside/Upchurch greyware; PRN 348.
549. Carinated bowl (MON 4H2); Fine Greyware; PRN 366.
550. Internally ridged platter (MON 7B1); Thameside/Upchurch greyware; PRN 355.
551. Lid (MON 12); Fine Greyware; PRN 364.
552. Fine cordoned bowl (MON 4J1); Fine Greyware; PRN 365.
553. Carinated bowl (MON 4H1); post-firing scratched graffito (Fig 59, 875); Fine Greyware; PRN 367.
554. Internally ridged platter (MON 7B1); Fine Greyware; PRN 368.
555. Cam 16 platter (Hawkes and Hull 1947, 220, fig 47, 11); *Terra Nigra*; PRN 369.
556. Globular beaker (MON 2I6); Local fine oxidised ware; PRN 371.

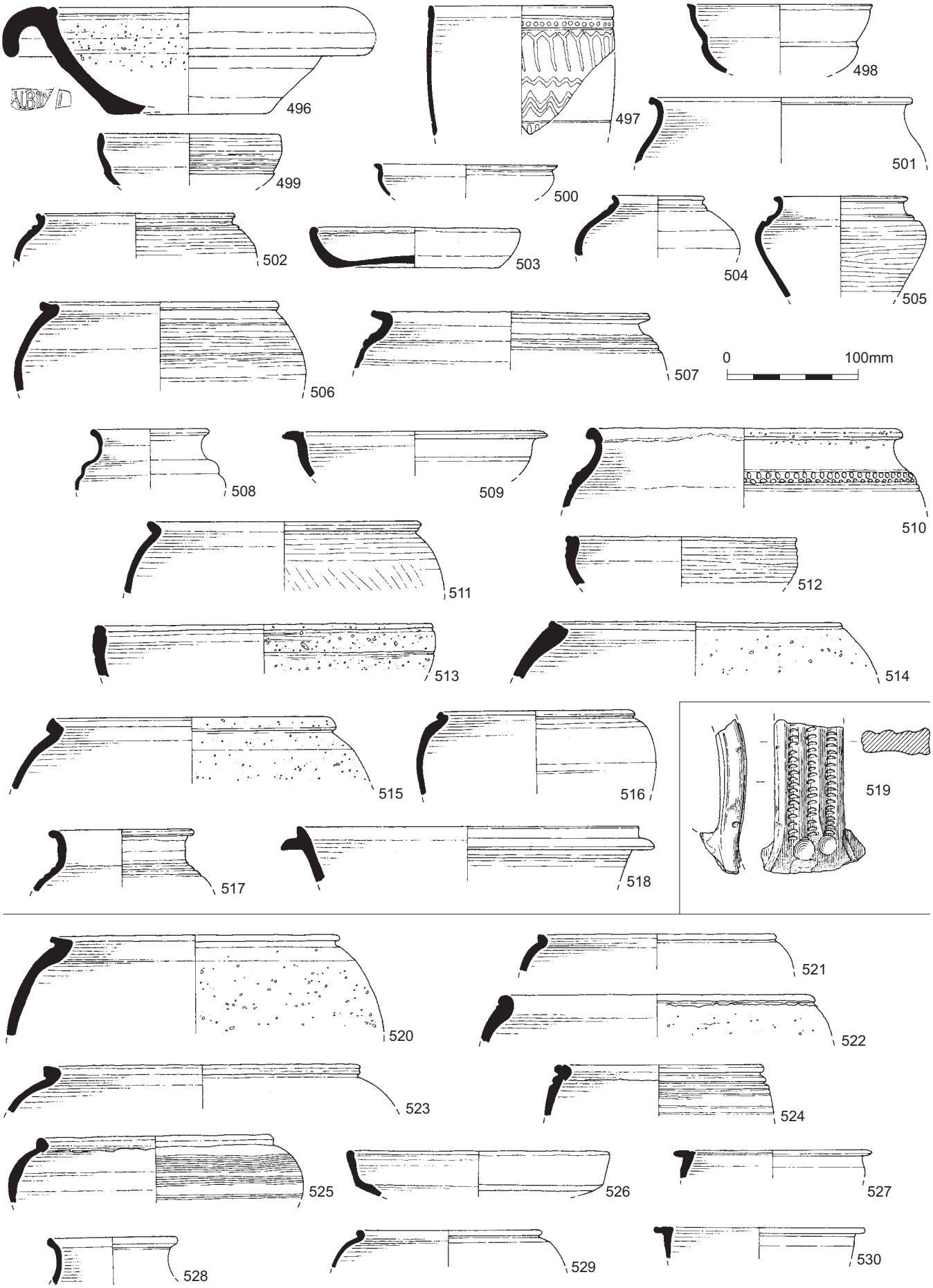


Figure 40 Springhead: pottery groups, Nos 496–530

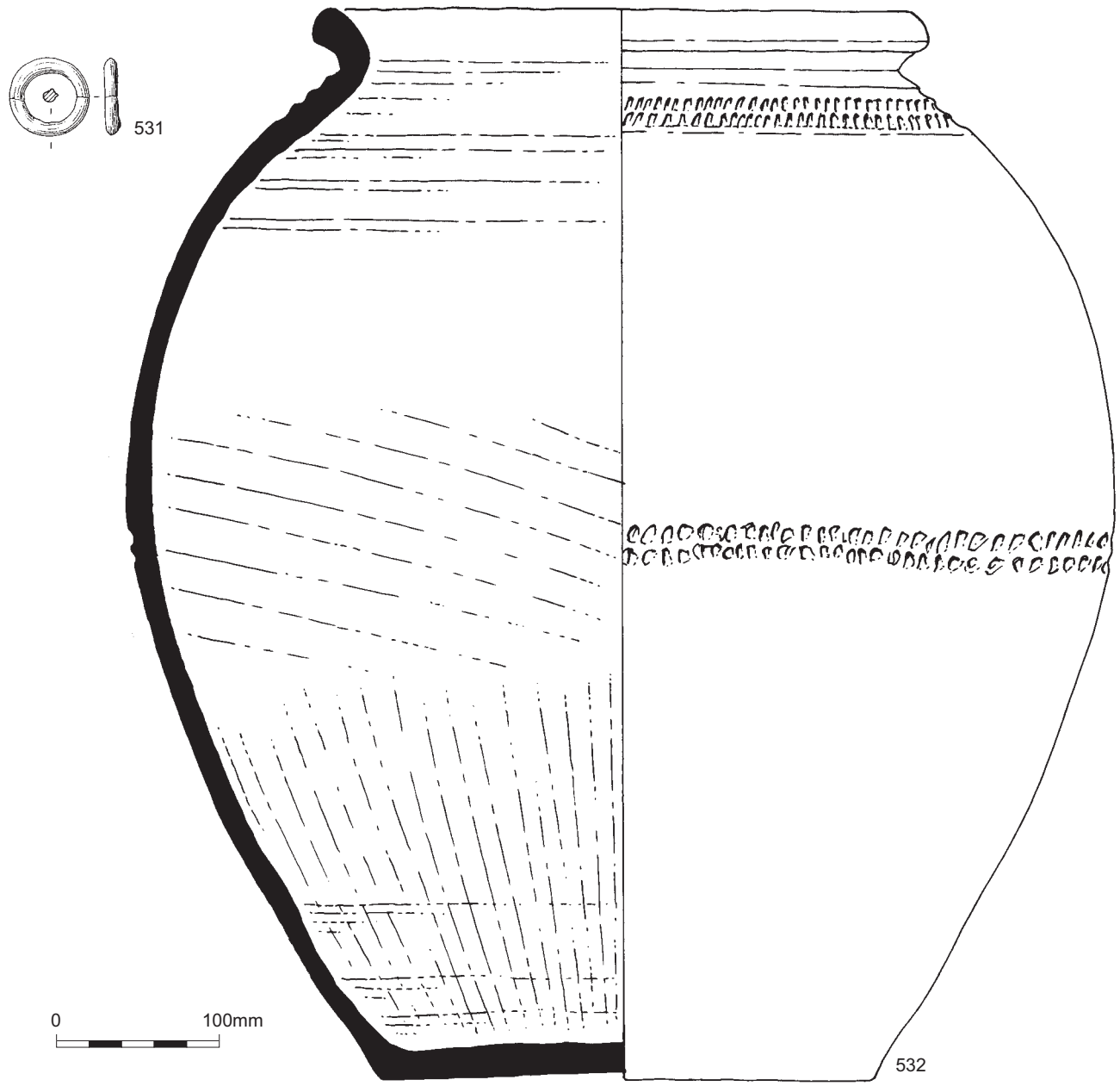


Figure 41 Springhead: pottery groups, Nos 531–32

557. Ceramic trivet or gridiron fragments; North Kent/south Essex shelly ware; layers (10819) and (11681); PRNs 896 and 897.

Pit 10843, 300410, 400128, Property 11:

558. Folded beaker with a flaring rim (MON 2D2); Local fine oxidised ware; (10821); PRN 372.
559. Bead rim bowl with footring base (MON 7A2); Local fine oxidised ware; (10821); PRN 373.

(Fig 43)

Layer 10808, Property 11:

560. Large storage jar with a facetted shoulder (MON 3D4); North Kent/south Essex shelly ware; PRN 295.
561. Lid-seated jar with a grooved bead rim (MON 3L7); North Kent/south Essex shelly ware; PRN 296.
562. Jar with a flattened hook rim (MON 3F3); North Kent/South Essex shelly ware; PRN 297.
563. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; PRN 298.
564. Lid (MON 12); North Kent/south Essex shelly ware; PRN 299.
565. Jar with a double facet (MON 3G5); Thameside/ Upchurch greyware; PRN 350.
566. Lid (MON 12); Thameside/Upchurch greyware; PRN 351.
567. Dish with flattened, inturned rim (MON 5E4) Thameside/Upchurch greyware; PRN 352.
568. S-profile bowl (MON 4A4); Thameside/Upchurch greyware; PRN 354.
569. Platter with a curved wall (Marsh 1978, 154, fig 6.10 and 6.11, 24); Mica-dusted ware; PRN 357.

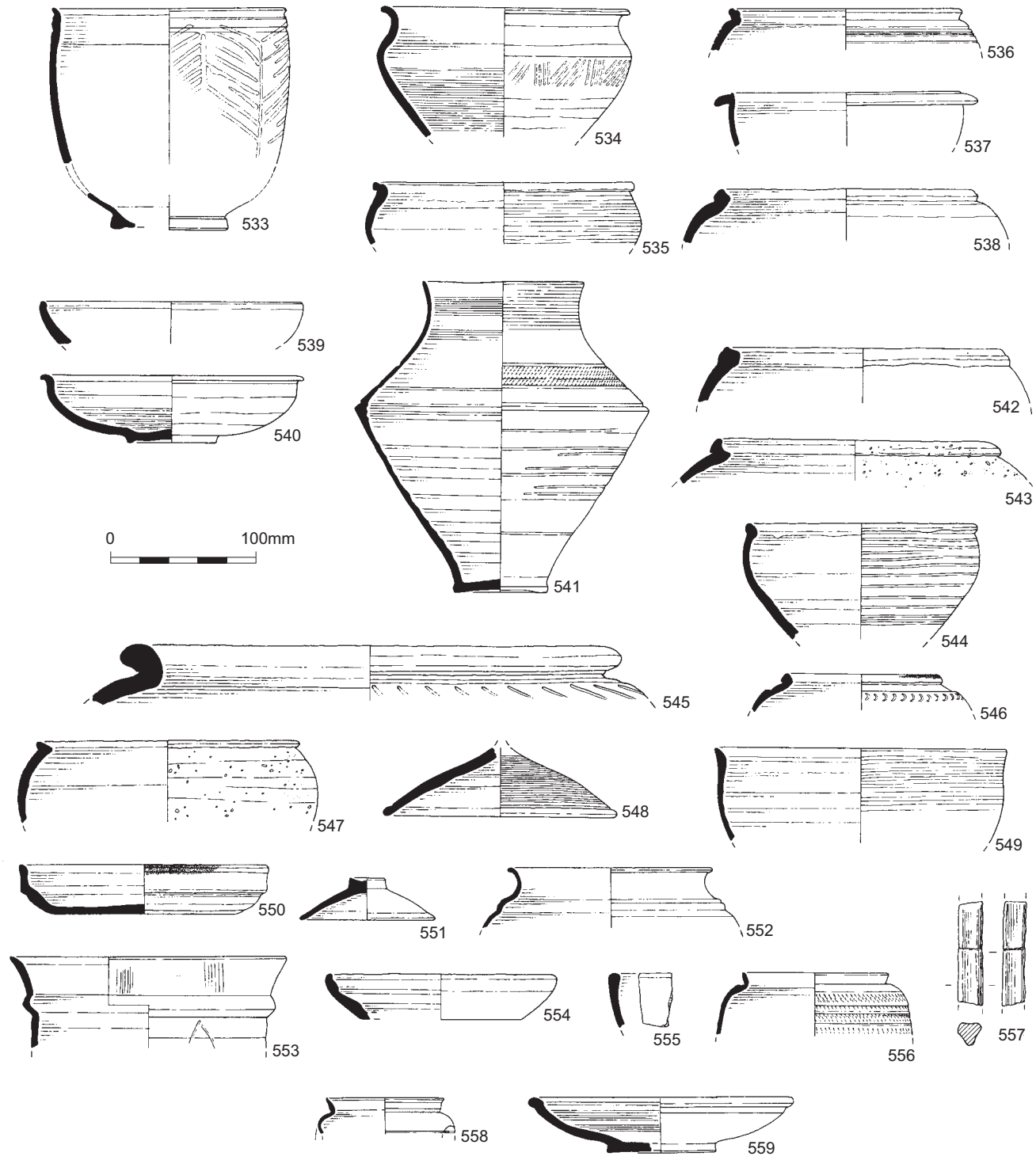


Figure 42 Springhead: pottery groups, Nos 533–59

570. Platter with beaded rim and footring base (MON 7A); Local fine oxidised ware; PRN 358.
571. Lid (MON 12); Upchurch painted ware; PRN 360.
572. Bead rim bowl with footring base (MON 7A2); Fine Greyware; PRN 361.
573. Fine, flanged dish (MON 5B2); Fine Greyware; PRN 362.
574. Carinated bowl (MON 4H1); Fine Greyware; PRN 363.
575. Decorated 'pie-dish' (MON 5D); Thameside/ Upchurch greyware; PRN 353.

Middle Roman

(Fig 44)

Grave 3142, 300048, 400018, cut into the enclosing ditch around the sanctuary complex:

576. Base from flagon or jar; Local fine oxidised ware; (3143); PRN 799.

Pit 2214, 300073, 400023, pit alignment to north of the 'portico' building:

577. Bag-shaped beaker with short rim and barbotine dot decoration (Tyers and Marsh 1979, 569, fig 239, IIIE.1); Fine Greyware; (2264); PRN 850.

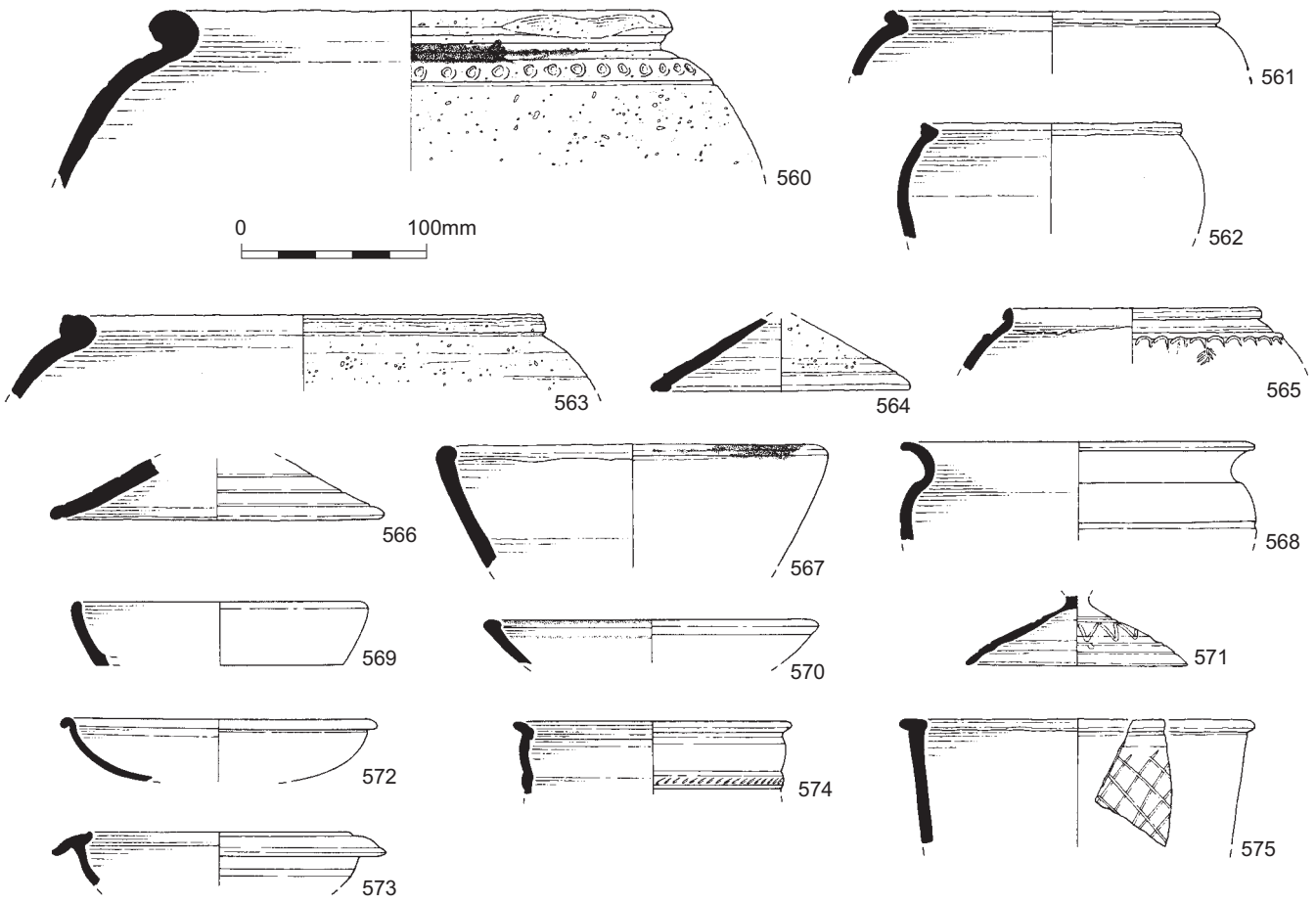


Figure 43 Springhead: pottery groups, Nos 560–75

578. Large storage jar with everted rim (MON 3D3); North Kent/south Essex shelly ware; (2264); PRN 853.
579. Lid-seated jar, ledge at top of everted rim (MON 3L9); Thameside/Upchurch greyware; (2264); PRN 855.
580. Lid-seated jar with everted rim (MON 3L1); Thameside/Upchurch greyware; (2264); PRN 863.
581. 'Dog-dish' (MON 5E1); Thameside/Upchurch greyware; (2264); PRN 864.
582. Base of a large storage jar; North Kent/south Essex shelly ware; (2263); PRN 868.

Pit 2236, 300073, 400023, pit alignment to north of the 'portico' building:

583. Bead rim jar (MON 3E1); Thameside/Upchurch greyware; (2717) and (2718); PRNs 552 and 553.
584. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (2717) and (2718); PRNs 557 and 558.
585. Miniature jar (MON 9A3); Thameside/Upchurch greyware; (2717); PRN 554.
586. Lid-seated jars, ledge at top of everted rim (MON 3L9); Thameside/Upchurch greyware; (2718); PRN 560.
587. Decorated 'pie-dish' with rounded rim (MON 5D1); Thameside/Upchurch greyware; (2717); PRN 555.
588. Facetted jar (MON 3G4); Thameside/Upchurch greyware; (2718); PRN 561.
589. Disc-mouthed flagon (Tyers and Marsh 1979, 551, fig 233, ID); Hoo ware; (2718); PRN 562.
590. High-shouldered bead-rimmed jar with cordons (MON 3E0); Thameside/Upchurch greyware; (2718); PRN 563.

Pit 2389, 300075, 400024, features probably associated with the sanctuary complex:

591. Plain 'pie-dish' with rounded rim (MON 5C1); Thameside/Upchurch greyware; (2449); PRN 547.
592. Decorated 'pie-dish' with rounded rim (MON 5D1); Thameside/Upchurch greyware; (2449); PRN 548.
593. Plain 'pie-dish' with triangular rim (MON 5C2); Thameside/Upchurch greyware; (2449); PRN 549.
594. S-profile bowl (MON 4A1); Thameside/Upchurch greyware; (2449); PRN 550.

Layer 5921, 300104, 400027, dumping/build-up above early road:

595. Cam 497 mortarium (Hull 1963, 190, fig 107, 497); Colchester whiteware mortaria fabric; PRN 605.
596. Cam 498 mortarium (Hull 1963, 190, fig 107, 498); Colchester whiteware mortaria fabric; PRN 606.
597. Large storage jar with an everted, rolled rim (MON 3D1); North Kent/south Essex shelly ware; PRN 607.
598. S-profile bowl (MON 4A1); Thameside/Upchurch greyware; PRN 608.

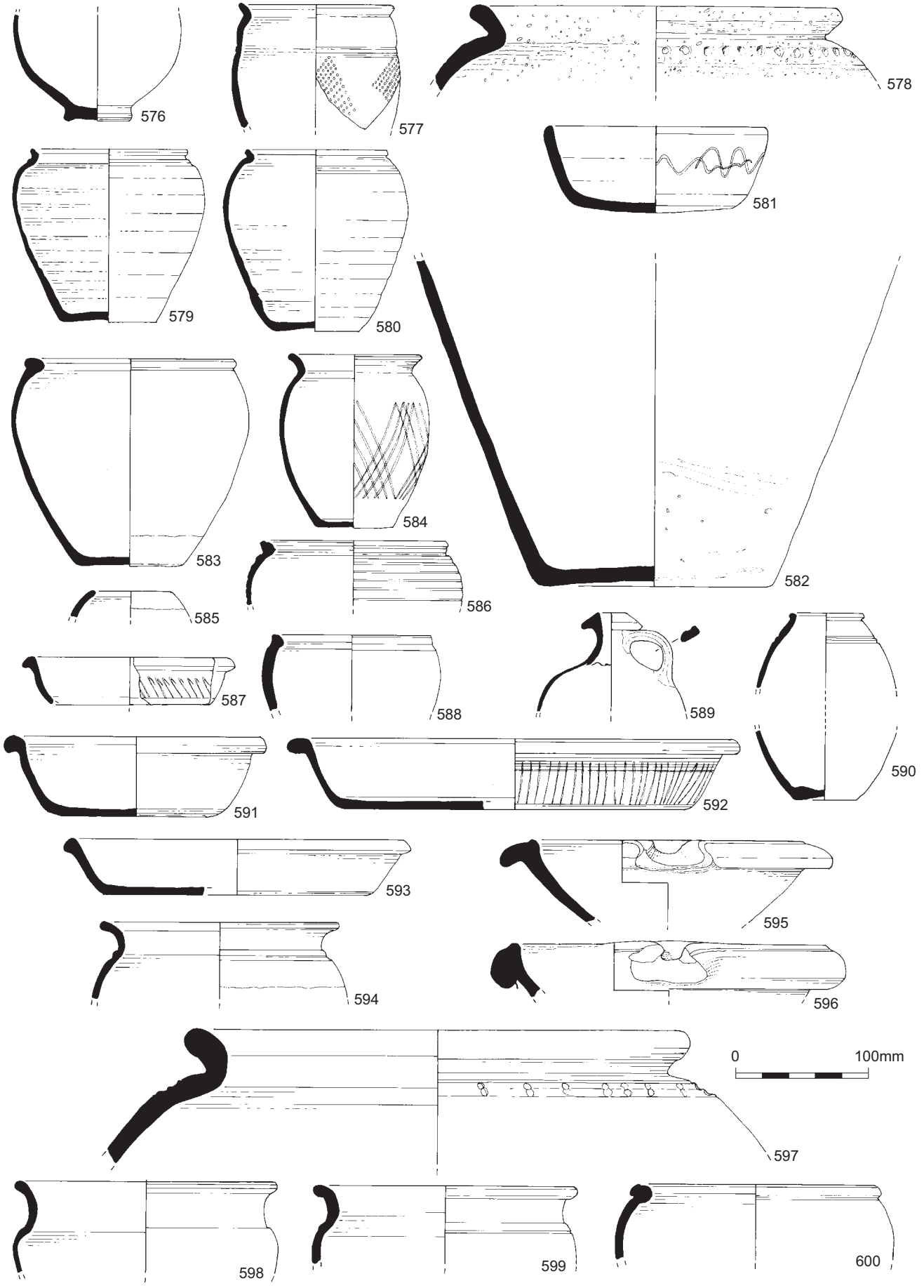


Figure 44 Springhead: pottery groups, Nos 576–600

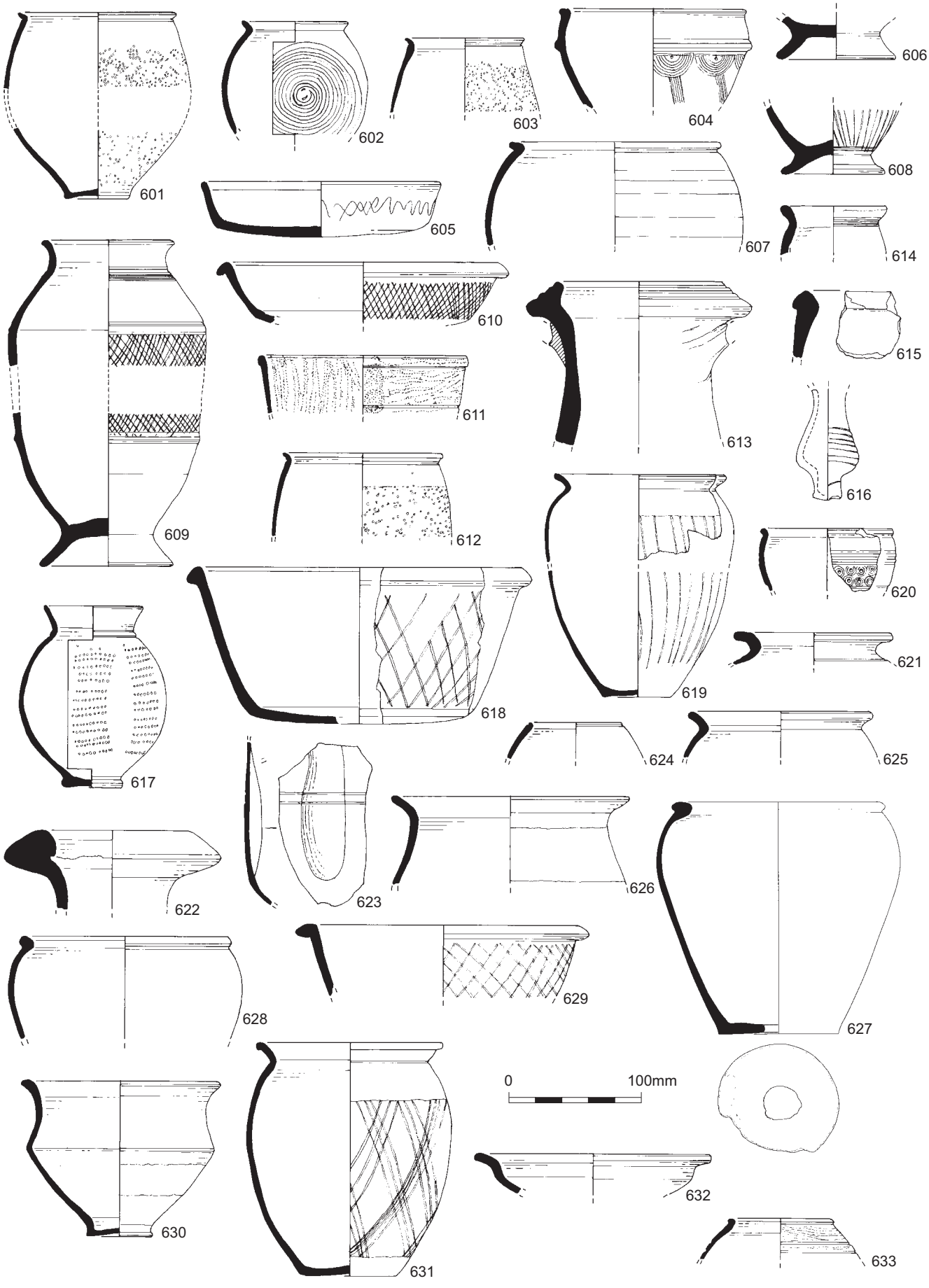


Figure 45 Springhead: pottery groups, Nos 601–33

599. S-profile bowl (MON 4A1); Thameside/Upchurch greyware; PRN 609.
600. Lid-seated jars with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; PRN 610.

(Fig 45)
Layer 5921, 300104, 400027, dumping/build-up above early road (contd):
601. Roughcast beaker; Central Gaulish colour-coated ware; PRN 611.
602. Globular bodied beaker decorated with a red painted spiral; Oxidised ware (highly micaceous); PRN 612.

Layer 6033, 300095, 400029, filling path 6175, rectangular, 'smithy' building:
603. Roughcast beaker; Central Gaulish colour-coated ware; PRN 633.
604. Carinated bowl with London-ware style decoration (MON 4H1); Local fine oxidised ware; 634.
605. 'Dog-dish' (MON 5E2); Thameside/Upchurch greyware; PRN 636.

Post-hole 6158, 300092, 400029, rectangular, 'smithy' building:
606. Low pedestal base; Thameside/Upchurch greyware; (6135); PRN 668.
607. Lid-seated jar with a grooved rim (MON 3L2); Thameside/Upchurch greyware; (6135); PRN 671.
608. Pedestal base sherds; Thameside/Upchurch greyware; (6135); PRN 669.
609. Pedestal jar (MON 3C); Thameside/Upchurch greyware; (6135); PRN 670.
610. Decorated 'pie-dish' with downturned rolled rim (MON 5D4); Thameside/Upchurch greyware; (6135); PRN 672.
611. Hemispherical bowl s with beaded rim (Marsh 1978, 176, fig 6.18, 42); London Marbled Ware; (6135); PRN 673.
612. Roughcast beaker; Central Gaulish colour-coated ware; (6135); PRN 674.

Layer 6199, 300105, 400033, consolidation layers for Sanctuary temple 1:
613. Large, double-handled flagon/amphora with a slanting, collared rim (Hawkes and Hull 1947, 248, fig 52, 16, pl lxiv, 163B); White-slipped red ware; PRN 598.

Post-hole 5251, 300110, 400033, aisle/corridor/fence north of temple 1:
614. Small everted rim jar (MON 3I1); Thameside/Upchurch greyware; (5251); PRN 898.

Well 2706, 300133, 400037, associated with Sanctuary Temple 2/bakery 1:
615. Cauldron (Going 1987, 34, fig 17, L1 1.1); North Kent/south Essex shelly ware; (2759); PRN 542.

Layer 2674, 300164, 400043, chalk rubble deposit post-dating rectangular structure 400042:
616. *Unguentarium* – surface reeded (Symonds and Wade 1999, 485); Oxidised ware; PRN 545.

Flue 2575 of oven/kiln, 300198, 400048, associated with the final use of the rectangular building on Viewing platform 2:
617. Poppyhead beaker (MON 2A4); Thameside/Upchurch greyware; (2578); PRN 506.
618. Decorated 'pie-dish' with rounded rim (MON 5D1); Thameside/Upchurch greyware; (2578) PRN 507.
619. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (2578); PRN 508.
620. Stamped London ware bowl (Rodwell 1978, 234, group 2); Stamped London Ware; (2578); PRN 509.

Post-hole 2758, 300199, 400048, associated with the final use of the rectangular building on Viewing platform 2:
621. Jar rim; *Eifelkeramik*; 2757; PRN 546.

Pit 2318, 300219, 400054, associated with beam-slot structure:
622. Dressel 20 amphora rim (Martin-Kilcher 1983, type 30); (2321); PRN 706.
623. Body sherds from an indented beaker/jar; White-slipped red ware; (2319); PRN 707.
624. High-shouldered, bead-rimmed jar (MON 3E0); Thameside/Upchurch greyware; (2321); PRN 708.
625. Jar with short everted rim (MON 3J1); Thameside/Upchurch greyware; (2321); PRN 709.
626. Native carinated bowl (MON 4G1); Thameside/Upchurch greyware; (2321); PRN 710.
627. Jar with thickened, flattened bead rim (MON 3E3); post-firing perforation in base; Thameside/Upchurch greyware; (2319) and (2321); PRNs 711 and 721.
628. Jar with thickened, flattened bead rim (MON 3E3); Thameside/Upchurch greyware; (2320) and (2321); PRNs 712 and 713.
629. Decorated 'pie-dish' with rounded rim (MON 5D1); Thameside/Upchurch greyware; (2319); PRN 717.
630. Native carinated bowl (MON 4G1); Thameside/Upchurch greyware; (2319), (2320), and (2321); PRNs 714, 715 and 716.
631. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (2319); PRN 720.
632. Fine, flanged dish (MON 5B4); Thameside/Upchurch greyware; (2319); PRN 719.
633. High-shouldered bead-rimmed jar (MON 3E0); Thameside/Upchurch greyware; (2319); PRN 718.

(Fig 46)
Pit 2318, 300219, 400054, associated with beam-slot structure (contd):
634. Base, with post-firing perforation, from a large storage jar; North Kent/south Essex shelly ware; (2320); PRN 722.
635. Base from a large storage jar; North Kent/south Essex shelly ware; (2319); PRN 724.
636. Large storage jar with a sharply everted rim (MON 3D3); lead-plug repair; North Kent/south Essex shelly ware; (2319); PRN 723.
637. Base, with post-firing perforation, from a large storage jar; North Kent/south Essex shelly ware; (2319); PRN 725.

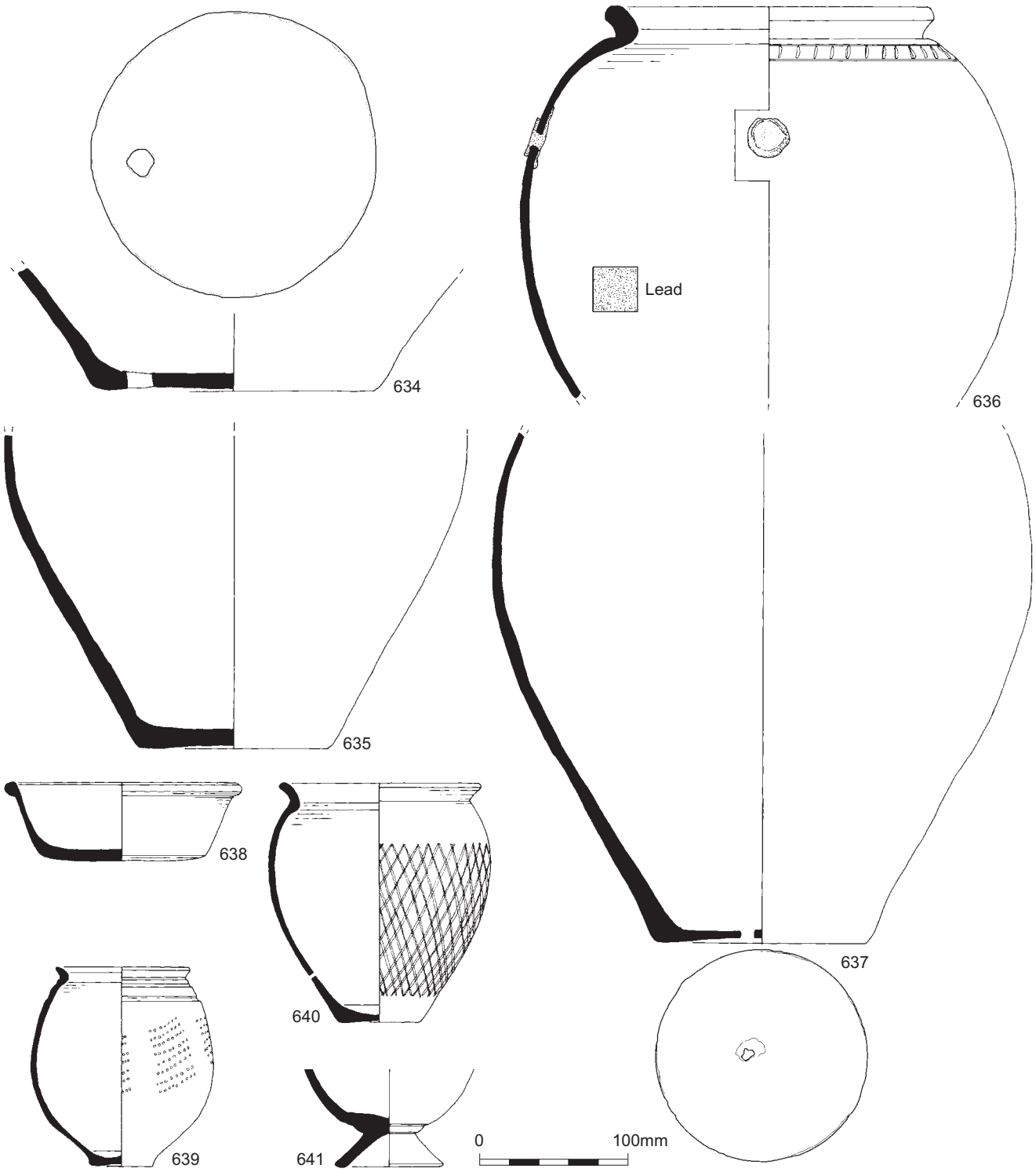


Figure 46 Springhead: pottery groups, Nos 634–41

Grave 2404, 300223, 400055, to the east Viewing platform 2:

638. Plain 'pie-dish' with rounded rim (MON 5C1); Thameside/Upchurch greyware; (2405); PRN 495.
639. Globular beaker with barbotine dot decoration (MON 2H2); Thameside/Upchurch greyware; (2405); PRN 497.
640. Jar with a short everted rim (MON 3J1); post-firing perforation Thameside/Upchurch greyware; (2405); PRN 496.

Layer 5600, 30000, colluvial deposits in spring area:

641. Pedestal base sherds; Thameside/Upchurch greyware; PRN 660.

(Fig 47)

Ritual shaft 2856, Sanctuary complex:

642. Grooved rim dish (MON 5F3); Thameside/Upchurch greyware; (2855) and (2903); PRNs 689 and 690.
643. Decorated cordoned bowl (MON 4F4); Thameside/Upchurch greyware; (2855); PRN 691.

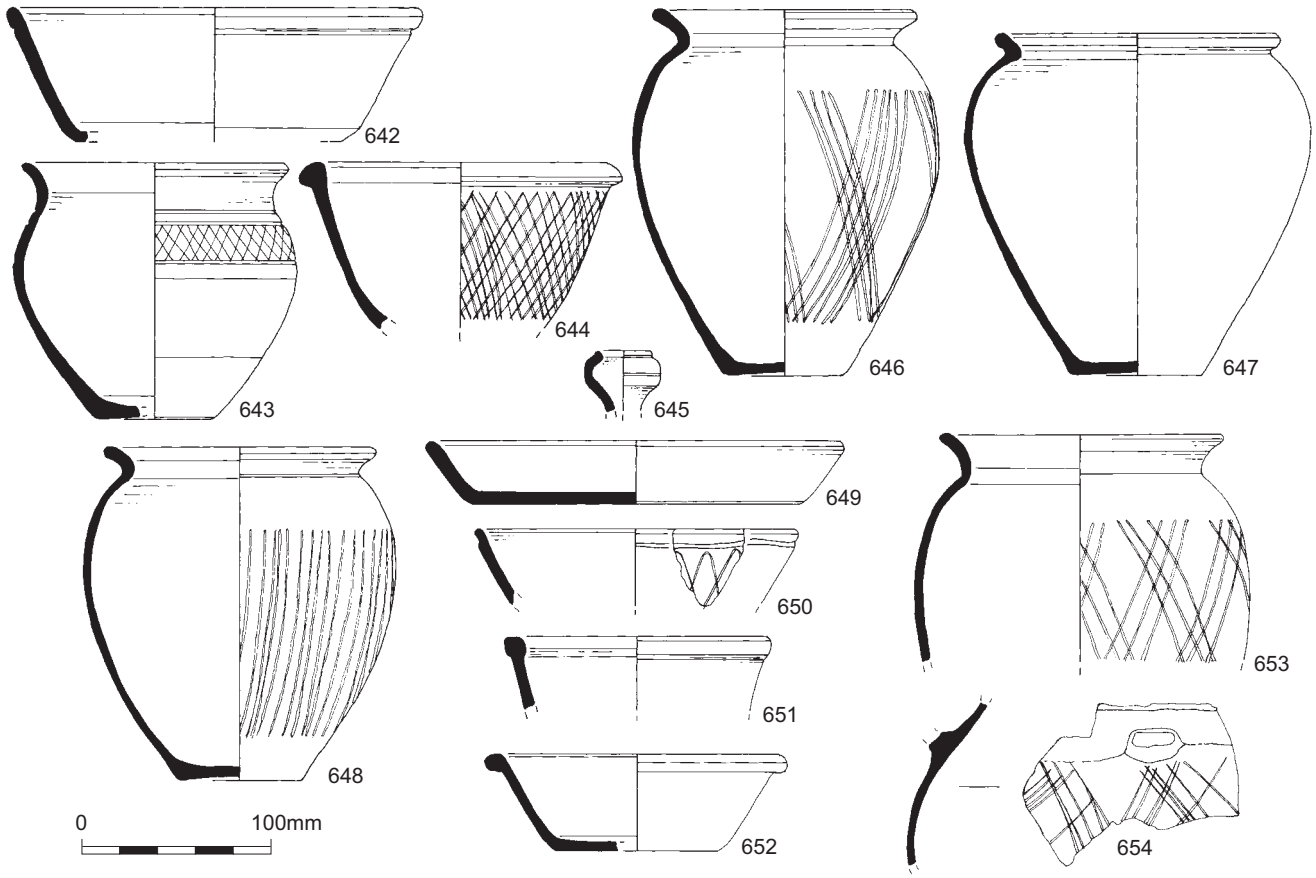


Figure 47 Springhead: pottery groups, Nos 642–54

644. Decorated 'pie-dish' with a rounded rim (MON 5D1); Thameside/Upchurch greyware; (2855); PRN 692.
645. Bowl from a triple vase (Symonds and Wade 1999, 486); Hoo ware; (6619); PRN 693.
646. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (5285) and (6619); PRNs 695 and 696.
647. Lid-seated jar with an everted rim (MON 3L1); Thameside/Upchurch greyware; (5285); PRN 694.
648. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (6620); PRN 697.
649. 'Dog-dish' (MON 5E1); Thameside/Upchurch greyware; (6620); PRN 698.
650. Grooved rim dish (MON 5F0); Thameside/Upchurch greyware; (6620); PRN 699.
651. Plain 'pie-dish' with squared-off rim (MON 5C8); Hoo ware; (6620); PRN 700.
652. Plain 'pie-dish' with a rounded rim (MON 5C1); Thameside/Upchurch greyware; (6620); PRN 701.
653. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (2996); PRN 702.
654. Body sherds probably from handled tankard (MON 2J1.1); Thameside/Upchurch greyware; (2996); PRN 703.

(Fig 48)
Pot burial 12222; 300344; 400105, within *temenos* on Property 2:
655. Large jar with inward-curling rim (MON 3D6); Thameside/Upchurch greyware; (12222) and (12223); PRNs 167 and 168.

Post-hole 12054, 300331, 400105, within *temenos* on Property 2:
656. Grooved rim dish (MON 5F); Thameside/Upchurch greyware; (12056); PRN 154.

Layer 12568, 300334, 400107, pre-temple infill/make-up layers on Property 2:
657. Lid-seated jar with a grooved rim (MON 3L2); Thameside/Upchurch greyware; PRN 166.
658. Decorated 'pie-dish' (MON 5D3); Thameside/Upchurch greyware; PRN 165.

Layer 12119, 300334, 400107, pre-temple infill/make-up layers on Property 2:
659. Folded jar with flaring rim (MON 2D2); Thameside/Upchurch greyware; PRN 221.

Layer 12133, 300336, 400107, pre-temple infill/make-up layers on Property 2:
660. *Unguentarium* (Symonds and Wade 1999, 485); Oxidised ware; PRN 153.

Oven 12068, 300340, 400108, Property 2:
661. Jar with externally moulded everted rim (MON 3H5); Thameside/Upchurch greyware; (12070); PRN 159.
662. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (12070); PRN 161.
663. Jar with externally moulded everted rim (MON 3H5); Thameside/Upchurch greyware; (12070); PRN 157.
664. Jar with externally moulded everted rim (MON 3H5); Thameside/Upchurch greyware; (12070); PRN 158.

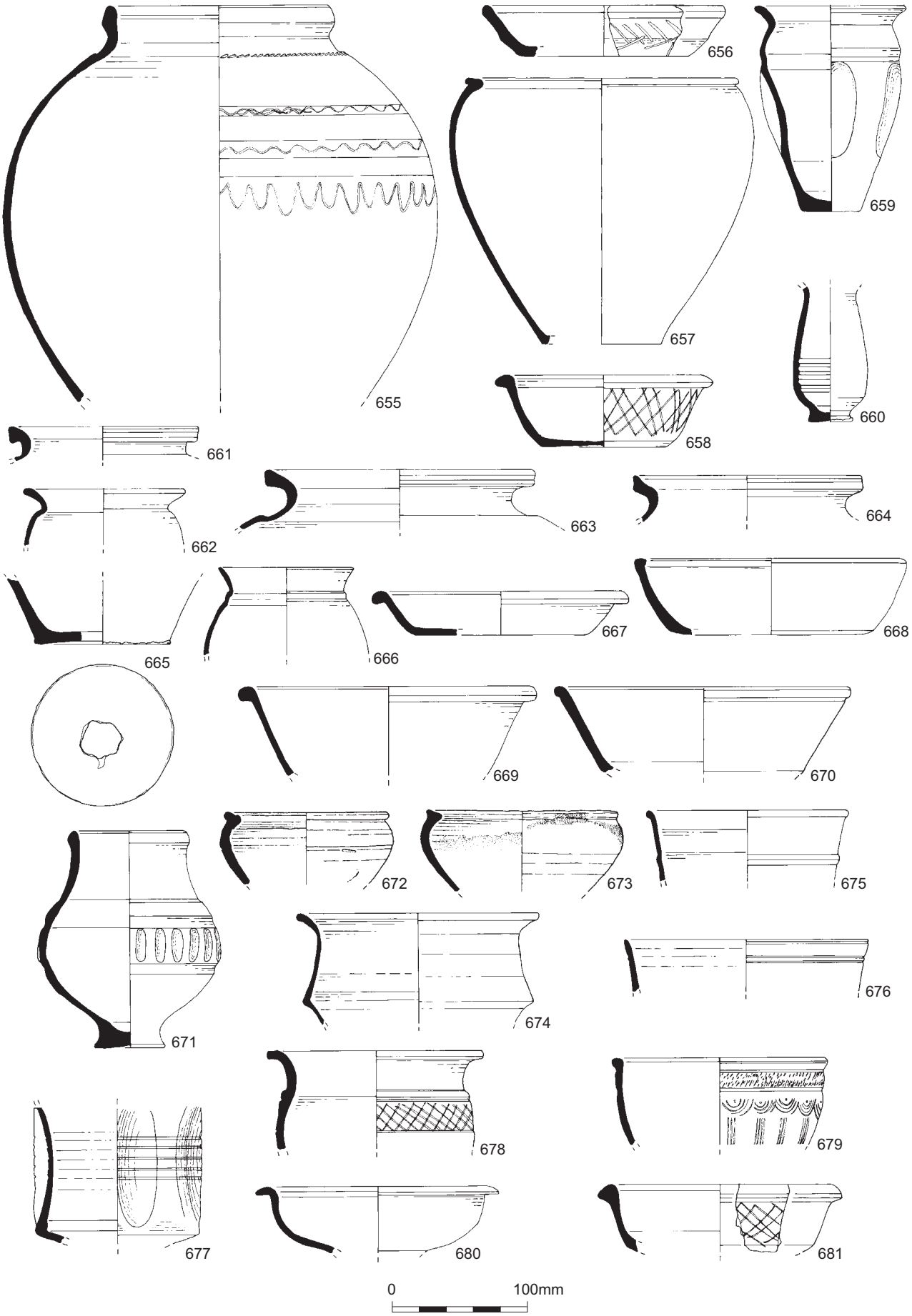


Figure 48 Springhead: pottery groups, Nos 655–81

665. Jar base with post-firing perforations; Thameside/Upchurch greyware; (12070); PRN 156.
666. Poppyhead beaker (MON 2A); Fine Greyware; (12070); PRN 160.
667. Plain 'pie-dish' with a rounded rim (MON 5C1); Thameside/Upchurch greyware; (12070); PRN 155.
668. Dish with flattened inturned rim (MON 5E4); Thameside/Upchurch greyware; (12070); PRN 162.
669. Plain 'pie-dish' with a rounded rim (MON 5C1); Thameside/Upchurch greyware; (12070); PRN 163.
670. Grooved rim dish (MON 5F3); Thameside/Upchurch greyware; (12070); PRN 164.

Late layers 17836 and 19426 3on west side of bakery complex, 300640, 400188, Property 3:
671. Folded, funnel-necked beaker (MON 2C4); Thameside/Upchurch greyware; (17836); PRN 220.
672. Bowl with a flattened, grooved rim; (MON 4I5); Thameside/Upchurch greyware; (19426); PRN 408.
673. Lid-seated bowl with grooved rim (MON 4L2); Thameside/Upchurch greyware; (19426); PRN 409.
674. Native carinated bowl MON 4G4); Thameside/Upchurch greyware; (19426); 19426; PRN 413.
675. Carinated bowl (MON 4H2); Fine Greyware; (19426); PRN 411.
676. Carinated bowl (MON 4H1); Local fine oxidised ware; (19426); PRN 412.
677. Folded beaker sherds (MON 2D2); Thameside/Upchurch greyware; (19426); PRN 410.

Layer 17778, 300680, 400196, Property 3, on south-east side of sunken-floored structure:
678. Cordoned bowl (MON 4F2); Thameside/Upchurch greyware; PRN 186.
679. London-ware style carinated bowl (MON 4H2); Local fine oxidised ware; PRN 187.
680. Flanged dish (MON 5B4); Fine Greyware; PRN 180.
681. Decorated 'pie-dish' with triangular rim (MON 5D2); Thameside/Upchurch greyware; PRN 189.

(Fig 49)
Layer 17043, Property 3:
682. Cauldron (Going 1987, 34, fig 17, L1 1.1); North Kent/south Essex shelly ware; PRN 196.
683. Large storage jar with facetted shoulder (MON 3D4); North Kent/south Essex shelly ware; PRN 201.
684. Carinated bowl with a moulded flange (Tyers and Marsh 1979, 571, fig 240, IVA); Greyware; PRN 197.
685. Carinated bowl (Marsh 1978, 178, fig 6.19 and 6.20, 44); London Marbled Ware; PRN 198.
686. Lid (MON 12); North Kent/south Essex shelly ware; PRN 199.
687. Large storage jar with sharply everted rim (MON 3D3); North Kent/south Essex shelly ware; PRN 200.
688. Lid-seated jar with everted rim (MON 3L1); North Kent/south Essex shelly ware; PRN 202.
689. Lid-seated jar with a grooved rim (MON 3L2); Thameside/Upchurch greyware; PRN 203.
690. Lid-seated bowl with grooved rim; *c* AD 50/70–90 (MON 4L2); North Kent/south Essex shelly ware; PRN 219.
691. Necked bowl with lid-seated rim (MON 4C1.2); Thameside/Upchurch greyware; PRN 206.
692. Deep bowl with out-turned rim (MON 4D4); Thameside/Upchurch greyware; PRN 205.
693. Dish with flattened, inturned rim (MON 5E4); Thameside/Upchurch greyware; PRN 204.
694. Jar with internally thickened, flattened bead rim (MON 3E3); Thameside/Upchurch greyware; PRN 207.
695. Jar with a double facet (MON 3G5); Thameside/Upchurch greyware; PRN 208.
696. Jar with short everted rim (MON 3J1); Thameside/Upchurch greyware; PRN 209.
697. Narrow-necked jar with single cordon at neck (MON 3A3); Thameside/Upchurch greyware; PRN 211.
698. Carinated bowl with a moulded flange (Tyers and Marsh 1979, 571, fig 240, IVA); Greyware; PRN 213.
699. Narrow-necked jar (MON 3A); Thameside/Upchurch greyware; PRN 210.
700. Lid (MON 12); Thameside/Upchurch greyware; PRN 212.
701. Wide-mouthed bowl (Thompson 1982, 311–15, type D1-4); Grog-tempered ware; PRN 214.

Layer 17833, Property 3:
702. *Patera* handle; Oxidised ware; PRN 407.

Layer 17821 sealing pits, 300692, Property 3:
703. Jar with a sharply everted rim (MON 3J3); three post-firing, incised notches (Fig 59, 896) on rim; Thameside/Upchurch greyware; PRN 485.

Layer17439, 300599, 400175, filling channel in waterfront area, Property 4:
704. Cauldron (Going 1987, 34, fig 17, L1 1.1); North Kent/south Essex shelly ware; PRN 178.

Pit 16831, 300570, 400168, phase 1 of the dyeing/retting complex, Property 4:
705. Jar with internally thickened, flattened bead rim (MON 3E3); Thameside/Upchurch greyware; (16837); PRN 222.
706. Native carinated bowl (MON 4G2); Thameside/Upchurch greyware; (16840); PRN 175.
707. Bead rimmed bowl (MON 7A2); Local fine oxidised ware; (16840); PRN 176.
708. Large storage jar with sharply everted rim (MON 3D3); North Kent/south Essex shelly ware; (16837); PRN 177.

(Fig 50)
Layer 200, Property 8:
709. Cauldron (Going 1987, 34, fig 17, L1 1.1); North Kent/south Essex shelly ware; PRN 541.

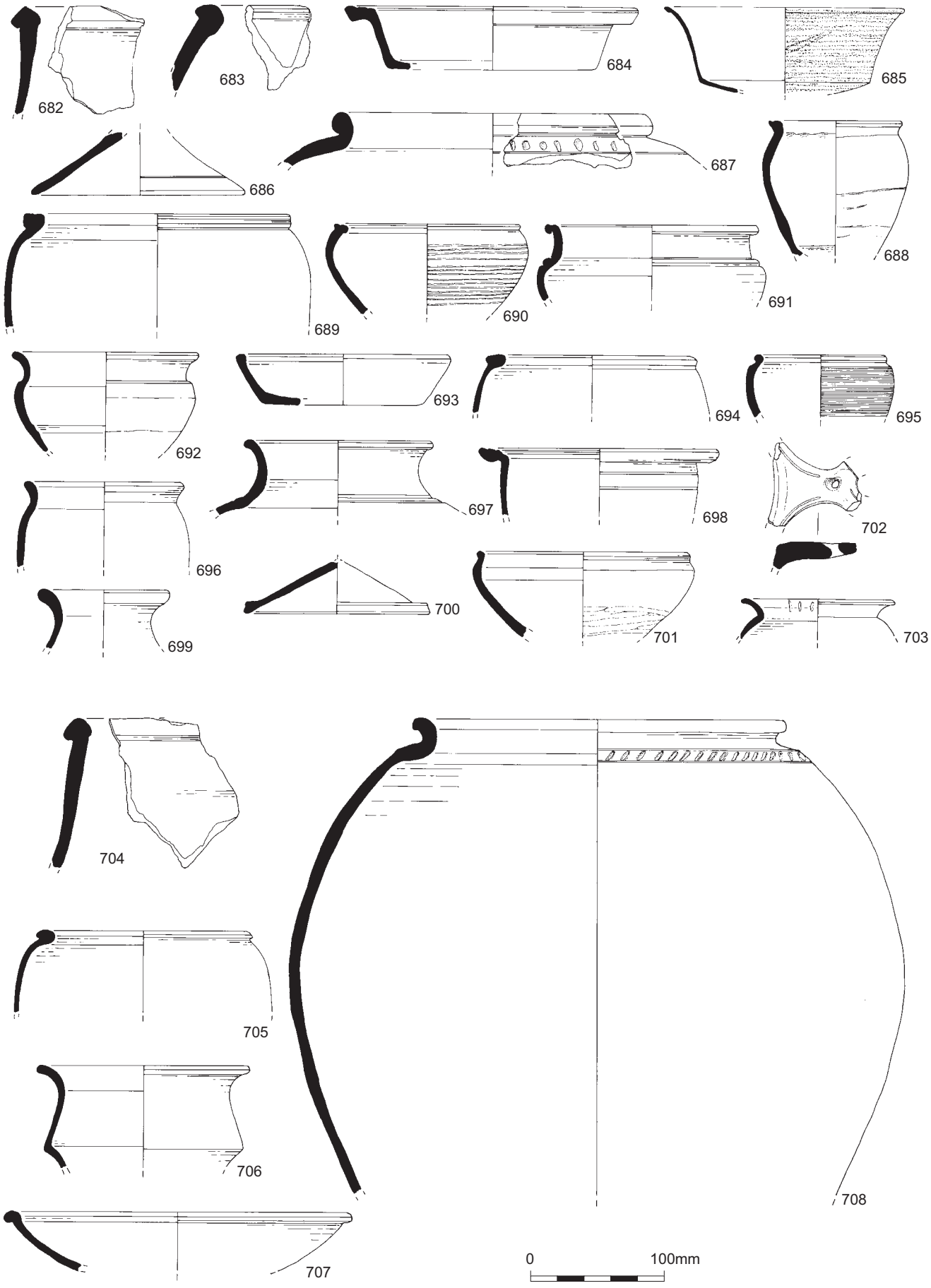


Figure 49 Springhead: pottery groups, Nos 682–708

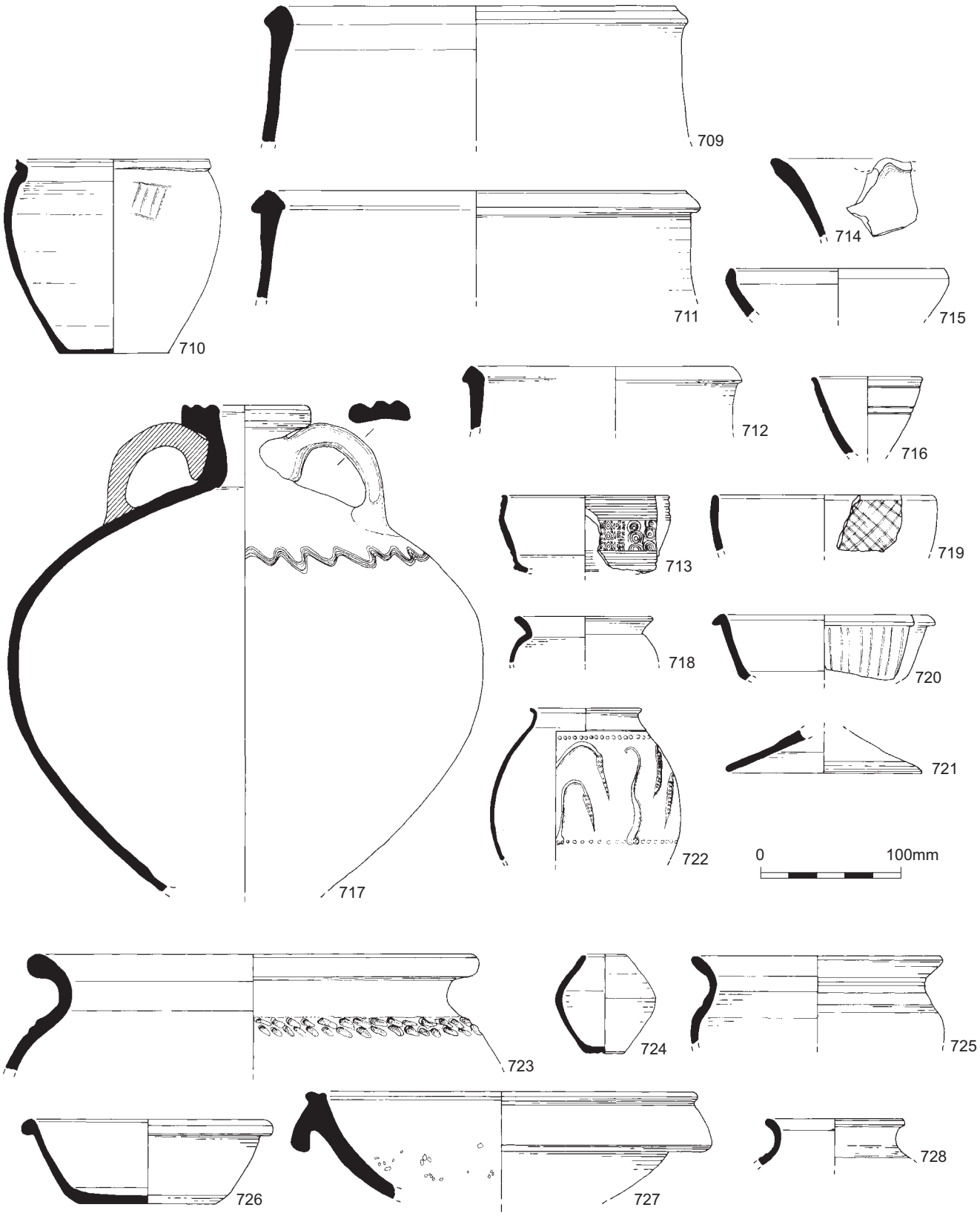


Figure 50 Springhead: pottery groups, Nos 709–28

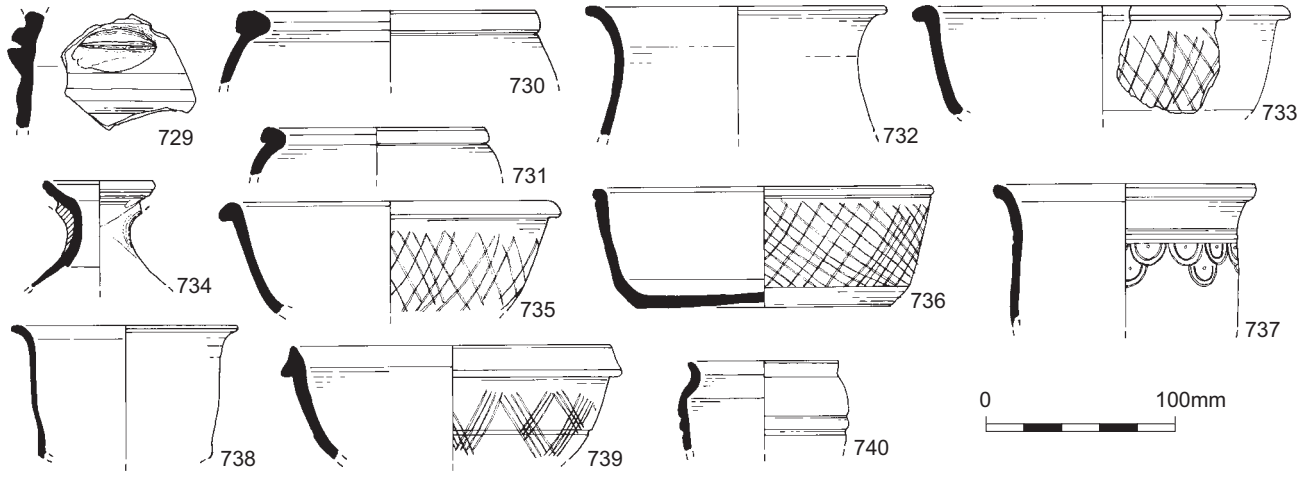


Figure 51 Springhead: pottery groups, Nos 729–40

Pit 16464, 300506, 400138, pre-dating the earliest phase of the smithy, Property 10:

710. Lid-seated jar with a grooved rim; *c* AD 50–140 (MON 3L2); pre-firing maker's mark on shoulder (Fig 17, 106); (16463); PRN 462.

Layer 10405, Property 11:

711. Cauldron (Going 1987, 34, fig 17, L1 1.1); North Kent/south Essex shelly ware; PRN 116.
712. Cauldron (Going 1987, 34, fig 17, L1 1.1); North Kent/south Essex shelly ware; PRN 117.
713. Stamped London ware bowl (Rodwell 1978, 234, group 2); Stamped London Ware; PRN 93.
714. Jug/flagon rim fragment; White-slipped red ware; PRN 94.
715. Platters with simple curving wall (Marsh 1978, 154, fig 6. 10 and 6. 11, 24); Mica-dusted ware; PRN 105.
716. Small hemispherical bowl (Marsh 1978, 147, fig 6.8, 13); White-slipped red ware; PRN 95.

Pit 10547, Property 11:

717. Furrowed rim amphora (Peacock and Williams 1986, 210–11, class 55); Unassigned amphorae (source probably in Normandy); (10551), (10553), (10555), and (10556); PRNs 132, 137–40.
718. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (10553); PRN 135.
719. 'Dog-dish' (MON 5E2); Thameside/Upchurch greyware; (10556); PRN 136.
720. Decorated 'pie-dish' with triangular rim (MON 5D2); Thameside/Upchurch greyware; (10556); PRN 133.
721. Lid (MON 12); Thameside/Upchurch greyware; (10556); PRN 134.

Pit 10039, 300396, 400124, Property 11:

722. Globular beaker with barbotine decoration (Symonds 1992, fig 11, 223); Central Gaulish black slipped ware; (10044); PRN 1016.

Layer 16001, Property 11:

723. Large storage jar (Thompson 1982, 257–67, type C6-1); Patchgrove ware; PRN 174.
724. Miniature bead rim jar (MON 9A3); Thameside/Upchurch greyware; PRN 173.
725. Necked jar (Thompson 1982, 283, type C8-1); Patchgrove ware; PRN 172.
726. Plain 'pie-dish' with rounded rim (MON 5C1); Thameside/Upchurch greyware; PRN 170.
727. Cam 498 mortarium (Hull 1963, 190, fig 107, 498); Unassigned mortaria fabric; PRN 169.
728. Round jar with rippled or corrugated neck (Thompson 1982, type B2-4); Patchgrove ware; PRN 171.

(Fig 51)

Layer 10016, 300370, 400117, early brickearth quarries, Property 12:

729. Body sherd with applied decoration, possibly from a face-pot; Oxidised ware; PRN 92.

Sunken featured building 11892, 300384, 400120, Property 12:

730. Lid-seated jar with a grooved rim (MON 3L2); North Kent/south Essex shelly ware; (11914); PRN 218.
731. Bead rim jar (MON 3E1); Thameside/Upchurch greyware; (11974); PRN 147.
732. 'Native' carinated bowl (MON 4G2); Thameside/Upchurch greyware; (11974); PRN 142.
733. Decorated 'pie-dish' with triangular rim (MON 5D2); Thameside/Upchurch greyware; (11974); PRN 141.
734. Flagon with short, flaring rim (Tyers and Marsh 1979, 550, fig 232, IB.7); Oxidised ware; (11902); PRN 145.
735. Decorated 'pie-dish' with rounded rim (MON 5D1); Thameside/Upchurch greyware; (11913); PRN 144.
736. Grooved rim dish (MON 5F3); Thameside/Upchurch greyware; (11974); PRN 143.
737. Carinated bowl with London-ware style decoration (MON 4H1); Fine Greyware; (11902); PRN 146.
738. Carinated bowl (MON 4H1); Fine Greyware; (11974); PRN 148.
739. Decorated 'pie-dish' with triangular rim (MON 5D2); Thameside/Upchurch greyware; (11902), (11914) and (11974); PRNs 150, 151 and 152.
740. Small jar or beaker (MON 2I); Fine Greyware; (11913) and (11914); PRNs 216 and 217.

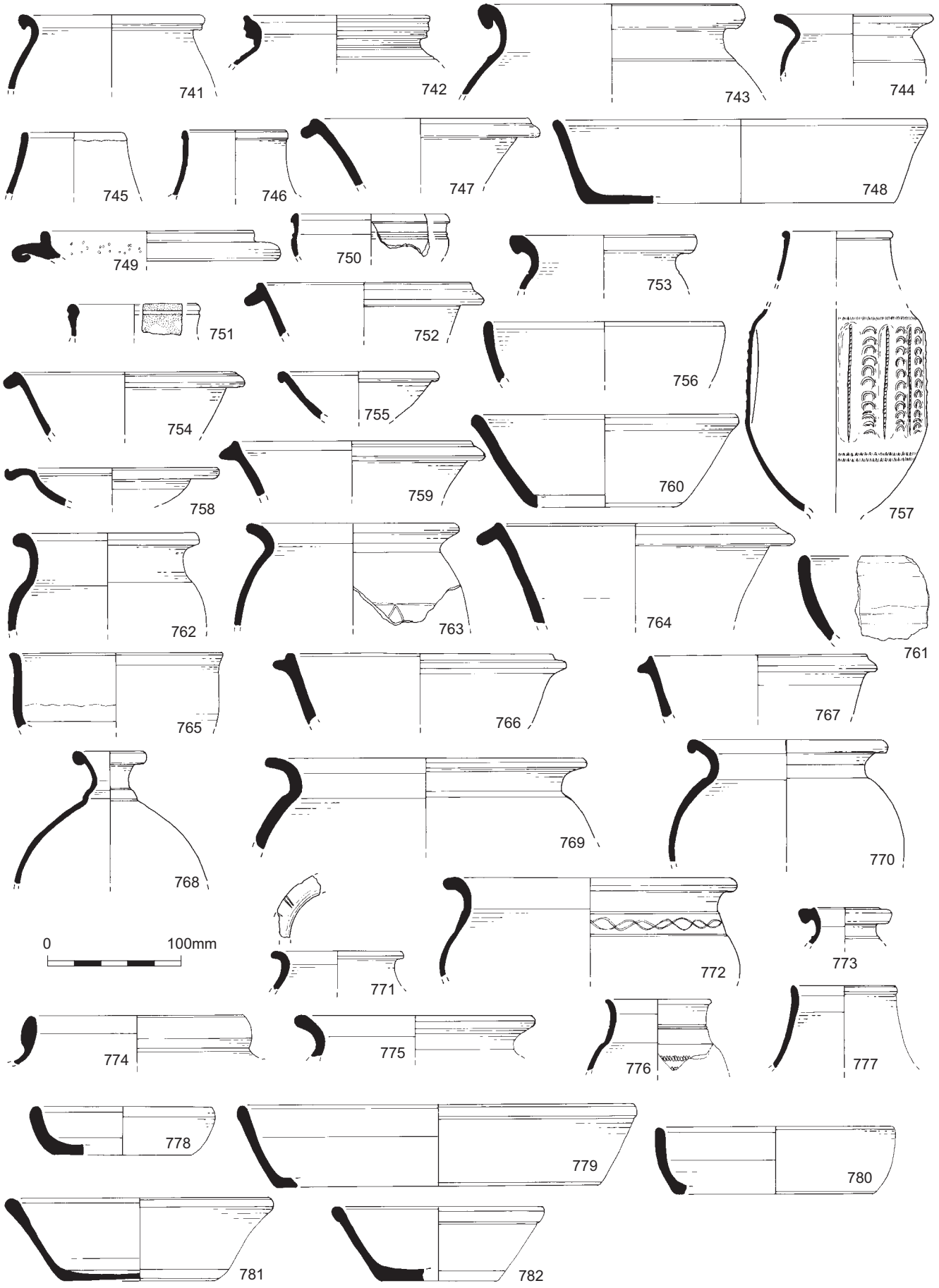


Figure 52 Springhead: pottery groups, Nos 741–82

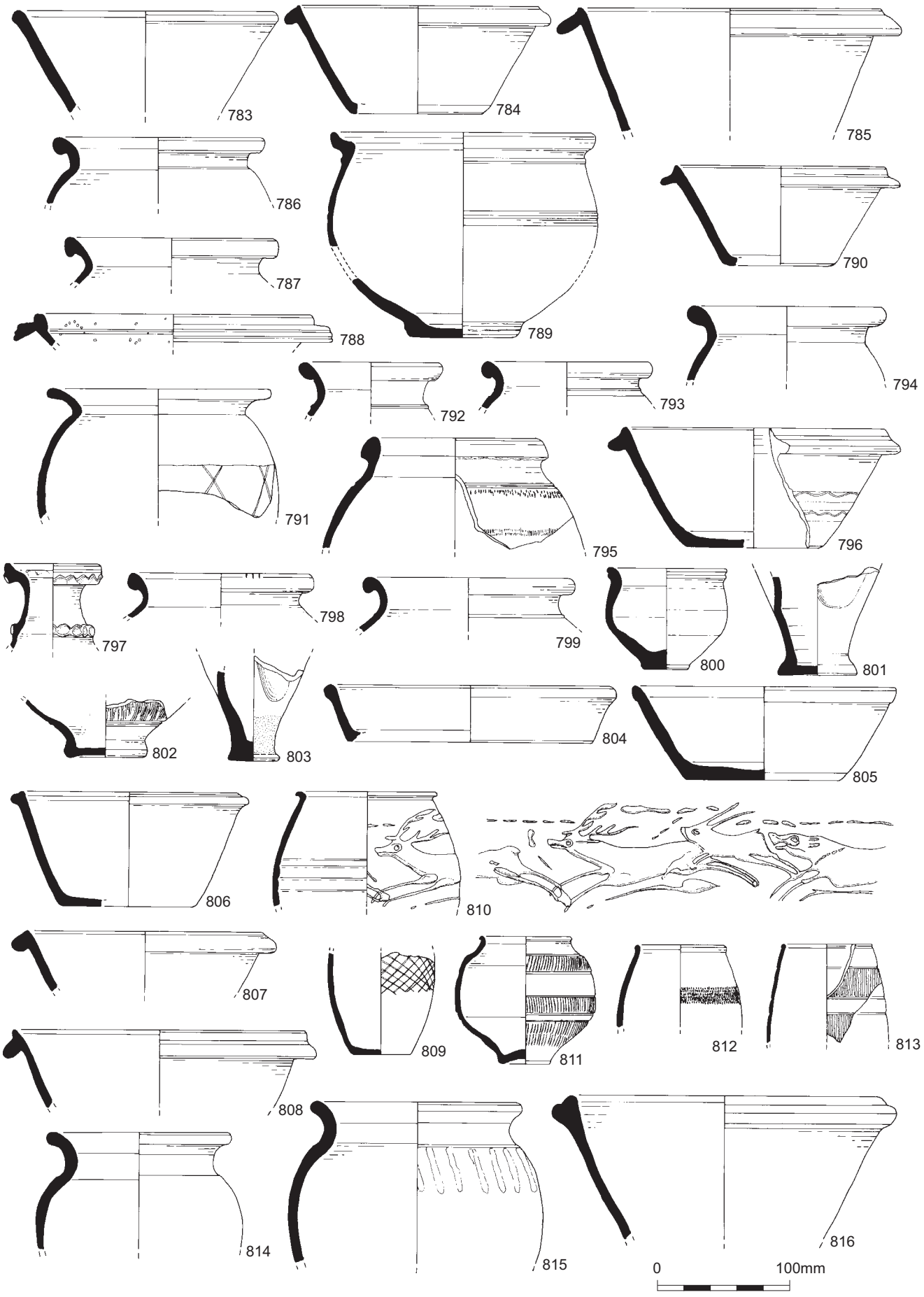


Figure 53 Springhead: pottery groups, Nos 783–816

Late Roman

(Fig 52)

Temple demolition deposits, 300326, 400103, Property 2:

741. Everted rim jar with overhanging, hooked rim (MON 3H7); Thameside/Upchurch greyware; (12307); PRN 29.
742. Lid-seated jar with an everted rim (MON 3L1); Fine Greyware; (12307); PRN 32.
743. Everted rim jar with overhanging, hooked rim (MON 3H7); Thameside/Upchurch greyware; (12308); PRN 24.
744. Jar with a sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (12308); PRN 26.
745. Funnel-necked beaker (Young 1977, type C22); Oxfordshire colour-coated ware; (12308); PRN 22.
746. Funnel-necked beaker (Young 1977, type C22); Oxfordshire colour-coated ware; (12308); PRN 23.
747. Flanged dish (MON 5A4); Thameside/Upchurch greyware; (12308); PRN 27
748. 'Dog-dish' (MON 5E1); Thameside/Upchurch greyware; (12308); PRN 28.
749. Mortarium with a wide, hooked flange (Young 1977, type M17); Oxfordshire whiteware; (12308); PRN 21.
750. Necked bowl with impressed decoration (Young 1977, type C78); Oxfordshire colour-coated ware; (12309); PRN 31.
751. Bowl copying samian form 37 (Young 1977, type W54); Oxfordshire whiteware; (12310); PRN 36.
752. Flanged dish (MON 5A5); Thameside/Upchurch greyware; (12310); PRN 38.
753. Everted rim jar with overhanging hooked rim (MON 3H7); Greyware; (12310); PRN 35.
754. Flanged dish (MON 5A5); Thameside/Upchurch greyware; (12310); PRN 39.
755. Shallow bowl copying samian form 31 (Young 1977, type C45); Oxfordshire colour-coated ware; (12310); PRN 34.
756. 'Dog-dish' (MON 5E2); Thameside/Upchurch greyware; (12310); PRN 44.
757. Indented beaker with stamped and applied barbotine scale decoration (Young 1977, type C32); Oxfordshire colour-coated ware; (12310); PRN 33.
758. Shallow bowl, probably derived from samian forms 36 and Curle 15 (Young 1977, type C49); Oxfordshire colour-coated ware; (12310); PRN 37.
759. Flanged dish (MON 5A4); Thameside/Upchurch greyware; (12311); PRN 42.
760. Deep, grooved rim dish (MON 5F4); Thameside/Upchurch greyware; (12311); PRN 43.
761. Deep, fairly thick-walled dish with flattened, inturned rim (MON 5E4); Hard gritty grog-tempered; (12312); PRN 90.
762. Everted rim jar (MON 3H); Greyware; (12312); PRN 40.
763. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (12312); PRN 41.
764. Flanged dish (MON 5A2); Greyware; (12312); PRN 91.
765. Grooved rim dish (MON 5F); Hard, gritty grog-tempered ware; (12313); PRN 86.
766. Flanged dish (MON 5A5); Hard, gritty grog-tempered ware; (12313); PRN 87.
767. Flanged dish (MON 5A4); Thameside/Upchurch greyware; (12313); PRN 85.

Layer 12411, demolition deposit outside the temple, 300325, 400103, Property 2:

768. Flask with a short neck (MON 1B6); Thameside/Upchurch greyware; PRN 56.
769. Large necked storage jar with an everted rim (MON 3D5); Hard, gritty grog-tempered ware; PRN 72.
770. Everted rim jar with an overhanging, hooked rim (MON 3H7); Thameside/Upchurch greyware; PRNs 60 and 64.
771. Everted rim jar (MON 3H0.7); three post-firing notches cut into rim (Fig 59, 895); Thameside/Upchurch greyware; PRN 73.
772. S-profile bowl (4A); Thameside/Upchurch greyware; PRN 62.
773. Narrow-necked jar/flask (Lyne and Jefferies 1979, 39, fig 24, class 1B); Alice Holt greyware; PRN 55.
774. Large jar with inward-curling, thickened rim (MON 3D6); Thameside/Upchurch greyware; PRN 59.
775. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; PRN 61.
776. Funnel-necked beaker (MON 2C2); Thameside/Upchurch greyware; PRN 57.
777. Funnel-necked beaker (MON 2C6); Thameside/Upchurch greyware; PRN 58.
778. 'Dog-dish' (MON 5E2); Thameside/Upchurch greyware; PRN 70.
779. Grooved rim dish (MON 5F3); Thameside/Upchurch greyware; PRN 68.
780. 'Dog-dish' (MON 5E2); Thameside/Upchurch greyware; PRN 66.
781. Deep, grooved rim dish (MON 5F1); Thameside/Upchurch greyware; PRN 67.
782. Deep, grooved rim dish (MON 5F1); Thameside/Upchurch greyware; PRN 71.

(Fig 53)

Layer 12411, demolition deposit outside the temple, 300325, 400103, Property 2 (contd):

783. Deep, grooved rim dish (MON 5F4); Thameside/Upchurch greyware; PRN 69.
784. Flanged dish (MON 5A4); Thameside/Upchurch greyware; PRN 63.
785. Flanged dish (MON 5A5); Thameside/Upchurch greyware; PRN 65.

Layer 12334, 300315, 400103, temple demolition deposits, Property 2:

786. Everted rim jar (MON 3H1); Thameside/Upchurch greyware; PRN 50.
787. Everted rim jar with overhanging, hooked rim (MON 3H7); Thameside/Upchurch greyware; PRN 53.
788. Mortarium with squat, folded flange (Young 1977, type M22); Oxfordshire whiteware; PRN 51.

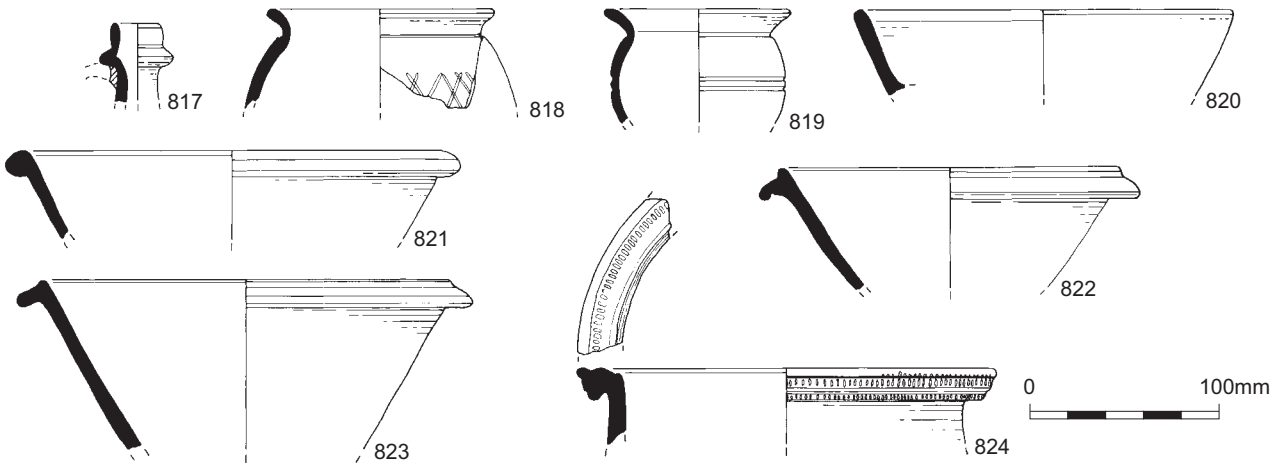


Figure 54 Springhead: pottery groups, Nos 817–24

789. Lid-seated bowl (MON 4L1); Greyware; PRN 52.
790. Flanged dish (MON 5A4); Thameside/Upchurch greyware; PRN 54.

Pit 12104, 300348, to the west of the temple, Property 2:
791. Jar with sharply everted rim (MON 3J3); Thameside/Upchurch greyware; (12106); PRN 6.
792. Tall, narrow-necked jar with cordon (MON 3A5); Thameside/Upchurch greyware; (12106); PRN 3.
793. Everted rim jar with overhanging, hooked rim (MON 3H7); Greyware; (12106); PRN 4.
794. Everted rim jar (MON 3H); Thameside/Upchurch greyware; (12106); PRN 5.
795. Jar with reverse D-shaped rim; Greyware; (12106); PRN 2.
796. Flanged dish (MON 5A4); Thameside/Upchurch greyware; (12106) and (12109); PRNs 7 and 8.
797. Flask with tall, narrow neck, decorated with frilled cordons (MON 1A4); sooted inside neck; Oxidised ware; (12111); PRN 10.
798. Everted rim jar with overhanging, hooked rim (MON 3H7); post-firing graffito on rim (Fig 59, 894); Thameside/Upchurch greyware; (12111); PRN 14.
799. Everted rim jar with overhanging, hooked rim (MON 3H7); Thameside/Upchurch greyware; (12111); PRN 15.
800. Small jar/bowl with moulded rim; Thameside/Upchurch greyware; (12111); PRN 12.
801. Folded beaker/jar base (MON 2D2); Thameside/Upchurch greyware; (12105); PRN 1.
802. Base with fine rouletted decoration; Oxidised ware; (12111); PRN 11.
803. Folded beaker/jar base (MON 2D2); Thameside/Upchurch greyware; (12111); PRN 13.
804. Grooved rim dish (MON 5F2); Thameside/Upchurch greyware; (12111); PRN 19.
805. Deep, grooved rim dish (MON 5F4); Thameside/Upchurch greyware; (12111); PRN 20.
806. Flanged dish (MON 5A4); Thameside/Upchurch greyware; (12111); PRN 16.
807. Flanged dish (MON 5A4); Thameside/Upchurch greyware; (12111); PRN 17.
808. Flanged dish (MON 5A5); Thameside/Upchurch greyware; (12111); PRN 18.

Pit 12160, 300346, 400109, probably pre-dating temple, Property 2:
809. Jar base; South-east Dorset Black Burnished Ware; (12161); PRN 48.
810. Cornice rim beaker with elaborate barbotine animal decoration, 'Hunt cup'; Cologne colour-coated ware; (12161); PRN 45.
811. Grooved rouletted beaker; Cologne colour-coated ware; (12161); PRN 46.
812. Bag-shaped beaker (MON 2E0); Thameside/Upchurch greyware; (12161); PRN 47.
813. Bag-shaped beaker with rouletted decoration; Cologne colour-coated ware; (12161); PRN 49.

Layer 12607:
814. Fairly globular-bodied, necked jar (Pollard 1987, 226, class IV C1(3), fig 70, 73); Hard gritty grog-tempered ware; PRN 84.

Post-hole 12585, Property 2:
815. Fairly globular-bodied, necked jar (Pollard 1987, 226, class IV C1(3), fig 70, 73); Hard gritty grog-tempered ware; (12586); PRN 88.
816. Beaded and flanged bowl (Lyne and Jefferies 1979, 46, class 5B, fig 32); Alice Holt greyware; (12586); PRN 89

(Fig 54)
Layer 16687; Property 4:
817. Flask rim (MON 1A5); Hoo ware; PRN 77.
818. Everted rim jar (MON 3J1); Thameside/Upchurch greyware; PRN 76.
819. Jar with sharply everted rim (MON 3J3); Greyware; PRN 78.
820. 'Dog-dish' (MON 5E1); Thameside/Upchurch greyware; PRN 81.

821. Plain 'pie-dish' with rounded rim (MON 5C1); Greyware; PRN 80.
822. Flanged dish (Seager Smith and Davies 1993, 235, type WA 25); South-east Dorset Black Burnished Ware; PRN 83.
823. Flanged bowl (MON 5A5); Greyware; PRN 79.
824. *Tazza*-type rim (Hawkes and Hull 1947, 256, Cam 198) with rouletted decoration; Greyware; PRN 82.

(Fig 55)
Early Roman layer 17755:
825. Southern Gaulish samian base (form 18); Stamp Cat No 22, CENSOR i; with abraded use-wear on underside – a ring at junction with footring and central spot in the kick; PRN 1017.

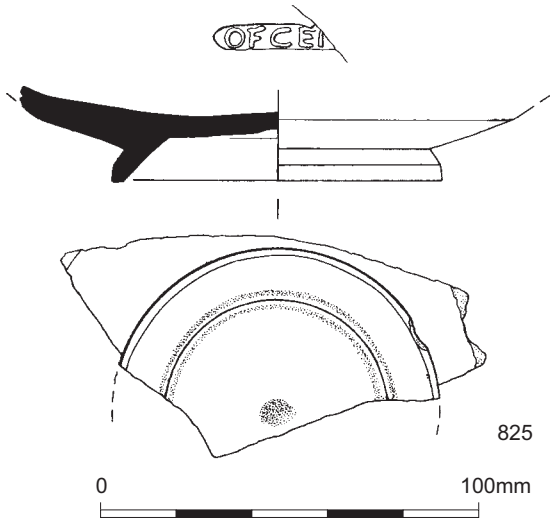


Figure 55 Springhead: worn samian ware vessel No 825

Pottery from Graves

In addition to the two vessels from cenotaph 6104 (Fig 22, 206 and 207) discussed above, seven graves contained deliberately deposited ceramic vessels, six with inhumed and one with cremated remains. In one instance, 'pot burial' 300344, found inside the temple *temenos* on property 2, the remains of probably two neonates were contained within a large Thameside/Upchurch greyware jar (Fig 48, 655), but in all other cases the pots accompanied the burials as ancillary vessels. Including the cenotaph, the total number of pots from burials amounted to 17, the number in each grave varying from one to four. Local fabrics dominate, with coarsewares (six of Thameside/Upchurch greyware, one of Grog-tempered ware) being marginally more frequent than the finer fabrics (one of Hoo white-slipped red ware, two of local fine oxidised ware and two of Fine Greyware). The five vessels originating outside the immediate locality comprise a *Verulamium* region whiteware flagon (Fig 22, 208), the Central Gaulish hairpin and teardrop beaker (Fig 22, 206; Pl 2), and three Southern Gaulish samian vessels, of forms 15/17 (Fig 1, 9), 18 (Fig 1, 8), and 27g (Fig 1, 7). These patterns find parallels among the material from the much larger cemetery at Pepper Hill (Biddulph 2006c). Likewise, the focus on forms associated with eating and drinking (flagons, bowls, dishes, and beakers) was also observed among the pots from graves of early Roman date within Springhead itself, and while only one coffined inhumation (grave 6608) is included in this group, it too has the three accompanying vessels (Fig 1, 9; Fig 22, 211–2) placed outside the coffin.

By the mid-Roman period, the emphasis on vessel types selected may have shifted towards more utilitarian (food preparation) forms. Although only three graves of this date were identified, one (grave 2404) contained a pie-dish (Fig 46, 638), beaker (Fig 46, 639) and two everted rim jars (one (Fig 46, 640) with a deliberate post-firing perforation through the vessel wall), all of Thameside/Upchurch greyware. The second mid-Roman grave ('pot burial' 300344) contained another large jar (Fig 48, 655) in this same fabric, while the third (grave 3142) was accompanied by a local fine oxidised ware flagon (Fig 44, 576). However, the stratigraphic position of this grave did not correspond with the accepted date range for this fabric, which was probably out of use by *c* AD 140/50 at the latest and, consequently, this vessel could have been several decades old when deposited. The deposition of such heirlooms was also observed at Pepper Hill (Biddulph 2006c).

It may also be significant that all three complete South Gaulish samian vessels from early Roman graves 6345 (Fig 1, 7 and 8) and 6608 (Fig 1, 9) have single chips out of their rims. All three vessels date to *c* AD 65/70–80/85 and both platters are also marked with a post-firing graffito letter 'V' on the underside of the base. The chips were certainly made in antiquity (rather than upon excavation). These vessels may have been deliberately chipped as part of the burial rites and rituals immediately prior to their deposition, although it is possible that they were selected from the domestic assemblage and were already slightly damaged through use. Similar chips in samian vessels from graves have also been noted on a form 18 platter from a broadly contemporary, mid-/late 1st century AD grave at West Thurrock (Andrews 2009, grave 17044), at Pepper Hill (E Biddulph, pers comm), and among both coarse and fine ware forms from cemeteries near Manston airport on the route of the Margate and Broadstairs urban wastewater pipeline (G Jones 2009, 114, pls 2.15–2.16).

Catalogue of pots from graves

Grave 3170
Bead rim jar (Thompson 1982, 213–6 type C1-1); Grog-tempered ware; mid 1st century AD (Fig 22, 210);. 25 sherds, 147 g. PRN 876.
Early Roman, context 3171, 300264

Grave 5570
Incomplete lid-seated jar (MON 3L9); Thameside/Upchurch greyware; late 1st century AD. 9 sherds, 135 g. Tentatively identified as a disturbed or truncated grave offering. Not illustrated.
Early Roman, context 5572

Grave 6608

Ring-necked flagon (MON 1E2.5); Hoo white-slipped red ware (Fig 22, 211); 47 sherds, 896 g. AD 60–130. PRN 684.

Beaker (MON 2E0) with evidence for a glue repair; Local fine oxidised ware (Fig 22, 212); 19 sherds, 220 g. PRN 704.

South Gaulish samian form 15/17 dish; stamped Vitalis; chip in rim; post-firing graffito obtuse-angled 'V' on underside of base (Fig 1, 9); 289 g; AD 70–85.

Early Roman, context 6609, 300079, 400025. Group dated to AD 65/70–85.

Cenotaph 6104

Globular, everted rim beaker with barbotine hair-pin and tear-drop decoration; Central Gaulish colour-coated ware (Greene 1979, fig 18, 1) (Fig 22, 206; Pl 2); 292 g. *c* AD 65/70–80. PRN 685.

Miniature, short-necked, biconical flask (MON 9B); Fine Greyware (Fig 22, 207); 125 g. PRN 686.

Early Roman, contexts 6102 and 6103, 300078, 40025. Group dated to AD 65/70–80.

Grave 6345

Necked bowl with a pear-shaped body and footring base (MON 4B4.3); Fine Greyware (Fig 22, 209); 284 g; *c* AD 45–90. PRN 688.

Small, single-handled, globular flagon, neck and rim missing; *Verulamium* region whiteware (Fig 22, 208); 348 g. PRN 687.

South Gaulish samian form 27 g cup; stamped GERMA[NI]; Germanus i; one chip in rim (Fig 1, 7); 179 g; AD 65–85.

South Gaulish samian form 18 dish; stamped C•ΛPITOF; Capitus ii; one chip in rim, post-firing graffito 'V' on underside of base (Fig 1, 8); 272 g. AD 70–85.

Early Roman, context 6355, 300078, 40025. Group dated to AD 65/70–80.

Grave 2404

Large globular-bodied beaker (MON 2H2); Thameside/Upchurch greyware (Fig 46, 639); 36 sherds, 292 g; AD70/80–100/10. PRN 497.

Everted rim jar (MON 3J3); Thameside/Upchurch greyware (Fig 46, 640); 45 sherds, 487 g; AD150–220/40. PRN 496.

Base and body sherds probably from an everted rim jar (MON 3J3); Thameside/Upchurch greyware; 41 sherds, 266 g; AD150–220/40. PRN 498 and 499; not illus.

Plain pie-dish with rounded rim (MON 5C1); Thameside/Upchurch greyware (Fig 46, 638); 8 sherds, 273 g; AD120/50–230/50. PRN 495.

Middle Roman, context 2405, 300223, 400055. Group dated to late 2nd/early 3rd century AD.

Grave 3142

Body and base sherds from a flagon; Local fine oxidised ware (Fig 44, 576); 11 sherds, 209 g. PRN 799.

Middle Roman, context 3143, 300048, 40018.

Pot burial 300344

Large, globular jar (MON 3D6); Thameside/Upchurch greyware (Fig 48, 655); 24 sherds, 1945 g; mid-/late 2nd–3rd century AD; PRNs 167 and 168.

Middle Roman, contexts 12222 and 12223, 400105, property 2.

'Make-do and Mend': Evidence for the Use, Re-use, and Repair of Ceramics

Perhaps unsurprisingly within an assemblage of this size, there is considerable evidence for the use, re-use, and repair of ceramic vessels. This occurs on a wide range of both fine and coarseware fabrics, with an appreciable bias towards samian and the north Kent/south Essex shell-tempered wares. Overall, such evidence is more common on coarsewares than it is on finewares (with the exception of samian), and can certainly be seen on significant numbers of Thameside/Upchurch greywares, grog-tempered-, and Patchgrove ware sherds.

Abraded wear

Use-wear is perhaps most readily apparent in the form of surface abrasion. The slip on samian is especially vulnerable to this and most reports feature comments relating to the degree of wear on footrings, the information contributing to assessments of levels of supply, availability, etc. Such use-wear was observed on an unusually high proportion of the samian vessels from Springhead, not just on footrings but also on the interior surfaces (base and walls) of vessels as well as the undersides of bases, often at the internal junction of the footring and the base, sometimes in the centre of the base only, and rarely covering the entire area within the footring.

Although no un-used samian vessels have been noted, considerable variability in the level of use is apparent from the degree of wear on the standing surface of the footring bases. Some have hardly been worn at all, suggesting comparatively little use, while others have completely lost their slip, indicating that they had been used a great deal.

Abraded wear on the interior of the base and/or lower parts of the walls is most common and, with the exception of form 33 cups, limited to vessels with rounded base profiles, such as cup forms 27, 27g, 35, 40 and 42 (Fig 1, 10), and dish/bowl forms 32, 36, 38, 44, and Curle 21. Although the form 33 cups are more frequent in the assemblage than other cup forms, only a handful show evidence of use-wear, often confined to a ring of wear at the base of the vessel wall. Curiously, the three form 38 bowls from the Sanctuary area of the site are all worn internally up to the level of the flange.

Examples of abraded wear on the interior surface of vessel walls (as if the vessel was tipped to one side during use, as in beating eggs) is mostly limited to bowls with rounded internal profiles. Unfortunately, however, most recorded instances of wear in this position occur on vessels represented by rim/body sherds only, so it is not possible to know whether their bases were also abraded. Two decorated bowls (Fig 6, 35 and Fig 7, 42; Pl 1), however, suggest that the wear is confined to patches on the vessel wall. Assuming that these two bowls were complete when these marks were caused, it seems as if decorated samian was being used for something far more active than simply serving food at table.

Abraded wear is sometimes associated with strange little pits or dimples worn into the surface of the pot, generally within the abraded patches, like those on the Cerialis bowl noted above (Pl 1) for example. These dimples are typically *c* 5 mm in diameter and 1–2 mm deep at the centre. Pitted surfaces are usually indicative of extreme or prolonged stirring or grinding, the formation of hollows demanding localised and possibly rotary abrasion (Hally 1983, 19), although it is difficult to suggest how processes such as stirring and grinding could be so localised and intense. Dimples were also occasionally noted at the footring junction and in the centre of the underside of bases, perhaps indicating the re-use of broken bases as small dishes or saucers. It is also possible that they represent some later activity, designed to reduce the samian fabric to a powder for use elsewhere, in the preparation of foodstuffs, cosmetics, medicinal substances, or even as a jewellers paste, for example, although why this should only affect small, localised patches rather than destroying whole sherds is unclear. Small pits ground into the interior surface of samian vessels, particularly cup forms 27 and 35 as well as the inside of the footring of a form 38 bowl, were also recorded at Highstead, near Chislet to the north-east of Canterbury (Taylor 2007, 242), suggesting that whatever process(es) caused these dimples it was a widespread practice across north Kent.

Wear on the underside of samian bases occurs most frequently on dishes of forms 15/17, 18, and 18/31. These vessels all have bases with straight footrings and a slight or moderate kick and, once broken, it was common for bases to be inverted and cut down to form small dish-like vessels or lids (Marsh 1981, 229). Where this occurs, the wear patterns within and around the edge of the base at the junction with the footring would be readily understandable and comparable with the wear produced by stirring and mixing seen at the base angle of form 33 cups. However, within the Springhead assemblage, several more complete vessels that have clearly not been cut down also display this ring of wear, often with a central spot (eg, Fig 55, 825). A similar wear-pattern was also noted on a stamped base sherd from a form 15/17 or 18 platter from County Hall, Dorchester, Dorset (Mills and Corney 1993, 42). While it is possible that samian dishes were sometimes used in an inverted position, even when complete, or that the function of the small vessel made from a broken base could be adequately fulfilled without going to all the trouble of trimming-up the sherd, on a lighter note one possible alternative suggests itself. One of the authors (Mills) recently attempted plate-spinning and noted that the plastic plates supplied by the childrens' toy manufacturer were shaped very like the samian form 18/31 dishes with a slight basal kick. The instructions included in the kit specified that the plate was to be positioned so that it initially rotated around the base of the footring; once the required speed was reached, centrifugal forces would take over and the plate would move so that it balanced at the central point of the kick. Although we can find no firm evidence for samian spinning in the archaeological record (scenes on samian itself, perhaps) or in the works of the classical authors, such activities would explain the unusual ware patterns observed. At Springhead, one can imagine troupes of entertainers among the travellers and pilgrims visiting

Plate 1 Abraded wear on the interior surface of the Cerialis bowl (Fig 8, 42; Cat No 195)

Plate 2 Central Gaulish colour-coated ware hairpin beaker

the site, as well as the possibility of temple fairs and markets, while it is all too easy to underestimate the influence and impact of children upon the material culture of the past.

Other areas of abraded wear occur on the rims of two form 31 bowls, on the walls and rims of Lud Sa and Curle 23 dishes (eg, Fig 2, 14), and on the exterior wall of a form 18/31R or 31R bowl, perhaps further evidence for the use of samian vessels, at least occasionally, in an inverted position. Wear was also noted on the interior and exterior surfaces of a form 27g cup, while one sherd from an 18/31R bowl has wear apparently formed by repeated cutting. The exact processes responsible for such patterns are currently unclear but ongoing research utilising replica vessels (Biddulph 2006a) may shed some light on these practices. Within the Springhead assemblage, wear was noted on samian vessels from all sources except 1st century AD Lezoux ware and Blickweiler, but the number of vessels from these sources is so small that it is not surprising that they are not represented. Activities causing such wear probably continued throughout the period of samian use, although it is perhaps possible that it represents some sort of later use of samian. There are, however, no obvious concentrations of worn samian within the assemblage and comparatively little occurred in residual contexts.

Among the coarsewares, abraded wear is most commonly found on the underside of larger jar bases. This was clearly caused by regular use rather than deliberate damage like that affecting several vessels in the Woodruff Collection (Monaghan 1983, 201). The abraded wear generally affects only one part of the base (usually *c* 20–25% of the circumference, although in one instance 50% is affected) where the fabric is 'worn' away, flattening the base angle, and probably resulting from repeatedly rocking or tipping of the vessel in one direction. The sheer size and weight of many of these jars, especially when full, must have necessitated such an action to retrieve the contents; they are simply too heavy and cumbersome to be lifted each time. It also implies that these particular vessels were used in one position over considerable periods of time, perhaps for the storage of dry goods, the risk of spillage and mess being much greater if the contents were wet. Bases worn in this way were found in both the Roadside settlement (properties 2, 4, and 9) and the Sanctuary site, associated with beam-slot structure 400054, structure 400030, and among the features pre-dating the sequence of early 'bakeries'. North Kent/south Essex shell-tempered ware storage jars are most commonly affected, although Patchgrove and grog-tempered jars have also been used in this way, while one *Verulamium* region whiteware mortarium has a similarly worn base.

A number of other pale-coloured coarseware mortaria have also been very well used, displaying worn, abraded interior surfaces and, in some instances, even the loss of trituration grits. This, together with their rarity within the assemblage as a whole (0.5% by count), may imply that mortaria were only available to, or desired by, the inhabitants of Springhead in very limited quantities. Samian mortaria, however, seem to have been unusually frequent in Kent (*cf* Cool 2006, 46, table 6.2). Twenty-seven mortaria were identified among the 387 samian vessels from the Lullingstone villa (Simpson 1987, 163, table v). Bird and Marsh noted that over one-third of the East Gaulish vessels from the Classis Britannica fort at Dover were mortaria (1981, 179), while at least ten were present among the 229 identifiable vessels from the Painted House (Bird 1989). Springhead and the Northfleet villa (Mills, this vol) both conform to this pattern. It is possible that these vessels were used in a different way from their pale-coloured counterparts (Cool 2006, 45–6), perhaps at table, like the whole suite of samian vessels, although many of the Springhead mortaria have seen such heavy and prolonged use that their slip is worn away and the grits feel worn and smooth to the touch. However, the popularity of red mortaria does not appear to have long out-lasted the final 50 years or so of the samian trade as their Roman colour-coated copies are rare in both the Springhead and Northfleet assemblages (see Biddulph below) during the later 3rd and 4th centuries.

New vessels from old

In addition to the samian vessels and/or bases that may have been used in an inverted position, the adaptation of broken vessels to form new ones was also undertaken, albeit on a small scale, among a wide range of other fabrics. For example, a narrow flagon neck-type sherd in the local fine oxidised ware (layer 17573 on property 3) appears to have been trimmed to form a new rim after its original one had been chipped or broken off, thus prolonging the life of an otherwise undamaged vessel. Once broken, another oxidised flagon rim/neck sherd (Fig 53, 797) may also have been re-used as a makeshift incense burner or a candlestick, its inner surface showing signs of burning and soot deposits unlikely to have been caused while the vessel was complete. Similarly, a small bowl had been formed from the lower section of a fine sandy ware jar (*cf* Thompson 1982, type B3-7), a new rim being created at the point where the vessel had broken at a cordon on the lower body. This vessel was found in layer 11320, associated with the first phase of the smithy on property 10 and may represent a real instance of 'make-do', like the many margarine cartons, jam jars, etc, pressed into service today to hold screws, nails, etc, in workshops, garden sheds, and garages. A grog-tempered pedestal base (Fig 23, 227) has been trimmed and inverted for use as a small dish or bowl and a second base (Fig 22, 195) may also have been used in this way. These vessels were found in relatively close proximity to each other, in the recut segment 6666 of ditch 300021 associated with the early road (300017) and in dumped layer 6161 overlying the road.

Similarly, one of the samian mortaria may have been re-used as a lamp. The complete base of a Trier mortarium (Fig 2, 16), found in tree-throw 12566, pre-dating the temple on property 2, has been cut in four

places to receive rivets; the breaks, however, are abraded and the interior very worn. An area of burning was noted where the broken edge projects most, possibly as a result of a wick being laid in this area. Several of the amphorae, that other stalwart of 'Romanisation' although they were never particularly well-represented at Springhead, also display evidence of being re-used. Three Dressel 20 amphorae and one from Cadiz have all had their necks and handles removed, the new, wider opening created at about the level of the lower handle attachments being trimmed and smoothed to form a new, simple, upright 'rim'. The rim/neck/handles of another Dressel 20, found in pit 12209 on property 2, show that the handles were first cut with a saw and then knocked-off, perhaps with a hammer and chisel, although the neck seems to have been simply smashed. These vessels were then utilised as large containers; one Dressel 20 may have been put to an industrial use as it was found among material from the first phase of the complex on property 4 (layer 16866, group 400168); two others are from property 11 (layers 11430 and 10835), while the Cadiz amphorae is from pit 5781, cut into the top of enclosing ditch 400017 on the Sanctuary site. Similar re-working of empty amphorae is well attested in Britain and on the Continent, in both military and civilian contexts (Callender 1965, 23; Van der Werff 2003, 110; Evans 2007, 179); they were clearly too useful as large containers to be simply discarded once their original contents had been consumed.

Re-used sherds

The practice of paring-down pottery sherds to fashion objects such as counters, weights, discs, and spindle whorls was not common practice at Springhead. Only two small gaming counters were identified (Fig 56, 826–7). The four ceramic discs (including Fig 56, 828) may have functioned as larger gaming pieces, weights, or even lids and find parallels at the Lullingstone villa, where the far more plentiful examples ranged between 28 mm and 100 mm in diameter (Meates 1987, 280–1). The 11 spindle whorls (Fig 56, 829–39) are made from a wide variety of fabrics (although samian was never chosen), perhaps suggesting that almost any available sherd would do to make them. Similarly, the amount of care and attention invested in fashioning them varies considerably, some being rough ovals while others are more precisely circular and well-finished. Five have hour-glass shaped perforations drilled from both surfaces, the others being drilled from the outside in. The eight most complete examples, however, weigh between 20 g and 33 g (average 26 g), broadly equivalent to one *uncia* (29 g), the basic unit of Roman weight measurement, and it may be that weight was a more important criterion for these highly functional objects than either appearance or finish.

Two other body sherds, both roughly triangular in shape, were also utilised. The long sides of a North Kent/south Essex shelly ware sherd have very smooth, slightly dished areas (Fig 56, 840) while one side of an oxidised ware sherd (Fig 56, 841) is worn to a smooth, rounded point; all other parts of both sherds are just rough. Both were probably used for rubbing or grinding purposes but the nature of these remains unclear. The only even broadly comparable objects known to the present authors are three triangular pieces of tile from the Roman bath-house (Woolaston House site) in Dorchester, Dorset (Seager Smith in prep), although these are much larger (up to 90 mm long) and well-worn all over, perhaps used as emery or massage stones. In addition, two amphora sherds have been cut into roughly square *tesserae*, a practice also noted at the Northfleet villa (see Biddulph below). Both were found in the Roadside settlement area, one in early Roman pit 10331 within the circular building on property 11, while the other was unstratified.

Re-used sherds

(Fig 56)

826. Counter; Thameside/Upchurch greyware body sherd; edges left rough; 30 mm diam, 6 mm thick. Fill (context 17418) of early Roman post-hole 17417, group 300655, property 3, SF 20415, PRN 882.
827. Counter; Central Gaulish black slipped ware solid pedestal beaker base, neatly trimmed. Mid-Roman layer 17759, property 3, SF 18753; PRN 997.
828. Disc; Thameside/Upchurch greyware jar base; 90 mm diam, 9 mm thick. Also a square stamp on underside of base. Fill (context 12050) of midd-Roman post-hole 12048, defining *temenos* on property 2; PRN 1001.
829. Spindle whorl; Hoo white slipped red ware body sherd; oval with smoothed edges; 51 x 45 mm, 5 mm thick, 24 g. Fill (context 11685) of early Roman post-hole 11684, group 300433, property 11, SF 15297, PRN 883.
830. Spindle whorl; local fine oxidised ware base, 54 mm diam, 8 mm thick, 29 g. Mid-Roman layer 10405, property 11, SF 15306, PRN 884.
831. Spindle whorl; grog-tempered ware body sherd, roughly trimmed oval 58 x 50 mm, 10 mm thick, 33 g. Early Roman layer 5641 (sub-group 300009), SF 879, PRN 885.
832. Spindle whorl; Patchgrove ware body sherd, roughly circular with smoothed edges, 55–60 mm diam, 7 mm thick, 33 g. Early Roman layer 5544, group 400039, SF 896, PRN 886.
833. Spindle whorl; sandy ware body sherd, very roughly circular, 40–48 mm diam, 9 mm thick, 21 g. Late Iron Age hollow 3660, group 400016, SF 1665, PRN 887.
834. Spindle whorl; local fine oxidised ware base, neatly trimmed, *c* 25% surviving, 100 mm diam, 8 mm thick; a scratched line follows the circumference with irregular lines radiating out from the center towards it. Fill (context 6570) of early Roman feature 6571, group 40050, PRN 888.
835. Spindle whorl; North Kent/south Essex shelly ware body sherd, roughly circular with partially smoothed edges, 40–45 mm diam, 8 mm thick, 23 g. Fill (context 3169) of early Roman pit 3167, group 400053, PRN 889.

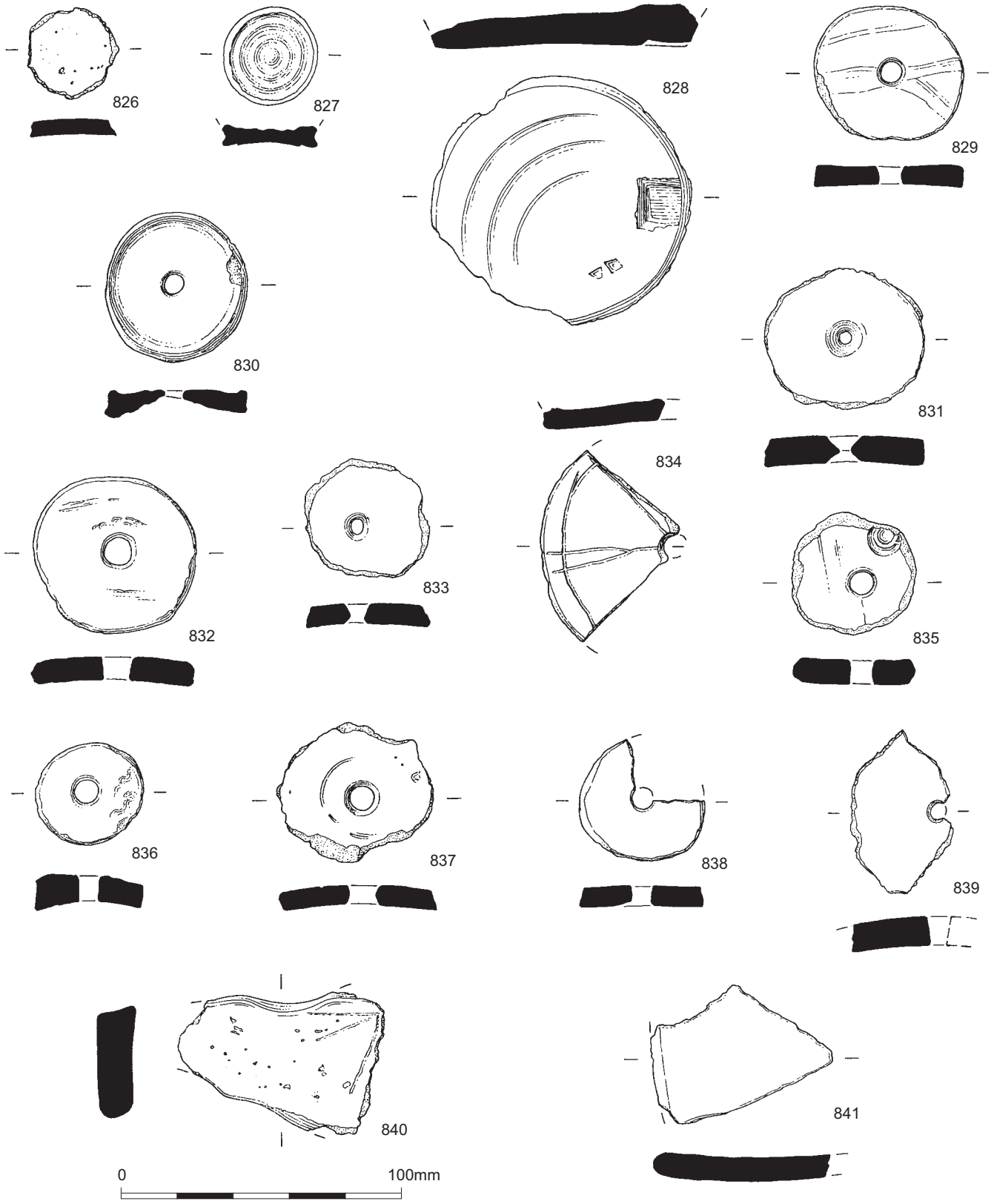


Figure 56 Springhead: modified sherds Nos 826–41

836. Spindle whorl; oxidised ware body sherd, oval 35–9 mm across, 12 mm thick, 20 g. Fill (context 3169) of early Roman pit 3167, group 400053, PRN 890.
837. Spindle whorl; North Kent/south Essex shelly ware body sherd, edges damaged; scratched/incised lines on both surfaces concentric with the perforation and *c* 8 mm from its edge; unstratified (ARC SPH00), PRN 891.
838. Spindle whorl; grog-tempered ware body sherd; incomplete, 66% of 45 mm diameter; roughly circular. Fill (context 3859) of Late Iron Age pit 3860, group 400016, PRN 892.
839. Spindle whorl; grog-tempered ware body sherd; incomplete, 30% of 80 mm diameter; edges left unfinished but with a smooth, straight-sided central perforation. Fill (context 3558) of Late Iron Age pit 3556, group 400016; PRN 994.
840. Utilised sherd; North Kent/south Essex shelly ware body sherd from a thick-walled storage jar; roughly triangular shape with two very smooth, slightly dished areas on opposing parts of the two long sides; 70 mm long, 50 mm wide, 12 mm thick. Fill (context 11383) of segment 11388 of the early Roman roadside ditch 300451; PRN 894.
841. Utilised sherd; oxidised ware body sherd; roughly triangular shape with one edge worn to a smooth, slightly rounded point. Fill (context 5770) of mid-Roman beam slot 5771, part of the pre-temple structure 300120, PRN 895

Other re-used sherds (not illus)

Disc; unassigned amphora; 70 mm diam, 11 mm thick. Early Roman layer 11257 associated with the first phase of smithy on property 10; PRN 1000.

Disc; white-slipped red ware base, 84 mm diam, 8 mm thick. Fill (context 11385) of segment 11388 of early Roman roadside ditch 300451; PRN 1002.

Disc; Thameside/Upchurch greyware base, 55 mm diam, 8 mm thick; late Roman layer 16863, property 4; PRN 1003.

Tessera, square, 30 x 35 mm; unassigned amphora. Fill (context 10332) of early Roman pit 10331 within the circular building on property 11; SF 15245.

Tessera; square, 32 x 34 mm; Dressel 20 amphora. Unstratified (ARC SHN02); SF 15232

Repair and modification of vessels

Another common form of modification is indicated by post-firing perforations carefully drilled through the bases and/or walls of vessels. These include 25 examples on samian vessels, mostly bowl and dish forms, with two form 33 cups, and 51 on more local fabrics. These include three on Fine Greywares, four on local fine oxidised wares, and the remainder on coarsewares, especially North Kent/south Essex shell-tempered ware (18 examples), Thameside/Upchurch greywares (11 examples), grog-tempered (six), and Patchgrove ware (three). Among the local fabrics, the post-firing perforations generally occur on jar sherds, although a *Verulamium* region whiteware flagon has also been repaired in this way. At least 52 instances involve perforations through the vessel wall; these predominantly occur as single holes on individual sherds, rather than complete vessels which may have shown the presence of multiple perforations. The remainder have been drilled through the base and, although not all bases are complete, the tendency appears to have been for one centrally placed hole. Eight samian vessels have cross-cut (X-shaped) or bowtie-shaped slots, while two have evidence for both drilled holes and cut or filed slots. In general, however, the perforations are circular or oval, although two base sherds (from segment 10247 of the early Roman roadside ditch 400121) have square holes in the centre, presumably reflecting the shape of tool used rather than the function of the pot. Most have been drilled from the outside in, although some have an hour-glass shaped cross-section, indicating that they have been drilled from both surfaces. In all cases, these perforations must have been made with considerable care to prevent the vessel breaking during the process. There are some differences in size, however; samian sherds consistently have the smallest perforations, generally less than 5 mm in diameter, while among the local fabrics, perforations through vessel walls tend to be smaller (up to 7 mm across) than those through bases, which are 10 mm or more.

It is probable that the smaller holes were drilled to repair broken vessels, the joining sherds being reunited with metal (most commonly lead) staples or rivets or perhaps leather thongs. This method of repair is especially common on samian, with traces of lead surviving *in situ* on three form 18/31 vessels of Antonine date, two from Central Gaul (from early Roman pit 2157 (group 400057) and late Roman layer 16863 on property 4), and one from Rheinzabern (late Roman layer 16687 on property 4). Local vessels were, at least on occasion, also repaired in this way, indicated by staple/rivet-sized holes (some only 2–3 mm in diameter) in vessels such as Fig 18, 119; Fig 21, 174; and Fig 24, 252, as well as a lid, a lid-seated jar (MON 3L2), and at least four body sherds in the North Kent/south Essex shell-tempered fabric, a second lid-seated jar (MON 3L7) in Thameside/Upchurch greyware, and two body sherds, probably from flagons, in a white-slipped red ware and an unsourced oxidised ware fabric. Sherds without surviving metal may represent failed repairs.

At least one coarseware jar (Fig 46, 636) had been repaired with a lead plug, filling a relatively large hole in the vessel wall. Other instances of this certainly occur at Springhead as numerous lead plugs were found among the metalwork (Schuster, this vol), but unfortunately not in contexts with visibly repaired sherds. Repair in this fashion may therefore account for some of the other post-firing perforations in vessel walls, but alternative explanations, such as perforations made in the rim/neck zone so that the vessel could be suspended, or to fix an organic cover, cannot be excluded. Perforations through the base (eg, Fig 22, 200; Fig 34, 438; Fig 45, 627;

Table 18 Springhead pottery: glue repairs, number of examples by fabric and phase

	Late Iron Age	Early Roman	Mid-Roman	Late Roman	Unphased	Total
Samian		7	2			9
Colchester mortaria					1	1
Fine Greyware		1	1			2
Local fine oxidised wares		2				2
Oxidised ware		1				1
White-slipped red ware		1	2			3
Fine shell and grog	1					1
Grog-tempered ware	1	3		1		5
North Kent/South Essex shelly ware		9	6		1	16
Patchgrove ware		4	2			6
Thameside/Upchurch greywares		5	4		1	10
Total	2	33	17	1	3	56

Fig 46, 634, 637; Fig 48, 665) are more indicative of some sort of change of use. This practice is well-known in Late Iron Age and Roman contexts across southern England (eg, Booth 1997, 123; Evans 2007, 179), traditionally associated with the production of cheese (Harding 1974, 88). Other possible uses may include the draining/straining of solids from liquids in both industrial and domestic (food preparation) contexts, as time-pieces, or flower pots (Fulford and Timby 2001, 294). Given the environmental evidence for brewing at Springhead, these vessels may have served in the preparation of beer and/or other alcoholic beverages, acting as makeshift funnels or sieves for use with or without a cloth lining.

Fulford and Timby (2001, 296) have suggested that some of the 'holed' vessels from Silchester may have been deliberately rendered useless in terms of their original perceived function 'as part of a wider Romano-British chthonic ritual'. Potential candidates from Springhead may include the narrow-necked jar (Fig 37, 472) from pit 16902 on property 4, the everted rim jar (Fig 46, 640) from grave 2404, and, perhaps, the perforated base sherd (not illus) from ritual shaft 2856. The perforated sherds from Springhead were found scattered in a range of feature/deposit types across the Sanctuary site with small concentrations associated with late Iron Age ditch 6621, the early 'bakeries' (400038, 400040, 400041), one of the 'viewing platforms' (400045 and 400047), beam-slot structure 400054, and the Sanctuary temple (400035). Within the Roadside settlement, vessels altered in this way were most commonly found in features and deposits on properties 2 and 11, but it was in these areas that the greatest numbers of sherds were found so they naturally included the widest range of unusual and specially treated sherds. Overall, there is little evidence to suggest that this form of modification reflects anything other than a simple change of use. One vessel however, may provide an exception to this, a *Verulamium* region whiteware mortarium (Fig 38, 494) dated to *c* AD 90–120 (Hartley 1984, 283) found in pit 16471 on property 5. This vessel has a large, irregular hole in the base, the nature of the breaks suggesting that it had been hit from the inside. While this may be an example of the ritual destruction of a vessel prior to deposition, it is equally plausible that the damage was caused during prolonged or over-enthuastic use, like that of the only holed mortarium from Silchester (Fulford and Timby 2001, 294).

Other evidence of repair

Monaghan's survey of the north Kent pottery (1987, 132, class MON 4J3) and several more recent publications (Booth 1997, 123; Dudd and Evershed 1999; McKinley 2004d, 31; English 2005) have highlighted the use of pitch- or resin- like substances to repair Roman pottery vessels. Glued repairs have also been noted among assemblages from the Cambourne new town, Cambridgeshire (Seager Smith 2009) and on late Iron Age sherds from the Margate and Broadstairs urban waste water scheme (G Jones 2009, 114). The Springhead assemblage, however, has included the largest group to date, 56 sherds or groups of joining sherds repaired in this way, representing a 'glued rate' of 1:2169 sherds. Most of the broken pieces have been glued together, the thick dark greyish–brown or black resin surviving on the broken edges and/or along the margins of the break, where it had spread onto the adjacent surfaces as the sherds were pushed together. At least two, possibly three, vessels (Patchgrove ware jar sherds from contexts 12265 and 12267 in pre-temple ditch 12256 on property 2 and a lid-seated North Kent/south Essex shell-tempered jar from gully 19300 on property 3) show a 'belt and braces' approach to repair, the glue occurring alongside small, post-firing perforations drilled to take metal staples. One of the perforations in a Patchgrove ware sherd (context 12265) was apparently filled with resin.

The glue repairs are found on vessels in a wide range of fabrics (Table 18). The contexts of these sherds, together with the range of fabrics and vessel forms (eg, MON 2G1, 3D, 3E3, 3G3, 3L2, 3L7, 4A1, 4C1.2, 4F, 5E4, 7B2, 7D; Thompson types C1-2, C6-1; South Gaulish and Les Martres samian), suggest that this practice was most popular during the 1st and early 2nd centuries. However, the Colchester mortarium is dated to the 2nd half of the 2nd century (Hull 1963, 191, type 501A), while a Thameside/Upchurch greyware everted rim jar

(Monaghan 1987, 105, class MON 3J3, *c* AD 150–220/40) indicates at least the limited continuation of this method of repair into the mid-Roman period. Indeed, local oral tradition holds that cherry tree resin was used to repair broken pots until modern times (Monaghan 1987, 178).

The distribution of the glued sherds was more or less even across both parts of Springhead, with 31 examples (a rate of 1:2073 sherds) from the Roadside settlement and 26 from the Sanctuary site (a rate of 1:2129 sherds). Within this, however, distinct clusters were noted (see Fig 108 below), in the area of the Sanctuary complex itself, though virtually all pre-dating it (14 examples from groups 400009, 400021, 400023–27, 400034, 400037, 400038, and 400068), on one of the 'viewing platforms' (four examples), and on properties 2 (four examples), 3 (12 examples), and 11 (six examples) but, again, these coincide with the greatest quantities of sherds overall. Two of the large shell-tempered storage jars used as pot-ovens on property 3 (pit 17449, layer 17450; pit 17174, layer 17172) were repaired in this way, although it is not clear whether they were repaired before or after they were chosen to become ovens. Certainly such exposure to heat would surely have re-melted the glue, although once the vessel was positioned and functioning as an oven, this may not have been an important consideration.

The adhesive substance was visually similar to the thin pitch-like deposits often observed on the external upper surfaces of the large shell-tempered storage jars (see above; Monaghan 1987, 178; Davies *et al* 1994, 102). To ascertain the origin of these materials, 25 samples, mostly adhesives but including six with surface deposits, were analysed by the Archaeological, Forensic and Scientific Services at the University of Reading using a combination of thin-section analysis, Fourier Transform-Infrared (FT-IR) spectroscopy, and Gas Chromatography/Mass Spectrometry (GC/MS). Full results are presented in the archive. These analyses confirmed the principal ingredient as birch bark tar, a substance produced by heating birch bark to temperatures in excess of 300–400°C. Some previous studies have identified animal fat (Regert *et al* 1998; Dudd and Evershed 1999; English 2005) and beeswax (Charters *et al* 1995) mixed with the birch bark tar used to repair ceramics, but there was no evidence for any such additional natural materials, or any derived from food residues, contained within the vessels at Springhead. It is not clear whether the birch bark tar adhesive was being produced at Springhead itself. The environmental evidence indicates that birch was growing in the locality (Barnett, Vol 3, Chap 3), and small amounts of birch were seen in the upper pollen sequences from several late Iron Age and Roman sites in London (Scaife 2000; Sidell *et al* 2000), but no physical evidence for processing birch bark was recovered during the excavations.

Traditionally, the repair of pottery vessels, especially coarsewares, has been associated with inadequate supplies (Marsh 1981, 227) or lowly status, limiting the availability of and/or access to new vessels, thus forcing the continued use of the old. However, given the size of the ceramic assemblage from Springhead, there is no reason to suppose that pots were ever in short supply or difficult to afford. As the focus of pottery studies shifts away from fabric and form analysis to examine in greater detail the way in which ceramics were used, it is likely that many more examples will come to light and repair will gradually be seen as part of everyday life. A 2nd century sand- and grog-tempered jar in the Woodruff Collection was repaired in antiquity using lead (Monaghan 1983, 205, fig 3, 20) while, further afield, coarseware vessels repaired with lead staples and plugs are known from sites in Wiltshire (Mepham and Morris 1992, 19, fig 6, 10) and Dorset (Seager Smith 1993, 54, fig 23, 14), at Silchester (Fulford and Timby 2001, 294), and King Harry Lane, *Verulamium* (Stead and Rigby 1989, 278, 282, fig 92, 24.2). The number of glue repairs known is also growing, although just how successful these were is open to question. In the 2nd century BC, Yeshua ben Sira, a Jew, formerly of Jerusalem but working in Alexandria, Egypt wrote in a collection of ethical teachings: 'He who teaches a fool is like one who glues potsherds together ...' (*Ecclesiasticus* (Sirach) 22:7). This may have been based on an pre-existing proverbial expression used by Greek-speaking Jews, meaning something along the lines of 'Pottery is for cooking with and glue won't withstand the heat, so glueing pottery together is a futile exercise' (S Morgan pers comm), but perhaps we should not be so sceptical – after all, three of the glued sherds survive intact!

Graffiti

Seventy-seven examples of post-firing graffiti (Figs 57–9) on pottery vessels were found, representing a graffiti rate of 1:1578 sherds. Although this seems to be a relatively high total, recent work on the assemblage from the temple precinct at Higham Ferrers, Northamptonshire has revealed some 33 vessels with post-firing graffiti out of a total of 28547 sherds (Timby 2007), a graffiti rate of 1:865 sherds, nearly twice as frequent as at Springhead. The Springhead graffiti comprises 11 literate marks, 29 'X' motifs (two in combination with notches), 14 other letters or parts of words, 9 abstract marks (one in combination with notches), and 14 examples of notches on their own. In common with the findings of recent surveys of graffiti on Romano-British pottery (Evans 1987, 202; Biddulph 2006b), most are on tablewares: 32 on samian (all plain forms), 1 on a *Terra Nigra* platter, and 11 on local Fine Greyware vessels, while 28 are on Thameside/Upchurch greyware, two on Patchgrove, and three on North Kent/south Essex shelly ware sherds. Although measured in assemblages from northern Britain, Evans (2004, 359) noted that around 60% of vessels with graffiti are normally on samian ware, and though the proportion of samian with graffiti from Springhead falls short of this (41%), the three finer fabrics together

almost reach the mark (57%), emphasing the importance of local wares and the shortage of imports in the assemblage as a whole. At Higham Ferrers, 48% were on finer tablewares (samian, imported beakers, and Lower Nene Valley colour-coated wares) with the remainder on coarsewares, especially the Nene Valley grey wares (30%; Timby 2007).

The literate graffiti from Springhead, all scratched into the exterior walls, were submitted to R S O Tomlin. Only one, giving the Celtic masculine name Senna (Fig 57, 842), is complete, although its form is unusual as such names are more often found latinised, as Senecianus for example (RIB II 1995b , 412, Carlisle). The others (Fig 57, 843–52) are all fragmentary but it is likely that they too represent personal names. Other marks or letters are generally interpreted as initials or illiterate marks of ownership (Evans 1987; Biddulph 2006b), though alternatives include numbers, indications of capacity, weight or intended contents, and apotropaic marks designed to charm the pot or to protect its contents (Going 1987, 108). The majority (38 examples) are located unobtrusively on the underside of bases, with 24 examples on vessel walls and four, all notches, cut into rims. The notches are very specifically located; the four examples cut into rims are all on coarseware vessels and find parallels at Lullingstone (Pollard 1987, 276, fig 70, 75; fig 73, 12; fig 75, 160) and Chelmsford (Going *et al* 1987, fig 49, 14–19), while the ten samian examples are cut or filed across the base of the footring. Six footrings have a single notch, two have two notches, and one example has three notches, while the other looks like IVV or possibly an M (Fig 59, 893). In the three instances where notches occur alongside other marks, one, associated with an X (Fig 57, 853), is also cut into the footring of a Central Gaulish samian base, another, again with an X, consists of two notches cut into the circumference of a Thameside/Upchurch greyware dish base (Fig 58, 860), whilst the third, occurring with a II on the neck of a Fine Greyware imitation butt beaker (Fig 59, 886), consists of a single notch cut into the edge of the rim.

The most common single letter is X, its frequency in this assemblage, as in most others (Evans 1987, 201; Biddulph 2006b, 357), implying that it represents something other than the number ten. The 'V' or 'Λ' marks (eight examples) vary, some being acute while others are broad enough to have the lines almost at right-angles to each other; one example (additional graffiti catalogue (not illus) no 10) is set within a scratched rectangle. Four of the Vs occur on South Gaulish samian vessels, including the two complete platters, both date to c AD 70–85, from early Roman graves 6345 and 6608 (Fig 1, 8 and 9), although the form of the letter is different on these two vessels, one being far wider than the other. Other single letters include b (or an inverted q; Fig 59, 878), M (Fig 59, 877), and T (Fig 59, 876), perhaps all initials. One of the abstract marks comprises a lightly scratched X with a third stroke (Fig 59, 884), perhaps intended to represent a wheel, on the underside of a late 2nd or early 3rd century Eastern Gaulish (Trier) samian form 38 or 44 base. It has been argued elsewhere (Going 1992b, 108; Biddulph, this vol) that at least some X symbols, especially if on the underside of bases, may represent simplified wheels or degenerate 'double axe' motifs, which may have carried funerary or underworld meanings or were perhaps symbolic of the goddess Fortuna and good luck (see Schuster below). Other abstract marks consist of rectangles (Fig 59, 886), vertical lines (Fig 59, 887), upright crosses with two or more horizontal bars (Fig 59, 885, 888, 891) – perhaps fragmentary examples of the equal-armed linear cross from Lullingstone (Pollard 1988, 279, fig 88, 427) – a variety of linear motifs (Fig 59, 889, 892) and part of a trident on the underside of a Thameside/Upchurch greyware jar base (Fig 59, 890). Examples of a trident- and wheel-graffiti are also found at the Northfleet villa, where their symbolism and other parallels are more fully discussed (see Biddulph, below).

Although the incidence of graffiti is more common in the Roadside settlement (43 examples or a graffiti rate of 1:1495 sherds) than on the Sanctuary site (34 examples, a graffiti rate of 1:1628 sherds), it may be of relevance that five examples from the Roadside settlement were found on property 2, among the late Roman demolition deposits associated with the earlier temple. If the graffiti are marks of ownership, their association with the temples and sanctuary areas is explicable in terms of the necessity to mark personal property where communal dining, organisation, and public events might be expected, while if their purpose was apotropaic, these areas would also be the most likely findspots.

Graffiti catalogue

(Fig 57)

842. Central Gaulish samian form 31; Antonine; above carination; SIINNA. Celtic masculine name *Senna*; dumping/build-up layer 5682 above early Roman road 400009.

843. Central Gaulish samian form 31; Antonine; exterior surface above footring; reading uncertain, letters incomplete; fill (5690) of mid-Roman pit 5781 cut into top of ditch 400017 enclosing the springs and sanctuary.

844. East Gaulish samian, probably Rheinzabern, form 33; late 2nd century AD +; external surface above base; reading uncertain, letters incomplete; mid-Roman layer 2674 post-dating sanctuary structure 300157.

845. Body sherd; East Gaulish samian form 32 or 40, late 2nd century AD +; exterior surface; reading uncertain, letters incomplete; mid-Roman layer 2675 post-dating sanctuary structure 300157.

846. Body sherd; Central Gaulish samian form 33; exterior surface of inverted vessel above carination]TA[; mid-Roman layer 17821 on property 3.

847. Central Gaulish samian form 31, mid–late 2nd century AD; external surface of inverted vessel, between footring and carination; incomplete VIE[; fill (2910) of mid-Roman pit 2904 located to the east of 'Viewing platform' 400045.

848. Body sherd; Thameside/Upchurch greyware; exterior surface; reading uncertain, letters incomplete; fill (2905) of mid-Roman pit 2904, to the east of 'Viewing platform' 400045; PRN 928.
849. Thameside/Upchurch greyware pie-dish (MON 5C1); exterior surface;]CIA[; mid-Roman layer 5287 in the sanctuary area; PRN 529.
850. Fine greyware body sherd; exterior surface; reading uncertain, something like]OMRIL[; fill (11072) of segment 11339 of the early Roman roadside ditch 300451; PRN 470.
851. Patchgrove ware storage jar sherd; exterior surface; incomplete, probably]NROC or V RO[; fill (16306) of early Roman dene hole 12686 on property 11; PRN 474.
852. Fine Greyware biconical beaker (MON 2G1); exterior surface; incomplete; reading uncertain, letters incomplete, possibly]VIM[; fill (11382) of segment 11388 of early Roman roadside ditch 300451; PRN 473.
853. X on underside of Central Gaulish samian form 31 base; notches |\|\| cut into the footring adjacent; Antonine; late Roman layer 12411, temple demolition deposits, property 2.
854. X; outer surface of *Terra Nigra* Cam 5b platter (Fig 30, 363); Unstratified (ARC SPH00); PRN 893.
855. X; underside of Thameside/Upchurch greyware jar base, one arm much deeper than the other; Fill (2262) of mid-Roman pit 2214, pit alignment 300073 in sanctuary complex; PRN 527.
856. X; underside of Thameside/Upchurch greyware jar base; Fill (2905) of mid-Roman pit 2904, to east of 'Viewing platform' 400045; PRN 929.
857. X; exterior of neck of Fine greyware beaker (MON 2G1; Fig 28, 313); Fill (3120) of early Roman pit 3114 to the north of sanctuary complex; PRN 734.

(Fig 58)
858. X; underside of North Kent/south Essex shelly ware jar base; Layer 5048, early Roman hearth 5047, primary use of 'Viewing platform' 400045; PRN 524.
859. X; underside of Fine greyware jar base; mid-Roman layer 5429, Portico structure 400020, Sanctuary complex; PRN 522.
860. Probable X; interior of a dish base, possibly one on the exterior too, along with two notches cut into circumference; Thameside/Upchurch greyware; Fill (5727) of mid-Roman pit 5725 cut into top of enclosing ditch 400017; PRN 521.
861. X; exterior surface, Thameside/Upchurch greyware dish (MON 5D1); Fill (6031) of robber trench 6030 of unknown date, sanctuary temple 400035; PRN 531.
862. Upright +; exterior surface, Thameside/Upchurch greyware dish (MON 5C1); Fill (10319) of mid-Roman dene hole 12058, property 11; PRN 466.
863. X; exterior surface of thin-walled body sherd, small Thameside/Upchurch greyware jar or beaker; Fill (10413) of mid-Roman pit 10408, property 11; PRN 467.
864. X; exterior surface of thin-walled body sherds, small Thameside/Upchurch greyware jar or beaker with rouletted decoration; late Roman layer 12308, temple demolition deposits, property 2; PRN 471.
865. X; interior surface, dish base; Thameside/Upchurch greyware; late Roman layer 12411, temple demolition deposits, property 2; PRN 74.
866. X; exterior surface of a Thameside/Upchurch greyware dish (MON 5E1); late Roman layer 12508, property 2; PRN 472.
867. Upright + ; neck of a Fine greyware beaker (MON 2G1); Fill (16641) of segment 16655 of the second phase of early Roman roadside ditch 300545; PRN 475.
868. X; underside of base; Thameside/Upchurch greyware bowl (MON 4C1.2); Fill (16641) of segment 16655 of the second phase of the early Roman roadside ditch 300545; PRN 477.
869. X; underside of Fine greyware beaker base; Fill (16862) of late Roman slot 17022, property 4; PRN 479.
870. Faint X; underside of Thameside/Upchurch greyware jar base; Fill (16889) of early Roman pit 16902; property 4; PRN 481.
871. X; underside of Thameside/Upchurch greyware jar base; Fill (16894) of early Roman pit 16902; property 4; PRN 1018 .
872. X; underside of Thameside/Upchurch greyware beaker base; mid-Roman layer 17835 on west side of bakery complex, property 3; PRN 486.

(Fig 59)
873. Acute-angled V; underside of base; Southern Gaulish samian form 18 (Fig 1, 8); AD 70–85; Fill (6355) of early Roman grave 6345 associated with early road 400009.
874. Obtuse-, almost right-angled V or L; underside of base; Southern Gaulish samian form 15/17 (Fig 1, 9); AD 70–85; Fill (6609) of early Roman grave 6608 associated with early road 400009.
875. Λ or an inverted V; exterior surface, Fine greyware bowl (MON 4H1; Fig 42, 553); early Roman layer 10819 (group 400127), pre-dating the earliest circular structure on property 11, PRN 367.
876. T; underside of Fine greyware jar/large beaker base; Fill (16641) of segment 16655 of the second phase of the early Roman roadside ditch 300545; PRN 476.
877. M; exterior surface, Fine greyware jar or beaker sherd; Fill (17524) of mid-Roman pit 17525, property 4; PRN 484.
878. b or inverted q; body sherd from shoulder of Thameside/Upchurch greyware jar; late Roman layer 12411, temple demolition deposits, property 2; PRN 75.
879. V, inverted; exterior surface Thameside/Upchurch greyware dish (MON 5E1); Fill (16862) of late Roman slot 17022, property 4; PRN 478.
880. V; underside of Thameside/Upchurch greyware jar base; Fill (16894) of early Roman pit 16902; property 4; PRN 1019.

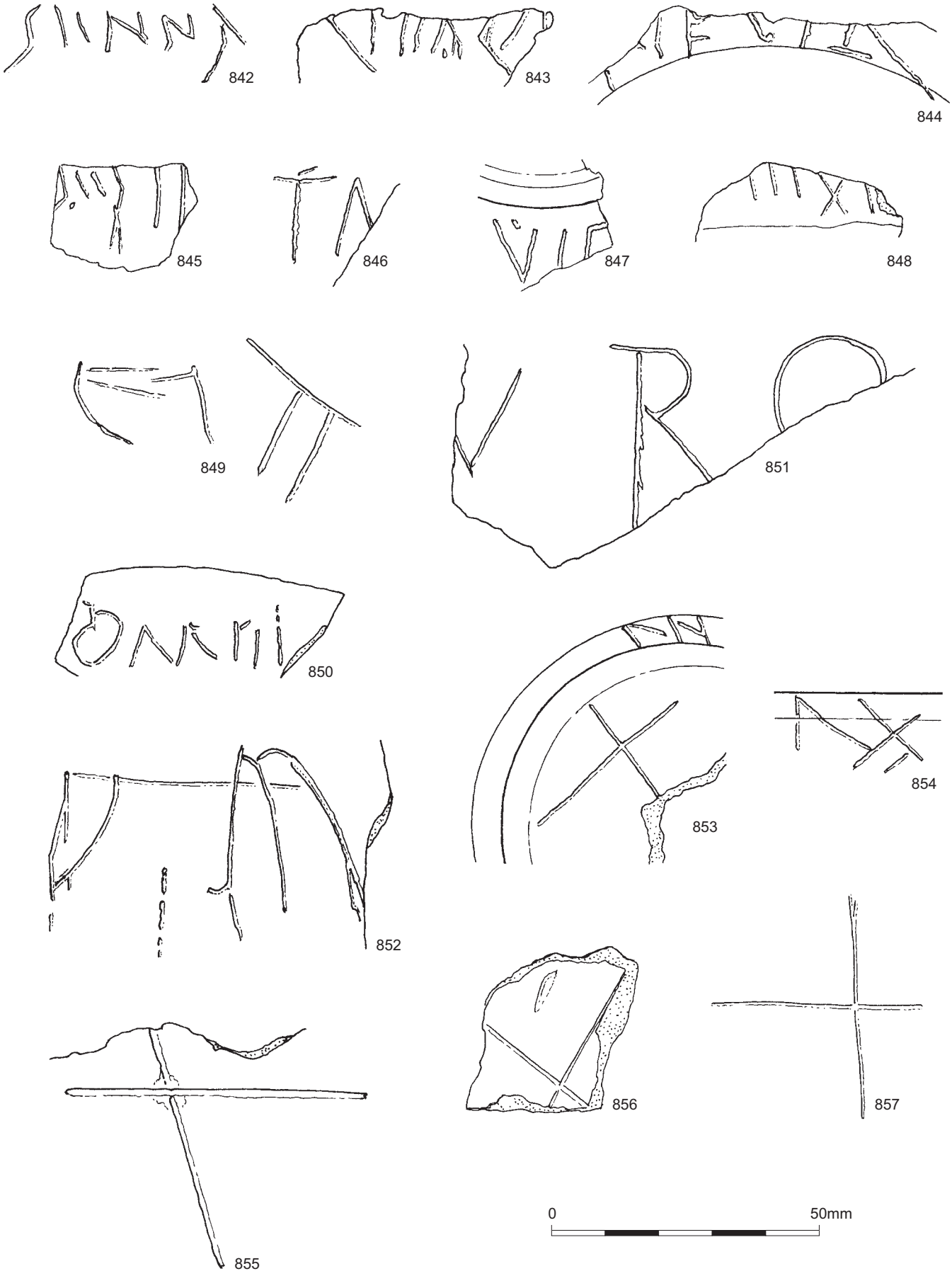


Figure 57 Springhead: graffiti Nos 842–57

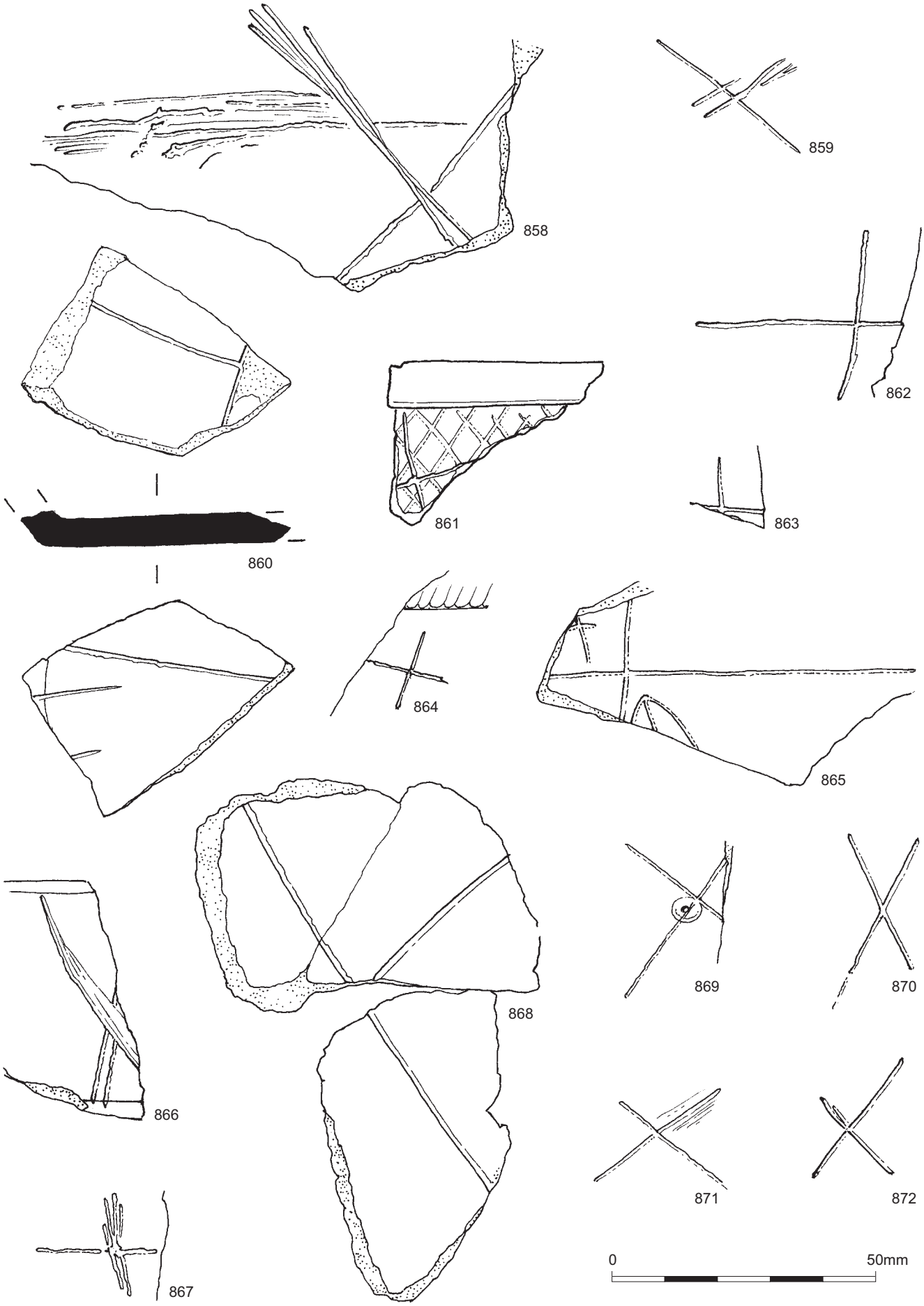


Figure 58 Springhead: graffiti Nos 858–72

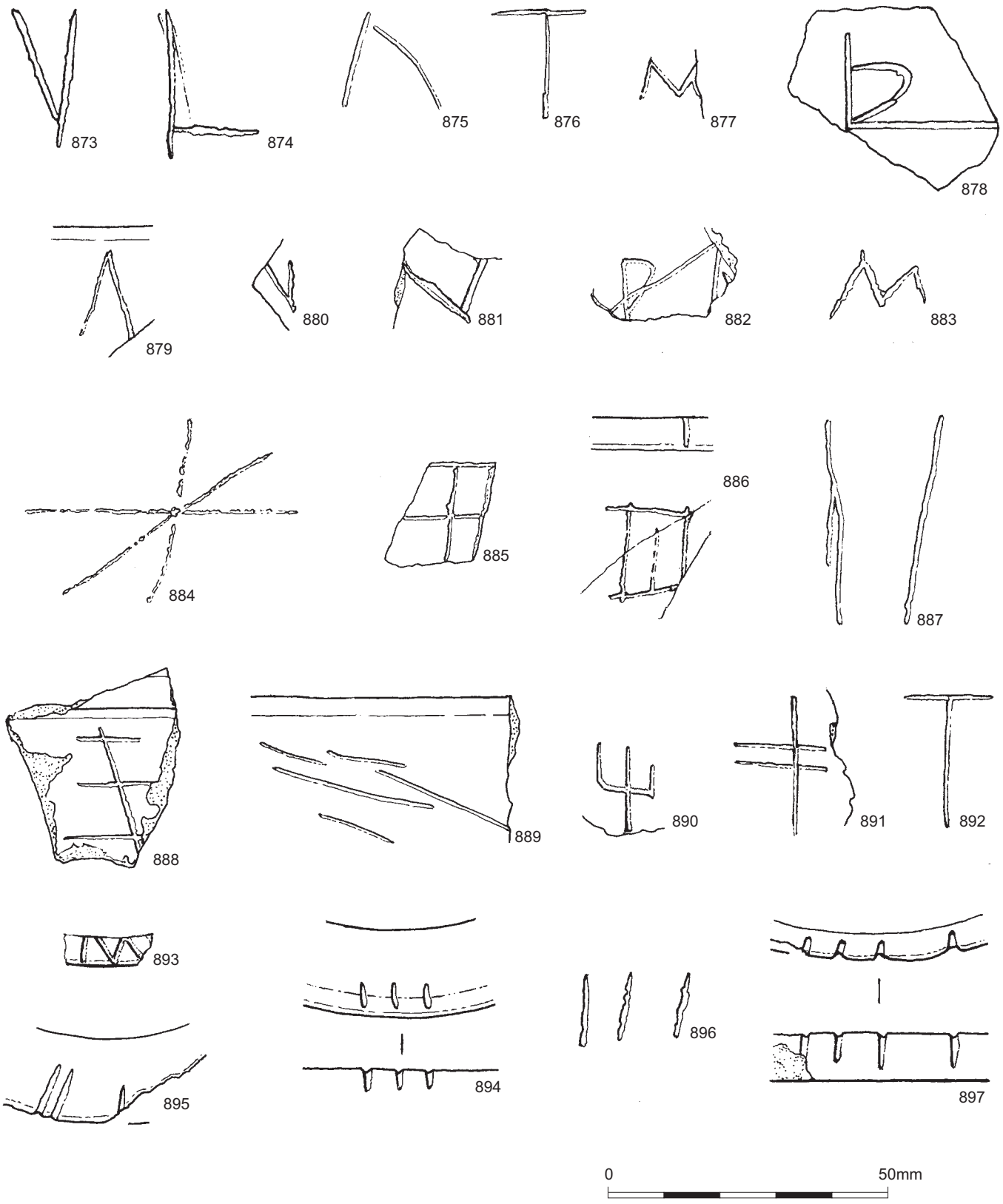


Figure 59 Springhead: graffiti Nos 873–97

881. Part of a V; exterior surface of Thameside/Upchurch greyware lid (MON 12); Fill (2319) of mid-Roman pit 2318, associated with beam-slot structure 400054; PRN 526.
882. PA[exterior of a Thameside/Upchurch greyware jar sherd; Fill (2361) of mid-Roman pit 2359 to the east of 'Viewing platform' 400045; PRN 525.
883. M; underside of a Thameside/Upchurch greyware jar base; Layer 2675 post-dating structure 300157; PRN 927.
884. X with an extra stroke; underside of Eastern Gaulish (Trier) samian form 38 or 44 base; late 2nd/early 3rd century AD; Fill (17016) of early Roman post-hole 17016, fence on south side of property 4.
885. An upright + with two horizontal strokes, perhaps similar to No 888 below; exterior surface of Fine greyware beaker body sherd; Fill (10207) of segment 10194 of the final phase early Roman roadside ditch 300387; PRN 465.
886. II, or a rectangle; exterior surface of neck of Fine greyware beaker (MON 2B2); also a notch cut into rim edge; Fills (10341 and 10345) of segment 10274 of the final phase early Roman roadside ditch 300387; PRNs 468 and 469.
887. | | possibly representing the number two; exterior shoulder of large North Kent/south Essex storage jar (MON 3D5; Fig 32, 412); Fill (10235) of segment 10233 (group 400121) of the final phase early Roman roadside ditch 300387; PRN 223.
888. A vertical line crossed by three horizontal lines; exterior surface of Thameside/Upchurch greyware jar; Fill (3056) of Late Iron Age feature 3055; PRN 523.
889. Lightly scratched lines on exterior surface; Thameside/Upchurch greyware dish (MON 5E2); Fill (6031) of robber trench 6030 of unknown date, sanctuary temple; PRN 530.
890. Trident; underside of Thameside/Upchurch greyware jar base; late Roman layer 16863, property 4; PRN 480.
891. Upright + with two horizontal bars; exterior surface of Thameside/Upchurch greyware dish; Fill (16999) of segment 16994 of the boundary ditch between properties 3 and 4; PRN 482.
892. T or perhaps a horizontal line terminating in a shorter vertical one; exterior surface of Patchgrove ware jar sherd; Fill (17235) of mid-Roman pit 17238, property 3; PRN 483.
893. IVV or M cut into footring; Central Gaulish samian, 2nd century AD; Fill (2709) of mid-Roman well 2706, sanctuary area.
894. Three notches cut into rim of Thameside/Upchurch greyware jar (Fig 53, 798); Fill (12111) of late Roman pit 12104 to the south-west of temple, property 2; PRN 143.
895. Three notches cut into rim of Thameside/Upchurch greyware jar (Fig 52, 771); late Roman demolition layer 12411 (300325, group 400103) outside the temple on property 2; PRN 73.
896. Three notches cut into rim of Thameside/Upchurch greyware jar (Fig 49, 703); mid-Roman layer 17821 sealing pits on property 3; PRN 485.
897. Four notches cut into rim of North Kent/south Essex shelly ware storage jar (MON 3D5); early Roman layer 6418, earliest phase of channel fills (400007); PRN 678.

Additional graffiti (not illus)

Simple 'X'

1. X scratched onto underside of base; Montans samian form 27 cup; AD 120–45; Fill (context 2219) of mid-Roman pit 2214, pit alignment 300073 in sanctuary complex.
2. X roughly scratched onto Southern Gaulish samian dish/bowl body; Fill (context 3116) of early Roman pit 3114, to north of the sanctuary complex.
3. X scratched onto underside of Central Gaulish samian form 31 base; AD 140+; mid-Roman colluvial layer 5600 in spring area.
4. X scratched onto underside of Central Gaulish samian form 31 base; AD 140–70; mid-Roman layer 5905, sanctuary temple 400035.
5. X scratched onto underside of Central Gaulish samian form 33 base; AD 140–70; Fill (context 5951) of segment 5935 of mid-Roman ditch 300112, sanctuary temple.
6. X scratched onto underside of Southern Gaulish samian form 18 base; AD 80–100; mid-Roman layer 10405, property 11.
7. Tentatively identified X on underside of base, Central Gaulish samian form 38; Antonine; mid-Roman layer 16363, property 9.
8. X scratched onto underside of Central Gaulish samian form 18/31R base; Hadrianic–early Antonine; mid-Roman layer 16642, property 4.
9. Small X scratched onto external wall of Central Gaulish samian form 27; Hadrianic–early Antonine; mid-Roman layer 17759, property 3.

Other letters

10. V surrounded by a rectangle scratched on underside of Southern Gaulish samian form 18 base; AD 50–65; Fill (context 10211) of segment 10194, final phase of the early Roman roadside ditch 300387.
11. V or Λ on underside of Southern Gaulish samian Curle 11 base; Flavian–Trajianic; Fill (context 11289) of mid-Roman pit 11211, associated with the first or second phase of the smithy on property 10.
12. M[on exterior wall of Central Gaulish samian form 33 cup; Antonine; Fill (context 2153) of early Roman pit 2152, to the east of enclosing ditch 400017.

Notches

13. One notch cut across footring; Southern Gaulish samian form 18R base; Flavian; Fill (context 10042) of mid-Roman pit 10039 within circular building, property 11.
14. One notch cut across footring; Southern Gaulish samian form 18 base; Fill (context 16641) of segment 16655 of the second phase of early Roman roadside ditch 300545.

15. Two notches cut across footring; Central Gaulish samian form 18/31R base; Hadrianic–early Antonine; Unstratified (ARC SPH00).
16. One notch cut across footring; Central Gaulish samian form 33 cup; Antonine; mid-Roman layer 16861, property 4.
17. One notch cut across footring; Central Gaulish samian form 18/31R or 31R base; Hadrianic or Antonine; Fill (context 17369) of mid-Roman pit 17374 associated with structure 400134/135, property 6.
18. One deep notch cut across footring; Central Gaulish samian form 31 base; Antonine; mid-Roman layer 17759, property 3.
19. One notch cut across footring; Central Gaulish samian form 33 cup base; AD 160–200; Fill (context 2716) of mid-Roman pit 2236, pit alignment 300073 in sanctuary complex.
20. Two notches cut across footring; Central Gaulish samian form 27 cup base; AD 120–60; Fill (context 3637) of mid-Roman gully 3636 in south/south-east corner of the site.
21. Three notches cut across footring; Central Gaulish samian form 18/31R or 31R base; Hadrianic or Antonine; Fill (context 5901) of mid-Roman clay-lined 'tank' 5917 to the rear of sanctuary temple.

Conclusions

At all times during its occupation, the inhabitants of Springhead relied on supplies of pottery from local sources. During the late Iron Age and earliest Roman periods, these included a wide range of as yet unsourced fabric types tempered with sand, shell, and grog, either alone or in combination, and continuing in the native traditions of the area. These were swiftly overtaken in the 2nd half of the 1st century AD by the much larger north Kent/south Essex shell-tempered and the Thameside/Upchurch industries, coupled with a wide range of regionally imported wares, mostly from kilns around London and Colchester. The two major north Kent industries lasted into the late 2nd and mid-3rd centuries respectively and were subsequently replaced by other sandy greywares and grog-tempered wares, the latter reverting to the handmade traditions of the pre-Conquest period, together with products from areas well outside the immediate north Kent zone (eg, Alice Holt, south-east Dorset, Oxfordshire, and Much Hadham).

Although imported Continental vessels were always present at Springhead, with the exception of samian they never reached quantities indicative of a significant or consistent 'trade', forming only a very minor element of the ceramic supply. This pattern is not unique but is repeated in other parts of Kent (Pollard 1988, 36, 59; Booth 2006c, section 4.4.2), although the diverse range of imports from Lullingstone (Pollard 1987, 281) provides a stark contrast, perhaps indicative of continued direct links with the Continent or the exceptional purchasing power of this villa estate. Even in the proportion of samian, traditionally one of the main indicators of site status (Willis 1998, 85–6), Springhead is found somewhat wanting; approximately 3% of the assemblage overall (by sherd count) while the proportion of decorated wares (at 14% of the vessels identified) is more akin to that of small, rural roadside settlements than larger, Romanised urban centres (see Mills above). However, it is possible that other factors were at work in this part of northern Kent, making comparisons with other parts of the province inappropriate. The proportion of decorated wares from Springhead is directly comparable to that from the Northfleet villa (13% by EVE) and considerably higher than values obtained for other villa sites in the region (see Biddulph below), suggesting that Springhead and Northfleet had equal, and easier, access to samian than other sites in the region. The absence of late 3rd–4th century imported finewares (eg, Argonne ware, *ceramique á l'éponge*, North African red-slipped ware), is more understandable given their rarity in the province in general, the relative paucity of other pottery of this date and the ephemeral nature of the late Roman activities at Springhead.

From the final quarter of the 1st century AD, the supply of British finewares, principally from the local north Kent industry, more than made up for any shortfall in imported tablewares. It remains unclear, however, whether this represented a deliberate choice made by the inhabitants of Springhead, their local products being of sufficiently high-quality to compete successfully against the imported tablewares, or whether it was one forced upon them because imports were simply not available. Overall, the distribution of 1st century imported finewares across the county (Pollard 1988, figs 18 and 19) is so scanty that it is possible that that few, if any, of these vessels ever reached a market at all, travelling rather as personal possessions, perhaps of military, other official or high-status personnel. This lies contrary to all expectations of Springhead, from its location on Watling Street, the main land transport link between the channel ports and supply bases at Richborough and Dover and London and the rest of the province, as well as the religious/ritual nature of the site, which must have attracted many visitors, pilgrims as well as travellers. The assemblage indicates an overall scarcity of pottery moving overland from east to west across the county. Assuming that the amphorae arrived with their original contents intact, the inhabitants of Springhead enjoyed only very limited access to olive oil and possibly a small amount of fish-based products from southern Spain, as well as wine from Italy and Gaul. The range of amphorae from the Lullingstone (Pollard 1987, 212–3), Thurnham (Booth 2006c, section 4.4.3), and Northfleet (Biddulph, this vol) villas was similarly restricted, while no amphorae at all were apparently recorded from Darenth (Philp 1973, 138–40). In contrast, a seemingly steady supply of oil, wine, and other products from Gaul, Spain, Italy, and the eastern Mediterranean reached Canterbury contemporary with the main period of occupation at Springhead (Arthur 1986, 258), possibly due to its closer proximity to Richborough and

Dover. Similarly, products of the Canterbury pottery industry only rarely penetrated west Kent (Pollard 1987, 68). No definite examples were recorded at Springhead while the HS1 sites have emphasised the easterly distribution of these wares (Booth 2006c, tables 4.4–5), only two sherds, both from Northumberland Bottom, occurring to the west of Thurnham. It is likely, then, that imported ceramics and other goods landed at Richborough and Dover were used in east Kent, while cargos destined for London travelled direct via the Thames, rather than being transported overland through Kent, or using stopping-off points on the north Kent coast to supply local markets.

Similarly, one might have expected that access to mortaria would have been relatively straightforward for the inhabitants of Springhead, but these vessels too are very scarce. Although comparative published material is sparse, it seems that while samian mortaria are unusually common (see Mills above), their pale-coloured counterparts never figured significantly in Roman Kent. Pollard (1988) illustrated only eight vessels, while Hartley and Tomber's recent survey considered mortarium production in Kent to be 'unexpectedly limited' (2006, 98). Certainly, mortarium production would have been well within the capabilities of the highly competent north Kent potters, although they may have been limited by the scarcity of white-firing clays (Monaghan 1987, 178). Their absence from the repertoire presumably indicates that there was comparatively little demand anticipated for such products. These vessels are often seen as being indicative of the adoption of Romanised methods of food preparation (Tyers 1986, 116), but this need not be the case as they were perhaps more common in Britain than many other parts of the Empire (Hartley 1998, 209), including Italy itself (Cool 2006, 45). It is possible that they were regarded simply as large bowls (*ibid*, 43–5) and given the general paucity of such forms in south-eastern England during the 1st and 2nd centuries AD, the scarcity of mortaria at Springhead is less surprising.

Although limitations of small assemblage size are frequently discussed in Romano-British pottery reports, there has been far less consideration of the effects of extremely large size. For most assemblages, chronology is perhaps the single most important factor influencing differences in assemblage composition, although variables such as site function and status are generally seen as contributors to the often complex patterns observed. At Springhead, however, almost every aspect of the ceramics demonstrates fairly consistent patterning between the two main areas, which might, at first glance, be expected to have widely differing functions and thus pottery assemblages, although this is clearly somewhat confused by the presence of the temple on property 2 and the possible shrine in the road junction. Although differences in the overall quantities of pottery recovered from the various properties and feature groups are apparent, these are broadly related to the differential survival of the archaeological deposits in these areas; some areas (and always the same ones) being far more prolific of all artefact types than others. Unlike the animal bone, there is comparatively little evidence for ceramics being used in any overt 'ritualised' way, although much of the assemblage must have functioned in the context of food preparation for and consumption by the visitors and pilgrims to the town. This 'everyday', utilitarian nature of the ceramic assemblage compared with unusual and 'outstanding' animal bone deposits, reflecting sacrifice and other ritual behaviour, finds parallels at the Snow's Farm shrine complex, Haddenham, Cambridgeshire (Evans and Hodder 2006, 435–43). Similarly, there was little direct evidence for the use of pottery in ritual or votive activity associated with the shrines at Coleshill, Warwickshire (Booth 2006a) or Uley, Gloucestershire, where, with the exception of a collection of miniature vessels, the assemblage mirrored others from contemporary settlement sites in the locality (Leach 1993, 243).

Status differences between properties/areas at Springhead are not readily apparent either; the assemblages are all surprisingly uniform, everyone seeming to have equal access to the whole range of ceramics available within the town. From the ceramics, it is certainly possible to see Springhead during the 1st-3rd centuries as a town with relatively little distinctive social stratification. Most of the permenant residents seem to have operated at the level of service providers to travellers and the numerous officials, visitors, and pilgrims flocking to the various shrines and temple complexes within the town. Certainly the population does not seem to have chosen, or used, pots to display their status in any obvious way.

Almost all the observable differences in assemblage composition at Springhead are explicable by chronology but beyond this, the usual discrepancies of distribution are simply not visible. The relatively restricted date range of the assemblage, which for the most part spans little more than 150 years, will certainly have contributed to this lack of patterning, while the practice of site phasing at feature level, rather than on an individual context basis, may well have further minimised any inconsistencies. But it is possible too, that the differences in assemblage composition that ceramic specialists expose and discuss at length, are really features of limited assemblage size, resulting from the excavation of relatively restricted areas of a site. In ceramic terms, an assemblage of 10,000 sherds is generally considered to be of 'a good size', but the Springhead collection is in the order of ten times greater than this and has provided an opportunity to examine the ceramics from a slice across a whole town where almost all deposits were of schedulable quality. Its uniformity may have taught us that as sample size increases, so we have fewer discrepancies, that many of the peaks, troughs, and other differences in assemblage composition perceivable to us, although influenced by chronology, are really caused by too little material from too small an area and that, with the exception of certain rare and special circumstances when pots were specifically chosen to play a part in pre-planned, 'structured' deposits, ceramics generally

remained utilitarian to the end, disposed of as, and with, domestic/industrial waste with little deliberate patterning or implied meaning.

The Pottery from Northfleet

by Edward Biddulph

A total of 9594 sherds of pottery, weighing 144 kg, was recovered from Northfleet. The vast majority – some 80% by sherd count – came from the Roman villa complex (NVEE, NVGS, NVNE, WB, Wetlands); the remainder was largely from the Western Roman Complex or Sportsground site (ESPORTS), which comprised a series of ditches and enclosures, while a handful of residual sherds was collected from Saxon deposits in Area 6 (Table 19). With an average sherd weight of 15 g, the condition of the pottery is generally good; rims that can be identified to vessel types are reasonably well-represented, while surfaces are not overly abraded. This is in part due to thick layers of hillwash and alluvium sealing the villa after occupation but it also points to undisturbed deposits within the villa complex containing pottery discarded near to the area of original use. The assemblage spans the Roman period, though most of it belongs to the mid- and late Roman periods (AD 120–410). A small amount of late Iron Age and early Roman period pottery is present.

The assemblage was sorted within context groups into fabrics and then into 'sherd-families' – collections of sherds sharing certain characteristics, such as rims belonging to the same vessel or pieces with particular decoration, or simply a mass of undiagnostic body sherds. Each sherd-family was quantified by sherd count, weight (in g) and estimated vessel equivalence (EVE), which records the surviving percentage of a complete rim. (EVEs are more usually presented in pottery reports as fractions of a whole; here, they are given as percentages. So, half a vessel is recorded as 50 EVEs or, more correctly, 50%, rather than 0.5 EVEs, and the grand total of 17158 (%) is equal to 171.58 EVEs.) Vessel types were identified only from rims and were matched with forms primarily from Monaghan's corpus of north Kent and Upchurch ware types (1987, MON classes). Additional types were available in Pollard's Kent typology (1988), with the Southwark typology (Marsh and Tyers 1978; Davies *et al* 1994), Going's Chelmsford type series (1987), and the *Camulodunum* series (Hawkes and Hull 1947; Bidwell and Croom 1999) also proving useful. A list of nomenclature commonly used throughout the report is given in Table 20.

Prehistoric Fabrics

Fabrics manufactured in the late Iron Age or the first two or three decades after the Roman Conquest account for just 1% of the entire assemblage by weight (Tables 21 and 22). Three fabric groups were recognised: sand-, flint-, and grog-tempered fabrics. Forms in the coarse, usually reduced, sandy fabrics include a bucket-shaped jar (Cam 254), a lid, and a plain rimmed bowl or dish (Pollard 14), all probably arriving during the 1st century AD; a lid is also available in the finer fabric that also contained shell and mica. Flint-tempered fabrics reached the site at the same time, although the tradition resumed briefly during the mid-2nd century, when it appears to have been used exclusively for the manufacture of chimney pots (Fig 63, 80).

Table 19 Northfleet pottery: distribution

Site code	Event name	Trench	No sherds	Wt (g)	EVE
ARC EBB01	Ebbsfleet Valley Detailed Mitigation	NVGS	5903	82,215	10,741
		ESPORTS	1854	27,358	2424
		Wetlands	912	18,299	2148
		NVNE	408	6823	657
		Unstrat.	369	7847	937
		NVEE	85	875	130
ARC 342W02	Ebbsfleet Valley WB Contract 342 (west)	WB	58	791	113
ARC EBB01	Ebbsfleet Valley Detailed Mitigation	Area6Ex	5	186	8
Total			9594	144,394	17,158

Table 20 Northfleet pottery: nomenclature used to identify form types

Type	Description	Reference
Cam (followed by type number)	*Camulodunum*/Colchester series	Hawkes & Hull 1947; Hull 1963; Bidwell & Croom 1999
Drag/Curle	Dragendorff or Curle samian type	*cf* Webster 1996
Gillam	Black-burnished ware category 1 type	Gillam 1976
Going	Chelmsford series	Going 1987
Lon	Southwark type	Marsh & Tyers 1978
Mon	Thameside/Upchurch series	Monaghan 1987
Pollard	Additional Kent types	Pollard 1988
Young	Oxford corpus	Young 1977

Table 21 Northfleet pottery: quantification of fabrics

Fabric	Sherds	% sherds	Weight (g)	% weight
Alice Holt grey ware	306	3	7806	5
Almagro 50 amphora fabric	3	<1	131	<1
Black burnished ware category 1	152	2	2215	2
Black burnished ware category 2	264	3	4662	3
Canterbury fine pink/buff wares	1	<1	12	<1
Catalan amphora fabric	2	<1	93	<1
Central Gaulish black-slipped ware	3	<1	7	<1
Central Gaulish samian ware	239	2	3776	3
Céramique à l'éponge	2	<1	21	<1
Colchester colour-coated ware	15	<1	58	<1
Colchester mortaria	14	<1	1078	1
Cologne colour-coated ware	7	<1	47	<1
Dressel 20 amphora fabric	32	<1	9694	7
Dressel 20 amphora (late)	6	<1	394	<1
East Gaulish samian ware	36	<1	739	1
Eifelkeramik	7	<1	159	<1
Fine grey ware	173	2	1231	1
Fine sand with shell and mica	4	<1	28	<1
Flint-tempered ware	24	<1	192	<1
Gallic amphora fabric	84	1	7268	5
Grey ware	69	1	1738	1
Grog-tempered ware	93	1	1593	1
Hadham grey ware	3	<1	61	<1
Hadham oxidised ware	67	1	929	1
Hadham oxidised ware mortaria	1	<1	22	<1
Hard gritty grog-tempered ware	249	3	3849	3
Highgate C grey ware	10	<1	62	<1
Local fine oxidised wares	75	1	712	<1
Local white-slipped grey ware	10	<1	92	<1
Lower German (Soller) mortaria	2	<1	601	<1
Mica-dusted ware	19	<1	431	<1
Moselkeramik	6	<1	33	<1
Nene Valley colour-coated ware	45	<1	527	<1
Nene Valley white ware mortaria	3	<1	89	<1
NFSE coarseware	48	<1	370	<1
NFSE mortaria	5	<1	172	<1
North African amphora fabric	4	<1	80	<1
North Gaulish white ware	8	<1	53	<1
North Kent white-slipped oxidised ware	231	2	1828	1
North Kent/South Essex shelly ware	280	3	8085	6
Oxfordshire parchment ware	13	<1	278	<1
Oxfordshire white-slipped red ware mortaria	8	<1	338	<1
Oxfordshire whiteware mortaria	37	<1	2807	2
Oxfordshire colour-coated ware	157	2	3161	2
Oxfordshire colour-coated ware mortaria	14	<1	510	<1
Oxidised ware	358	4	3128	2
Patchgrove ware	112	1	2649	2
Sandy fabrics	23	<1	231	<1
Shell-tempered ware (late)	68	<1	1221	1
South Gaulish samian ware	12	<1	295	<1
Thameside/Upchurch grey wares	5957	62	62,331	43
Tilford/Overwey (Portchester 'D') ware	87	1	1271	1
Unassigned amphora fabric	4	<1	49	<1
Unassigned colour-coated wares	15	<1	327	<1
Unassigned mortaria	7	<1	643	<1
Verulamium-region grey ware	5	<1	90	<1
Verulamium-region white-slipped red ware	6	<1	161	<1
Verulamium-region white ware	32	<1	511	<1
Verulamium-region white ware mortaria	5	<1	1620	1
White-slipped grey ware mortaria	8	<1	437	<1
White-slipped red wares	21	<1	206	<1
White ware	40	<1	912	1
Wiggonholt mortaria	3	<1	280	<1
TOTALS	9594	100	144,394	100

Table 22 Northfleet pottery: vessel class by fabric, quantification by vessel count based on rims

Fabric	Amphora	Beaker	Bowl	Cup	Dish	Flagon	Jar	Lid	Misc	Mortarium	Platter	Storage jar	Unknown	Total	% total
Alice Holt grey ware					56		34							90	6
Black burnished ware category 1					13		9							22	1
Black burnished ware category 2					91		5							96	7
Catalan amphora fabric	1													1	<1
Central Gaulish black-slipped		1												1	<1
Central Gaulish samian ware			25	16	32					1	2		1	77	5
Colchester colour-coated ware		1												1	<1
Colchester mortaria										7				7	<1
Cologne colour-coated ware		2												2	<1
Dressel 20 amphora fabric	3													3	<1
East Gaulish samian ware			3	4	2					1				10	1
Eifelkeramik			1											1	<1
Fine grey ware		10	4		2		3							19	1
Fine sand with shell and mica								1						1	<1
Flint-tempered ware									1					1	<1
Gallic amphora fabric	1													1	<1
Grey ware		1	2		1		8							12	1
Grog-tempered ware			1				3							4	<1
Hadham oxidised ware		1	1		5		9							16	1
Hadham oxidised ware mortaria										1				1	<1
Hard gritty grog-tempered ware			1		19		36							56	4
Highgate C grey ware		3												3	<1
Local fine oxidised wares		2	4				1							7	<1
Local white-slipped grey ware					1		2							3	<1
Lower German (Soller) mortaria										1				1	<1
Mica-dusted ware			1		3	1	2							7	<1
Nene Valley colour-coated ware		2	1		6		1							10	1
Nene Valley whiteware mortaria										1				1	<1

Table 22 Northfleet pottery: vessel class by fabric, quantification by vessel count based on rims (continued)

Fabric	Amphora	Beaker	Bowl	Cup	Dish	Flagon	Jar	Lid	Misc	Mortarium	Platter	Storage jar	Unknown	Total	% total
NFSE mortaria										2				2	<1
North African amphora fabric	1													1	<1
North Gaulish white ware		1												1	<1
North Kent white-slipped oxidised ware						8	1							9	1
North Kent/South Essex shelly ware			1				14					8		23	2
Oxfordshire parchment ware			4				1							5	<1
Oxfordshire white-slipped red ware mortaria										6				6	<1
Oxfordshire white ware mortaria										16				16	1
Oxfordshire colour-coated ware		1	32		10									43	3
Oxfordshire colour-coated ware mortaria										3				3	<1
Oxidised ware		4	1		5	4	7	1						22	1
Patchgrove ware							6					2		8	1
Sandy fabrics			1				2	1						4	<1
Shell-tempered ware (late)					3		13							16	1
South Gaulish samian ware			1	5	1						1			8	1
Thameside/Upchurch grey wares		29	31		219	1	516	10				5		811	55
Tilford/Overwey (Portchester 'D') ware					7		8		1					16	1
Unassigned mortaria										3				3	<1
Verulamium region grey ware							1							1	<1
Verulamium white ware			2			2	2							6	<1
Verulamium white ware mortaria										3				3	<1
White-slipped grey ware mortaria										2				2	<1
White-slipped red ware					2		1							3	<1
White ware						3			1					4	<1
Wiggonholt mortaria										1				1	<1
Total	6	58	117	25	478	19	685	13	3	48	3	15	1	1471	
% total	<1%	4%	8%	2%	32%	1%	47%	1%	<1%	3%	<1%	1%	<1%		

Table 23 Northfleet pottery: maximum number of samian vessels by fabric

Form	SG	Les M	CG	Argonne	Rheinz	Trier	EG
15/17R	1						
15/17R variant			1				
18	2						
18/31		3	14	1			
18/31 – 31series			6		1		
18/31 or 31			4				
18/31R		1	5				
18/31R or 31R			4				
27	4		2				
30			1				
31/Lud Sa			12		1		
31R/Lud Sb			8		2	1	
33			18	2		1	
35			1				
36		1	4				1
37			29		1	1	
30 or 37							1
38			6				
40?							1
38 or 44			2				
44/Lud SMb/c					1		
45			3			4	
Walters 79			3				
Curle 11	1		1				
Curle 15			1	1			
38 or Curle 11			1				
Closed form			1				
Cup			1				
Dish or bowl			20				1
Cup or bowl			1				
Total	8	5	149	4	6	7	4
Chips			6			1	

Vessel forms are Dragendorff forms unless otherwise stated: EG = East Gaulish
SG = South Gaulish, almost certainly all from La Graufesenque Les M = Les Martres-de-Veyre
CG = Central Gaulish, almost certainly all from Lezoux Rheinz = Rheinzabern Lud = Ludovici

Grog-tempering was the main ceramic tradition in late Iron Age south-eastern Britain, and so its dominance among contemporaneous fabrics is unsurprising. Few forms were identified – a result of the paucity of late Iron Age material from the site generally – and confined to jars and a wide-mouthed bowl.

Imported Finewares

Imported finewares contributed some 3% to the assemblage by weight (Tables 21 and 22). The vast majority of these are samian.

Samian, *by J M Mills*

This small but interesting collection of samian comprises 273 sherds (weighing 4758 g) which represent a maximum of 183 vessels (see Table 23). Every sherd was examined with the naked eye and using a x10 hand lens in order to identify the fabric and hence the probable production centre for each piece. Joining sherds were noted and a record made by weight and sherd count for each vessel identified on an Excel spreadsheet which is available in the post-excavation archive. Decorated sherds and those with potters' stamps were identified to an individual potter or group of potters where possible (see catalogues below).

The earliest vessels are from South Gaul, almost certainly all from the kilns at La Graufesenque. The quantities are small, representing only 4% of the vessels identified and they may pre-date the main period of activity on the site. Of the eight South Gaulish vessels, three, including a form 15/17R stamped by Carbo (stamp no 3) are Neronian or early Flavian in date; the remainder are Flavian, with one vessel, a Curle 11, perhaps of late Flavian or Trajanic date. Just five vessels (3% of the assemblage) come from the early 2nd century Central Gaulish kilns of Les Martres-de-Veyre; four form 18/31 dishes and one of form 36. These date to the first two decades of the 2nd century, a period during which relatively little samian reached Britain (Marsh 1981). Along with the South Gaulish samian this material may also pre-date the main period of activity on site.

The majority of the samian is from the Central Gaulish kilns at Lezoux which produced vast quantities of pottery from around AD 120. A maximum of 149 vessels is present (81% of the assemblage) of which about 20% is decorated, although only half of the examples have surviving decoration. The Central Gaulish samian is predominantly of mid- to late 2nd century date (for more detail of the vessel forms refer to Table 23). None of the closely-dated vessels (stamped as well as decorated sherds) pre-dates *c* AD 140. Of the nine decorated bowls two are attributed to the Cinnamus workshop (*c* AD 150–80), three to Paternus II (*c* AD 160–90), one to Advocisus (AD 160–90), and one to Bannus (AD 160–200), showing a clear bias toward the later 2nd century. The plain ware assemblage supports this observation, with fewer early forms (ie, those which ceased production *c* AD 160) such as form 27 and form 18/31R than their later counterparts. A single sherd from a form 15/17R in a hard-fired but micaeous Central Gaulish fabric of probably Hadrianic date was recovered (Fig 60, 1). This is an unusual form for Lezoux, although it is known at Les Martres-de-Veyre (Terrisse 1968, fig 31 second from bottom on the right side of the figure). The presence of forms Drag 45 and Walters 79, both of which were introduced around AD 170, shows that the later 2nd century was one of increasing rather than declining samian consumption at Northfleet.

East Gaulish samian from Argonne reached the site in the 1st half of the 2nd century as evidenced by the presence of one form 18/31 bowl. Most of the East Gaulish samian is, however, of late 2nd- to mid-3rd century date. Approximately 11% of the assemblage (by weight and vessel count; 14% by sherd count) is from East Gaulish kilns. It is usual for around 10% of a samian assemblage from sites in eastern England to be from East Gaul. Not all of the vessels could be identified to a particular production area but wares from Argonne, Trier, and Rheinzabern were present with the greatest number (7) from Trier. The Trier vessels included fragments from four mortaria, probably all of form 45. Although most were dated to the late 2nd-3rd century, three of the Rheinzabern vessels (form 37, Lud Sa, and Lud Sb) and one from Argonne (form 33) are of 3rd century date.

Use-wear, repair, and post-depositional processes:
The average sherd size for the assemblage is more than 17 g (15 g for the Central Gaulish sherds and over 20 g for all others). This gives a larger average sherd size than was observed at Springhead. An average sherd size greater than about 12 g is large for samian in the author's experience and indicates little post-depositional disturbance of the deposits. Despite some of the samian having been very badly burnt most of the sherds are in a good condition. A couple of pieces found on the gravel spur appear to have been rolled and hence become very worn, but very little of the samian shows evidence of prolonged wear and none has drilled or cut holes for mending. The three sherds that display heavy use-wear are worn on the inside, including two cups with the internal slip worn away (20031 and 20437) and a form 38 bowl (10903). The latter appears to have been used tipped to one side so that the area of wear is on the wall. No examples of wear on the undersides of vessel bases were noted. One of the heavily rolled sherds (10179, a form 33, base) may have been cut down so that the base could be used as a lid or small pot, but the amount of post-depositional abrasion makes this identification uncertain.

Comparison with the samian from the excavations at Springhead
Although the Northfleet villa assemblage is small in comparison with the samian from Springhead, it differs from the Springhead material in several ways. The most obvious difference is in the probable dating of the earliest activity on each site. The villa samian assemblage has very little pre-Antonine samian with less than 10% of the assemblage pre-dating around AD 120–30, a date which may indicate the first major phase of occupation. In contrast, at Springhead very early 1st century samian hints at a pre-Roman phase of activity with use of the site clearly established in the Neronian and early Flavian periods. The bulk of the Northfleet collection probably dates to the 2nd half of the 2nd century and continues into the mid-3rd century when samian imports to this country ceased. Samian use at Springhead also continued until the end of the export period. There appears to be little evidence in the form of heavy use or repair to suggest any economic hardship at the villa, and presumably these imported finewares were readily replaced by other fine vessels of pottery, glass or metal when samian ceased to be available. Heavy wear of vessels along with repair using both metal 'rivets' and birch bark glues was a feature of the Springhead collection. Only one or perhaps two examples of graffiti were noted in the villa assemblage, one definite and one possible 'X'. There was perhaps less need to identify or personalise vessels within the villa situation than within a larger settlement like Springhead, where there were more than twenty vessels with graffito and a further eleven with cuts across the footring.

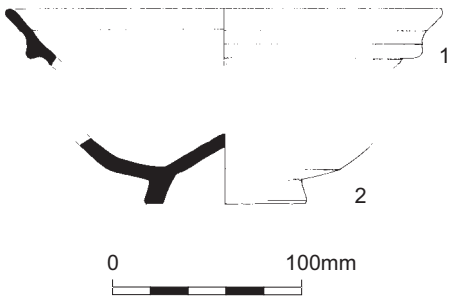


Figure 60 Northfleet: samian ware Nos 1 and 2

Because of the smaller sample of the assemblage the range of forms recorded for Northfleet is more restricted with fewer of the less common types present. In common with Springhead there is a good amount of East Gaulish samian and although none of the lesser East Gaulish centres were identified here, the size of the assemblage is likely to account for that difference. As at Springhead there is a high proportion of mortaria, this feature was also noted in Dover (J Bird, pers comm) and may be a function of the export patterns in the east of the country during the final 50 or so years of the samian trade.

Catalogue of illustrated sherds

(Fig 60)

1. Drag 15/17R or variant, CG. Hadrianic. Unusual micaceous fabric, but like Les Martres-de-Veyre in all other respects. Context 16524.
2. Drag 31/Lud Sa, EG (Rheinzabern). Later 2nd century or 1st quarter of 3rd. Unusual high kick to base. Context 20128.

The Samian potters' stamps

by B M Dickinson and J M Mills

Each entry gives: potter (i, ii, etc, where homonyms are involved), die, form, pottery of origin, reading, date, and excavation context number. Ligatured letters are underlined.

1. 20031. Aventinus ii, 1a, 31, Lezoux. AVENTINI.M. *c* AD 145–75.
2. 15793. Avitus viii, 1a of Rheinzabern, 1a, 18/31, ?Rheinzabern. [M]ITVSFEC. *c* AD 150–80.
3. U/S. Carbo, 1a, 15/71R, La Graufesenque. [C]ARBONISM. *c* AD 65–85.
4. 10046. Divicatus, 3d, ?Walters 79, Lezoux. [DI]VICATUS. *c* AD 155–65.
5. 20420. Ericus, 1b, 18/31, Lezoux. E[RI]CI.M. *c* AD 145–65.
6. 19059. Gippus, 2a, 18/31 or 31, Lezoux. GIPPI.M. *c* AD 155–85.
7. 15088. Paternus v, 7a, 37, Lezoux. PΛTRN[FE] retrograde. *c* AD 160–90.
8. 20106.Patricius ii, 6a, 18/31R, Lezoux. PΛ.T.RI[CIMA]. *c* AD 140–70.
9. 300010. Paulus v, 10a, 31, Lezoux. [P] ^VΛΛV[S]. *c* AD 160–200.
10. 16597. Taurinus, 1a, 18/31, Lezoux. [T]AVRINI.M. *c* AD 125–50.
11. 16597. Viducus ii, 5b, 18/31, Les Martres-de-Veyre. VIDVCVSF. *c* AD 100–25.

Incomplete/unreadable stamps

12. 20013. BA[, 33, Lezoux. Hadrianic or Antonine.
13. 20061.]NI· , 38, Lezoux. Antonine.
14. 20647.] NV[ ] IC, 31, Lezoux. Antonine.

Catalogue of decorated sherds

by J M Mills with Joanna Bird (Eastern Gaulish sherds)

Central Gaul: Lezoux (all form 37)

1. Base of decorated zone from pot in Cinnamus style. There remains a large double-bordered medallion containing Venus (O.331) flanked by two pendant leaves with rings below. In the panel to the right is an acanthus with a horizontal astragalus below. The beaded dividers end in large beads, and there is a guideline at the base of the decoration. The beads, rings and large medallion are on a bowl with a large advert stamp of Cinnamus from London (S&S 1990, pl 160, 35), and the acanthus on another stamped bowl, also from London (*ibid*, pl 160, 45). *c* AD 150–80. 10189.
2. Body sherd from a bowl with a fragment of cabled border and a leafy scroll with a vine leaf and a heart-shaped leaf and large 8-petalled rosettes. Probably the work of a late Antonine potter, perhaps Banvus or Ivstvs. *c* AD 160–200. 10727.
3. A body sherd from a bowl in Divixtus style with panels divided by bead rows with a ring at the junctions. The large panel contains Victory O.809 within a large medallion. *c* AD 145–75. 12619.
4. At least 15 sherds from context 15088, two from 10076 and one from 10090, no joins between the contexts, but probably all from the same bowl. The sherds from 15088 include the ovolo (Rogers B206) with a bead row below. Not many of the sherds join but the decoration has a marine theme with Triton O19 within a large medallion with leaf sprig Rogers J162. Dolphin O.2392 sits within a single bordered festoon. There are also large rosettes, astragali and vertical cabled borders. From 10076 is a fragment of ovolo B206 and a sherd from the base of the bowl, along with that from 10090, with dolphins (O.2384) and leaf sprigs (Rogers J162) below a cabled border. The border has a small rosette on it placed directly below a plain, single-bordered festoon. The cabled borders suggest the work of Paternus II whilst the leaf sprig was generously used by Laxtucissa who, like Paternus II used the ovolo and the figure types. There are clearly links with both Laxtucissa and Paternus II within this bowl, if it is indeed a single bowl. A date in the range *c* AD 155–90 is probable. 15088, 10076, 10090.
5. Body sherd from panel-decorated bowl with erotic scene O.B. Probably the work of Criciro or Divixtus. This sherd is broken on three sides, but the fourth shows repeated cut marks, possibly with the aim of

snapping the original sherd in two after repeatedly scoring it with a blade or a point. There is no other sign of post-breakage use on the sherd to suggest it had been used as, for example, a counter, and it is perhaps too curved for this anyway. *c* AD 135–65. 15413. Fig 63, 79.

6. A small body sherd with seated Diana (O.111). Cinnamus style, *c* AD 150–80. 19202.
7. Two non-joining sherds, probably from the same bowl; both with ovolo Rogers B102 and a neat bead row below. This ovolo was used by Advocisus, Priscus/Clemens and potter P-19. One of the sherds has a fragment of linked festoons with a pendant trifid between similar to the design on a stamped bowl of Advocisus (Rogers 1999, pl 1, 8). *c* AD 160–90. 20130 and 20375.
8. Rim sherd from a bowl with Paternus stamp (Cat No 7) in decoration. The ovolo (Rogers B105) has a bead row below and a scrap of a vine leaf and a small ring are all that remains of the decorative scheme. *c* AD 160–90. 200101.
9. Body sherd with ovolo Rogers B234 with wavy line below and a scrap of decoration, probably a lion within a plain festoon. This ovolo with the wavy line was used by Paternus II (S&S 1990, pl 104, 4). *c* AD 160–90. U/S.

East Gaul (all form 37)

12. Rheinzabern. Body sherd from the lowest part of the decoration with grape sprig (Ricken and Fisher 1963, P168) above three parallel guidelines over which is impressed cross motif (*ibid*, O.53). The motifs were used by Julius II and Julianus I of Rheinzabern. *c* AD 225–45. 19042.
13. Trier. Body sherd with scrap of decoration including a circle of two plain bands with a cabled one between (Fölzer 1913, Taf 15, 40) and a stool (*ibid*, Taf 15, 9). Probably the Censor group of potters. Antonine or later. 20364.

Other imported finewares

Black-slipped fine wares – so-called Rhenish wares – take a very small share of the entire assemblage. Just three occurrences of Central Gaulish black-slipped ware were recorded, with one form identified – a globular, funnel-necked beaker (*cf* eg, Symonds 1992, fig 9 nos 173–4, 181–2, etc). Body sherds only of *Moselkeramik* from East Gaul were recovered from four deposits. Both fabrics reached the site in the late 2nd or 1st half of the 3rd century. Cologne colour-coated ware is a little better represented, there being seven occurrences. Two Cam 391 roughcast, bag-shaped beakers, of mid-2nd century date, were recognised. Northfleet received no new imported fine wares after *c* AD 240 until the 4th century when *céramique à l'éponge* or marbled ware from western Gaul arrived. Two sherds were recovered, probably belonging to flanged bowls.

Amphorae

The earliest amphora represented at Northfleet is a collared vessel, probably a Catalan Pascual 1 wine amphora (Fig 63, 73). This was manufactured in north-east Spain during the 1st century AD, although it was residual in a late Roman demolition deposit in the villa complex. Dressel 20 olive oil containers from southern Spain arrived at the end of the 1st century AD and subsequently dominate the class, taking a share of 55% of the amphora assemblage by weight. Importation ceased by *c* AD 250 and was replaced by evolved Dressel 20 forms (including, perhaps, Dressel 23), though quantities never matched those of the earlier product. Almost as significant a presence is south Gaulish amphorae, which account for 41% of the class by weight. There are few occurrences before AD 170, with the main period of importation taking place from the late 2nd to mid-3rd centuries. One form was identified – a flat-bottomed Pélichet 47 wine amphora (Fig 63, 72). A few late Roman amphorae (apart from late Dressel 20 types) were recorded. A North African cylindrical amphora (Peacock and Williams 1986, class 35), which probably carried olive oil (Williams and Carreras 1995), was identified in a deposit dating to the late 4th or early 5th century; body sherds from a second deposit may belong to a similar type. Another cylindrical amphora – Almagro 50 from Portugal (Fig 63, 71) – probably arrived during the 4th century, but was residual in a post-Roman layer.

Mortaria

Mortaria accounted for 7% of the entire assemblage by weight. Vessels arrived from a variety of sources. North French/south-east English (NFSE) mortaria were among the earliest vessels to reach the site, dating to the 2nd half of the 1st century AD, though all were found in mid-Roman deposits; a single bead-and-flanged mortarium (Gillam 1976, 238-type) was identified. *Verulamium* region whiteware mortaria were deposited during the 2nd century; forms include an evolved bead-and-flanged vessel (almost a Cam 498 type) and a vessel with a bead and stubby flange (*cf* Going D9), a rarer type in the *Verulamium* region repertoire. The period of the late 2nd and early 3rd centuries saw an increase in the use of mortaria. Colchester products – including, perhaps, Colchester-like products from other Essex sources, such as Heybridge (Biddulph *et al* forthcoming) – were the most popular during this time, though other sources are represented, including Wiggonholt in Sussex and possible local workshops, which may have been responsible for white-slipped grey ware and buff ware mortaria. The hammerhead-rim type, Cam 498, was the main product to reach the site from all these sources. Two occurrences of Soller mortaria from Lower Germany, much larger than British-made vessels, were

also recorded. Supply patterns were radically altered during the late Roman period, with mortaria now arriving from the Nene Valley, Much Hadham, and Oxfordshire. Of these, Oxfordshire products are dominant, especially whiteware forms (chiefly Young type M22, with M17 and M18 types also represented). Oxfordshire red colour-coated ware mortaria are among the latest products; a wall-sided mortarium decorated with rosette stamps (Young C99) recovered from a Saxon colluvial deposit, dated after AD 360 (Fig 63, 70). A Hadham oxidised ware mortarium (Going D5-type) similarly may have been among the latest imports; it was found with Saxon pottery, though context details are unknown. Three Nene Valley whiteware mortaria were recovered, with one being recognised as the standard corrugated-flange type (Going D14).

British Finewares

The earliest finewares to reach Northfleet were local products from the north Kent workshops, comprising Fine Greyware, fine oxidised ware, and white-slipped wares (with both grey and oxidised fabrics represented). Together these account for 42% of the British fineware assemblage by weight. Fine Greyware is the most important of the local fabrics. The fabric first appears during the 2nd half of the 1st century AD, but is only present in quantity after AD 120. There is little evidence to suggest deposition after AD 200, though the fabric was recovered as a residual occurrence in late Roman contexts. Forms standard to the industry were recovered: carinated beakers and bowls (MON 2G and 4G), poppy-headed beakers (MON 2A), deep bowls imitating Drag 37 (MON 4H), and shallow dishes (MON 5B2). Local fine oxidised ware was also a mainly 2nd century arrival. Few forms were identified; those present include a folded beaker (MON 2D), a Monaghan class 4H bowl, and a flanged bowl (*cf* MON 5B1). North Kent white-slipped oxidised ware was almost exclusively available as ring-necked flagons (MON 1E1/2) and was recovered from late 1st and 2nd century deposits. Local white-slipped greyware contributed a small amount of pottery; like much of the north Kent products, the ware was retrieved from 2nd century deposits. A bead-rimmed dish (MON 5C) and cooking pot-type jar (MON 3J) are represented.

Mica-dusted ware is an oxidised fabric occasionally with black external surfaces. Forms include a flagon (MON 1E; Fig 63, 64), a reeded-rim bowl (Lon IVA), at least three shallow, groove-rimmed dishes (MON 5F2; Fig 62, 60-1), and an oval-bodied jar (Fig 62, 58). The last mentioned is unusual in the fabric, but the others have reasonable parallels in London (Davies *et al* 1994, 136–9), where the vessels may have originated. Traditionally, British mica-dusted wares have been dated to late 1st and 2nd centuries (*ibid*, Booth 1993, 138); at Northfleet, the emphasis is on the mid-late 2nd century, with only the reeded-rim bowl dating to the Flavian-Trajanic period. Three sherds of fine oxidised wares recovered from gully fill 20157 are mica-dusted and attest to production of mica-dusted wares in north Kent workshops, albeit on a very small scale.

Colchester colour-coated ware arrived during the mid-2nd century. Importation may have continued into the 3rd century, perhaps accompanying mortaria from the same source, but since only one type was identified – a Cam 391 roughcast, bag-shaped beaker – an exclusive 2nd century date seems likely. More important as a source of fineware was the Nene Valley, accounting for 10% of the fineware assemblage by weight, compared with just 1% for Colchester colour-coated ware. Most occurrences were recorded, however, as body sherds; forms that were identified included a so-called Castor bowl (Cam 308), a necked jar (MON 3H), and, predominantly, dishes, both bead-and-flanged and plain-rimmed types (MON class 5A and 5E, respectively). A few vessels reached the site at the end of the 2nd century or early 3rd, but most were found in late Roman deposits, suggesting that importation was generally weighted towards the later end of the fabric's late 2nd-early 5th century date range (*cf* Pollard 1988, 210).

Hadham oxidised ware was another late Roman arrival, but a more significant one, accounting for 17% of the fineware category by weight. This east Hertfordshire product was attested in early 3rd century deposits, but was not imported in quantity until after AD 325. Its association with a Roman quay – one of the latest features at the villa complex – and routine appearance in colluvial deposits, laid immediately after the Roman occupation, suggests that the ware continued to reach the site well into the 2nd half of the 4th century or early in the 5th. Forms include necked jars (*cf* Going E6), frilled rim sherds (Going G26 and H17), possibly belonging to face-pots, and dishes, principally Drag 36 copies (Going B10), and bead-rimmed types (MON 5C). Oxfordshire colour-coated ware joined Hadham oxidised ware in the late Roman period. The fabric dominates the fineware category, taking a share of 58% by weight. As with Hadham ware, the fabric, based on occurrences in Roman-period deposits, reached the site mainly in the 4th century. This is strongly suggested by the range of forms present: hemispherical bowls (Young C71), necked bowls (Young C75), and carinated bowls (Young C81–83) were all introduced in the 4th century; the remaining forms – shallow bowls C45 and C51 and hemispherical bowl C55 – were made throughout the exporting period of the industry (Young 1977). A substantial proportion of the fabric was residual in Saxon or post-Roman colluvial deposits. This in part reflects continued importation to the very end of the Roman period, but the deliberate collection of the fabric by Saxon inhabitants may also have been a factor (see below).

Oxidised Wares

This category incorporated a range of fine to medium-coarse white and red wares. The best represented fabric group is general oxidised wares, which account for 56% of the category by weight. The fabric group – mainly recovered from mid- and late Roman deposits – largely comprises oxidised versions of the Thameside greyware fabric, whose forms – the bead-rimmed dish (MON 5C), the lid-seated jar (MON 3L), and the necked jar (MON 3H) among them - were also replicated. Beakers, including folded and bag-shaped types (MON 2D and 2E, respectively), and a 'pulley-wheel' rimmed flagon (*cf* Going J2), are additionally represented, though not necessarily from Thameside workshops. One deposit, pit fill 15686, contained two unusual ledge-rimmed dishes (one with crudely-fashioned feet), a plain-rimmed dish, a beaker, and a jar in a very gritty oxidised fabric (Fig 61, 15–18). The presence of such unusual forms in an identical, but also unusual, fabric raises the possibility that the group had been deliberately selected for deposition, since the group as a whole took on a predominantly red appearance, as opposed to the more typical grey.

Pottery assigned to general whitewares probably arrived from a variety of sources, though these have not been identified with certainty. It is likely, however, that the north Kent/Thameside industry was not among them. Forms were only infrequently recognised – a factor contributing to inability to source this material – but those that were identified point to some of the material originating in Colchester and the Rhineland. Three large, double-handled flagons (Lon IJ) found at Northfleet are in cream or buff fabrics that are consistent with the Colchester range. An *unguentarium* (Cam 389; Fig 63, 68) from pit fill 16105 is a more certain Colchester product, since manufacture of the form is attested there (Hull 1963, 133–4). Some of the fragments assigned to North French/south-east English coarseware may also more properly belong to the Colchester industry, though without evidence of forms, their source must remain uncertain. A fragment of a theatrical face-mask in white pipeclay (Fig 63, 81) has a continental source, possibly Gaulish, though more likely the Rhineland (Anderson 2002, 200; Marsh 1979).

Products from *Verulamium* account for some 12% of the oxidised wares category. These arrived almost exclusively as whitewares during the late 1st and, more frequently, 1st half of the 2nd centuries. Forms include disc-rimmed and trefoil-mouthed flagons (Lon ID and MON 1D, respectively), necked jars (Lon IIG), and a reeded-rim bowl (Lon IVA). A small amount of white-slipped red ware also arrived from *Verulamium*. Just two occurrences were recorded; both residual in late Roman or Saxon deposits. No forms were identified. General white-slipped red wares not attributable to *Verulamium* contribute bead-and-flanged and bead-rimmed dishes (MON 5A and 5C) and a jar. Oxfordshire parchment ware was among the latest oxidised ware arrivals, reaching the site during the late 3rd and 4th centuries. The fabric was recovered from nine deposits, and forms are confined mainly to carinated bowls (Young P24), though a jar (Young P7) is also represented. A single sherd of a buff fabric from Canterbury was recovered from the site, highlighting that supply patterns almost never looked towards central or south-eastern Kent.

Coarsewares

Ceramic assemblages belonging to the later 1st century and 1st half of the 2nd were identified at least in part by the presence of north Kent/south Essex shelly ware. The ware first arrived during the mid-1st century, probably before AD 70, in the form of bead-rimmed and ledge-rimmed jars (MON 3E1 and 3L). By the end of the 1st century, the bead-rimmed jar had evolved slightly to include a hooked rim, and the storage jar (MON 3D) was introduced. This remained the principal form until production of the fabric ceased *c* 150/60. Shelly ware was accompanied in the early Roman period by grog-tempered Patchgrove ware, although most occurrences of the fabric date to the 2nd century and are of storage jars. The coarsewares are otherwise dominated by Thameside greywares, which account for 65% of the coarseware category by weight and 43% of the assemblage as a whole. Thameside greywares were made throughout the life of Northfleet villa, though the tradition declined during the late Roman period when Alice Holt greyware and grog-tempered wares were introduced. Changes in the fabric over time are apparent. The later 1st and 2nd century fabric tends to be hard with a rough, sandy surface, being tempered with abundant, medium quartz (*cf* Pollard 1987, 197); the 3rd and 4th century fabric is just as hard-fired, but finer with smoother surfaces, and resembled Black-Burnished ware category 2 and Alice Holt fabrics. The distinction is not absolute, however, and fabrics of both and intermediate grades are present in all periods (in general, fabric alone was not used as a chronological indicator during recording).

A wide range of forms was available. Jars are the most common vessel class. Cooking-pot-type jars (MON 3J) and oval-bodied necked jars (MON 3H) are well-represented, but ledge-rimmed jars (MON 3L) were frequently found, too. The abundance of such forms reflects the site's chronology, with its emphasis on the mid- and late Roman periods. However, earlier forms are present that accompanied the less extensive later 1st and early 2nd century activity. These include bead-rimmed (MON 3E and 3F) and narrow-necked jars (MON 3A). Dishes take the next largest share of available forms. Bead-rimmed dishes, both plain-surfaced (MON 5C) and decorated (MON 5D), were ubiquitous in the 2nd and earlier part of the 3rd century, but were replaced in the late Roman period by bead-and-flanged types (MON 5A). Plain-rimmed and, less commonly, groove-rimmed dishes (MON 5E and 5F,

respectively) were current throughout the mid- and late Roman periods. Bowls mainly consist of necked, high-shouldered, or S-profiled types (essentially wide-mouthed jars), including MON 4A, 4C, 4D, 4F, and 4I. There are relatively few beakers, these being confined to poppy-headed types, butt-beakers, bag-shaped beakers, and carinated beakers. Lids and flasks are also represented.

Wheel-thrown Black-Burnished ware (category 2) is very close to later Thameside products in terms of fabric, and often only the burnish or thin, silvery-white slip seen on Black-Burnished products distinguishes the two. A stricter approach to fabric sorting would no doubt place the two fabrics into a single category, but a separation of Black-Burnished ware category 2 remains useful on cultural grounds, as the fabric brings together a distinct range of forms with a well-defined, mid-Roman date range (*cf* Pollard 1987, 198–9), as well as for comparative reasons, since it is worth remembering that for sites outside north Kent which did not receive Thameside products, Black-Burnished ware was a clearly identifiable fabric. There is likely to be an overlap between Black-Burnished ware and Thameside greywares, but generally, Black-Burnished ware at Northfleet has only been identified if showing burnished or slipped surfaces. Forms at the site are heavily weighted towards dishes, particularly bead-rimmed dishes (MON 5C and 5D) and, to a lesser extent, plain-rimmed and groove-rimmed dishes (MON 5E and 5F). Bead-and-flanged dishes (MON 5A) were available, as were cooking-pot type jars (MON 3J), but in very small numbers, confirming that production of the ware had ceased by *c* AD 300 (*ibid*). The *Verulamium* region industry supplied greyware to the site, as well as its more common whiteware. This was a very minor part of its exports to Northfleet, though – just five occurrences, including a jar, were recorded.

The late Roman period introduced a greater range of fabrics to the market. Alice Holt greyware was chief among them. Less than 1% of the fabric by weight was recovered from deposits belonging to the late 3rd century, suggesting that the ware almost exclusively arrived in the 4th century, and its occurrence in late- or post-Roman destruction deposits suggests that importation continued to the end of the villa's life. Jars were available in the fabric, particularly in the form of storage jars, but bead-and-flanged dishes (MON 5A) are especially common, accompanied to a lesser extent by plain-rimmed dishes (MON 5E). Handmade Black-Burnished ware (BB1), though widely exporting from its Dorset workshops from *c* AD 120, did not reach Northfleet in quantity until after *c* AD 270. Forms are limited to just three types: cooking-pot-type jars, flanged dishes, and plain-rimmed dishes. The late Roman period also saw the introduction of hard, gritty grog-tempered ware. The ware varies in its composition; the fabric is, on occasion, tempered solely with grog and is identical to the classic late Iron Age grog-tempered fabric, with only form separating the two. Other variants are more gritty, including sand and rock fragments in the matrix. All are handmade, however. Forms are essentially identical to Dorset Black-Burnished ware types – bead-and-flanged dishes (Pollard 205–7), plain-rimmed dishes (Pollard 204), and everted-rim jars or cooking pots (Pollard 208–11).

Tilford/Overwey ware, or Portchester 'D' ware, a distinctive sandy, oxidised fabric, was introduced to Northfleet after *c* AD 325. Forms include oval, necked jars, often with rilled shoulders (MON 3H; *cf* Going G27), plain-rimmed dishes (MON 3F2), and two instances of a bead-and-flanged dish. A colander (*cf* Lyne and Jefferies 1979, type 5C2), with a base perforated before firing, was also recovered (Fig 63, 67). The coarse-tempered *Eifelkeramik* from Germany was the latest Continental import. Like Tilford/Overwey ware, it reached Northfleet after AD 325, although, of its six occurrences, five were in destruction or Saxon deposits, hinting at importation during the late 4th or early 5th century. The only identifiable form is a bowl with an internally bulbous rim (Fulford and Bird 1975, fig 1.8). Late Roman shelly ware arrived after *c* 350, probably from the Harrold kilns in Bedfordshire. Forms are largely confined to everted-rim jars with rilled shoulders (Going G27), though flanged and plain-rimmed dishes (MON 5A and 5E) are also represented. Hadham greyware was another late 4th century arrival, and includes a fragment with so-called 'Romano-Saxon' decoration (*cf* Roberts 1982). Given its paltry three occurrences, its exportation from east Hertfordshire was more opportunistic than economic as the fabric accompanied the industry's main, oxidised ware, product.

Chronology and Ceramic Supply

Trends relating to supply and composition have been deduced from key ceramic groups: context-groups that date to a single phase (early, mid- or late Roman) in terms of their ceramic and stratigraphic dating. Within these phases, pottery groups have been sub-divided into ceramic phases as a means of more precisely identifying changes in supply patterns; these also broadly reflect the stratigraphic phasing of the villa complex (*Table 24*). Quantified data for each date range are presented in *Tables 25–31*; quantification is by estimated vessel equivalence (EVE). Key groups provide snap-shots of ceramic use at a given time; some typical groups, which reflect the chronological and compositional biases seen at Northfleet, are presented in the catalogue of illustrated pottery.

Early Roman (AD 43–120)

Twenty-six groups were assigned to the early Roman period on ceramic and stratigraphic grounds. Five groups are certain to date before AD 70/80; most date after AD 50, with eight dating after 70, suggesting that activity before this date was on a smaller scale than that after 70. Locally-produced wares dominate the group, taking a 56% share by EVE. Thameside greyware heads

the early Roman assemblage, with north Kent/south Essex shelly ware an important addition. Local fabrics were available mainly as jars or bowls, though in functional terms there appears to be little difference between the two, since coarseware bowls, like the jars, tend to be large and thick-walled types that suggest robust use. Pottery arriving from further afield includes a mica-dusted bowl, probably from London, and *Verulamium* region products. Samian – South Gaulish and Central Gaulish from Les Martres-de-Veyre – makes a contribution of 8% by EVE. Fragments of south Spanish Dressel 20 amphorae are also represented, pointing to trade links becoming well-established early in the life of the villa.

Mid-Roman (AD 120–250/60)

The mid-2nd century sees an expansion of the range of forms and fabrics following significant villa development; some 40 context-groups were dated to this period. The proportion of local products in the mid-2nd century (AD 120–70) increases to over 70% by EVE, though this is directed mainly towards the Thameside greyware and Black-Burnished ware. Fine greyware increases its share, but shelly ware has all but disappeared, its use now confined to the specialist role of storage jars. However, north Kent white-slipped oxidised ware become available in the form of ring-necked flagons, and Thameside greyware increases its share to 50% of the mid-2nd century assemblage. Jars continue to be the fabric's principal product, though there are now necked jars (MON 3H) and cooking-pot jars (MON 3J), which replace bead-rimmed types. Dishes, newly introduced, are almost as important in this ware group. This, plus the appearance of Black-Burnished ware category 2 as a specialist fabric for dishes, and the decline of jar-like bowls, suggests that the phase saw changes in food preparation and dining habits to something more Continental. This is supported by other developments: the introduction of mortaria, the increase in the amount of Dressel 20 olive oil amphorae reaching the site, and the more extensive range of samian forms, now arriving from Central Gaul. Colour-coated finewares from Colchester and Cologne are present, though represented only by body sherds. The presence of Alice Holt greyware – generally a late Roman fabric in Kent – is intrusive.

Twenty-one context-groups date to the 2nd half of the 2nd century (AD 150–200). The pattern of supply appears to be little altered from the mid-2nd century. Locally-produced pottery still dominates the assemblage and mainly comprises Thameside greyware and Black-Burnished ware category 2. Forms are largely identical too, with only ledge-rimmed jars (MON 3L) adding significantly to the potters' repertoire. Jars and dishes dominate as before, even slightly increasing their shares. A range of beakers was produced during this time, including folded, globular, and bag-shaped beakers. Local oxidised wares became available, though their occurrence in key groups is restricted to a single deposit in the form of ledge-rimmed dishes, a plain-rimmed dish, and a folded beaker, suggesting limited use of the fabric and the deliberate selection of the material for deposition. Handmade BB1 ware increases its still tentative representation at the site. Mortaria are more frequently used during this period; *Verulamium* and possible local or Essex products – all Cam 438 hammerhead types – are present, as is a mortarium in Central Gaulish samian ware. Other samian products were arriving from East Gaulish factories. In general, samian ware takes a smaller share of the later 2nd century assemblage compared with the previous phase (to 9% from 13%), though this does not necessarily indicate a weakening of continental trading, since amphorae from southern Spain increase their share of the assemblage and are joined after AD 170 by wine amphorae from south Gaul. Central Gaulish black-slipped fineware is also present, as is *Moselkeramik*, though all occurrences at the site were residual.

A decline in pottery use is seen in the 1st half of the 3rd century. Just six context-groups date to this period. This may be linked with changes in the organisation and occupancy of the villa estate, although the paucity of pottery appears to belong to a wider phenomenon. C J Going published a paper proposing a series of cyclical phases to explain the peaks and troughs of pottery production in Britain (Going 1992a). The early 3rd century, he argued, was almost ceramically invisible, with relatively few large groups from this time identified. This was a period of recession that left even major producers 'hanging on by the skin of their teeth' (*ibid*, 100). Given that this period appeared to be virtually aceramic, with little or no ceramic development taking place, the explanation for the lack of pottery at Northfleet cannot be attributed solely to changes recorded at the villa. Few fabrics were recorded in any quantity. The importance – reliance, even – on local suppliers is evident as they enjoyed almost exclusive access to the market. Dishes become more important compared with the previous phase, but have not overtaken jars as the main vessel class. Bead-rimmed dishes are used still, but groove-rimmed dishes are better represented, while bead-and-flanged dishes (MON 5A) are a new addition to the potters' repertoire. Perhaps as a sign of recession, jars are available only in Thameside greyware. East Gaulish samian is the sole import that is certain to have arrived during this time, taking a 6% share of the assemblage (although this presents something of biased picture, since samian tends to enjoy more accurate dating).

Late Roman (AD 250–410)

After the lean years of the earlier 3rd century, factories began to develop their repertoires and export more widely. That said, the amount of pottery dated to the 2nd half of the 3rd century (AD 250–300) at Northfleet remains relatively small, as few context-groups were assigned to this phase. Pottery deposition seems to have been limited at the site, suggesting that the decline in activity – or a change in the nature of occupation – continued from the earlier 3rd century. Local

manufacturers still dominated but faced competition from the rapidly-expanding Oxfordshire industry. Thameside jars are restricted to necked and cooking-pot types (MON 3H and 3J), while dishes, apart from a groove-rimmed dish in Black-Burnished ware, are exclusively bead-and-flanged types. Vessels begin to arrive from Alice Holt probably after *c* AD 270, further eroding the share enjoyed by Thameside greywares. Hard, gritty grog-tempered ware is introduced at this time, though no forms were recorded. Other fabrics present in this phase included handmade BB1 and Nene Valley colour-coated ware. Dressel 20 amphora sherds, East Gaulish samian, and north Kent/south Essex shelly ware are residual.

The level of pottery deposition increases slightly during the 1st half of the 4th century (AD 300–350). Locally-produced pottery is dominated, as expected, by Thameside greyware; forms are again largely restricted to necked jars and bead-and-flanged dishes. Black-Burnished ware category 2 is probably residual at this time, since a bead-rimmed dish is one of its forms present here. Handmade BB1 begins to strengthen its grip on the market, now accounting for 10% of the assemblage by EVE. Gritty grog-tempered ware, sharing a range of forms with Black-Burnished ware, is introduced during this phase, perhaps as local competition to the Dorset potters. The proportion of Alice Holt greyware remains steady, and the bead-and-flanged bowl is added to the products reaching the site. Tilford/Overwey (Portchester 'D') ware appeared after *c* AD 325; a colander or strainer is represented in the key groups, though jars and bowls are almost certainly available during this time. Nene Valley and Oxfordshire whiteware mortaria are also present.

The 2nd half of the 4th century sees a decline in Thameside greyware – which mainly supplied necked and cooking-pot type jars, and bead-and-flanged dishes – and an increase in hard, gritty grog-tempered ware. Handmade BB1 virtually disappears, but Tilford/Overwey ware remains a visible component of the assemblage. Late Roman shelly ware is new to this phase, supplying jars and dishes. A small amount of material from the Continent reached the site; a North African cylindrical amphora is represented here. Nene Valley colour-coated ware and Alice Holt greyware were also recovered.

Table 32 Northfleet pottery: Roman pottery from Saxon deposits: a comparison of mean sherd weights and the proportions of latest and residual pottery

	% of pottery by weight (g)		Mean sherd weight (g)	
	Latest Roman	Residual Roman	Latest Roman	Residual Roman
Colluvium	33	13	24	27
Abandonment	18	20	21	39
SFBs	28	29	15	19
Late Roman	44	7	23	14

As for the terminal date of villa occupation, the latest coins were issued in AD 367–78, pointing to occupation stopping a decade or two before the end of the 4th century, and the ceramic evidence is broadly in agreement with this. Ceramic supply appears to have remained buoyant well into the later 4th century. Most fabrics that Pollard (1988, 160–3) identifies as good markers for late 4th century occupation are present at Northfleet, among them Oxfordshire white-slipped and red colour-coated wares, Nene Valley colour-coated ware, late shell-tempered ware, Alice Holt greyware, grog-tempered ware, and, among the Continental imports, *Eifelkeramk*, and *céramique à l'éponge*. Some of the latest Oxfordshire red colour-coated ware types to be produced are also present at Northfleet, including a mortarium with rosette stamps that was made after AD 360 (Young 1977, type C99; Fig 63, 70).

Roman Pottery in Saxon Contexts

Some 20% of the Roman pottery assemblage by weight was recovered from post-Roman, Saxon deposits. Often groups were large, contained the latest Roman pottery, and appeared to have low levels of residual pottery dating earlier than the late 3rd/4th centuries. These are potentially exciting, since they raise the possibility of 5th century ceramic supply and use. While this appears not to be the case at Northfleet, as the dating evidence rules out continued occupation into the 5th century, other questions remain. Was the Roman pottery available to the Saxons for everyday use? Did the settlers select certain attractive pieces from existing deposits of discarded pottery to serve as keepsakes or trinkets? Was the pottery simply residual, post-dating, even, occupation of Saxon structures? Northfleet provides an ideal dataset with which to address these questions; ceramic supply appears to have continued well into the late 4th century, possibly into the early 5th, while Saxon occupation commenced around AD 450, if not before. It is not unreasonable, therefore, to suppose that there existed a degree of overlap between Roman and Saxon pottery use.

In order to answer these questions, all Roman pottery from Saxon contexts was selected from the Roman pottery database. The dataset was further divided by context into interpretative categories: sunken-featured buildings (SFBs), post-Roman colluvial (hillwash) deposits, alluvial deposits, deposits associated with the demolition or abandonment of the villa structure, ditches, post-holes not part of SFBs, and pits. Effectively, only datasets belonging to colluvium, abandonment, and SFB related deposits were sufficiently large and robust to allow detailed analysis, and so the remaining groups were discarded. For comparison, pottery data from late Roman key groups were also examined.

Looking first at composition, fabrics from each group were identified as late Roman (late 3rd/4th century) or residual (dating before *c* AD 250/70); fabrics that

spanned these periods, particularly the greywares which were current throughout the Roman period, remained undated. On this basis, it is clear that the assemblages recovered from SFBs and abandonment groups contain a significant residual component (Table 32). The proportions of residual and late Roman pottery are more or less equal, in contrast to the colluvium derived group, which contains a larger proportion of late Roman fabrics. In this respect, this group is similar to the late Roman key group assemblage, which also includes a much smaller residual element. Mean sherd weights provide useful support to these figures; only in the late Roman key group assemblage is the mean sherd weight of residual pottery noticeably smaller. This suggests that the residual and non-residual pottery from colluvial, abandonment, and SFB groups was in a similar condition and, indeed, reasonably fresh and unworn when collected. The late Roman key group assemblage is different, because the residual pottery was incidental when features were filling with mainly late Roman material, being part of the 'background noise' of long discarded and routinely-weathered sherds.

A more complicated picture emerges when we examine the distribution of wares among these interpretative categories (Table 33). The proportions of wares in the colluvium derived assemblage correspond reasonably closely with those from the late Roman key group assemblage, suggesting that the former conformed to expected late Roman supply patterns. The SFB and abandonment derived assemblages, however, do not offer close matches with any other category, though the SFB group is itself curious, as it contains a relatively high proportion of fineware (mainly Oxfordshire colour-coated), samian, and oxidised wares. The causes of these observations are not easily identified, but chronology is likely to have been a crucial factor. Most pottery recovered from colluvial layers, which were laid immediately after occupation of the villa complex, comprises very recent types - forms and fabrics that were current mainly during the late Roman period. In addition to the generally low amount of residuality, 4% of the colluvial assemblage by weight is composed of the latest material, which was certain to have arrived after AD 325. The late Roman key group assemblage contains a similar proportion of latest pottery (6%), while the SFB derived assemblage contains the least (2%), as well as a greater amount of residual material. The SFB assemblage is, therefore, chronologically mixed, has minimal amounts of latest Roman pottery, and was probably brought up accidentally through ground disturbance resulting from Saxon settlement activity.

The assemblage recovered from the SFBs at Northfleet appears to follow expected patterns of Roman pottery deposition in Saxon features. Just as a large amount of residual pottery (that is, earlier than the late Roman period) was recovered from the Northfleet SFBs, a higher proportion of residual pottery compared with expected proportions in late Roman assemblages was recorded in a large group of Roman pottery recovered from a Saxon pit from Heybridge, Essex (Biddulph *et al* forthcoming). The emphasis in Northfleet's SFB assemblage on oxidised, colour-coated, and samian wares among Roman pottery, which hints at the deliberate selection of red-surfaced pottery, recalls West Stow, Suffolk, where the Roman pottery assemblage collected from SFBs was biased towards red vessels, particularly Oxfordshire colour-coated ware (Plouviez 1985, 84). Similarly, at Barrow Hills, Radley in Oxfordshire, the proportion of colour-coated wares in SFBs was at least twice that expected at late Roman sites in the region; in addition, re-used sherds and bases were preferred (Booth 2007, 36–7). As at West Stow and Barrow Hills, the SFB derived assemblage from Northfleet contains a lower number of rim sherds (11% by sherd count), compared with the late Roman assemblage (27%). In slight contrast, samian, rather than Oxfordshire colour-coated ware, was the most common Roman fineware found in SFBs from Mucking, Essex, although overall the evidence for deliberate selection of red and finewares was less clear here (Going 1993, 72).

Distribution and Pattern of Deposition

The pottery can be examined on spatial grounds and by feature type. These main categories are: the villa's east range, the west range, the bath-house, ditches, wells and cisterns, deposits associated with the quayside, quarries, and the Western Roman Complex (the Sportsground trench). The assemblages from the zones were compared in order to provide a sense of pottery deposition across the site, allowing us to identify the main areas of discard and, potentially, use.

Apart from the Western Roman Complex assemblage, which comprise all the pottery from that site, relatively large proportions of pottery were deposited in ditches, wells and cisterns, and the west range (*Tables 34 and 35*). The condition of the pottery is generally good, too, with many large, unabraded sherds represented. This is further suggested by comparing its high 'completeness' statistic (EVE/vessel count) with other feature types. ('Completeness' records the mean EVE or the average surviving proportions of rim fragments (Orton *et al* 1993, 178–9). A figure of 100 represents a complete vessel or, in this case,

Table 33 Northfleet pottery: distribution of ware groups

Ware group	% weight (g)			
	Colluvium	SFBs	Abandonment	Late Roman
Amphorae	1		28	2
Fine wares	11	22	4	8
Mortaria	6	-	5	7
Oxidised wares	6	15	4	5
Reduced wares	74	53	57	76
Samian wares	2	10	1	1
Total weight	14,572	922	2832	23,302

assemblage.) Vessel rims from the ditches, wells, and the west range measures on average between 17 and 25 EVE (*Table 34*). What the groups from these features have in common is that they were recovered from upper fills or deposits associated with disuse and abandonment and, given its condition, it is likely that the pottery represents deliberately dumped material. In the case of the west range, the pottery cannot be related directly with activities within the building, though it is unlikely to have moved far or been subject to re-deposition and weathering. Pottery from the bath-house is only slightly more fragmented; it was similarly recovered from disuse levels and was probably dumped deliberately, too, once the bath-house had been abandoned. The hard surface of the Roman quay and foreshore in the Wetlands area also received a large amount of pottery, though the use of that material cannot be directly associated with the wharf, since it was brought in as hard-core to raise the surface. Nevertheless, though incorporated into the surface, the condition of the pottery is good. Surfaces are very fresh, with burnished wares remaining particularly glossy, probably as a result of subsequent waterlogged conditions. This material was brought in presumably from existing dumps or abandoned structures, but had not been subject to disturbance and re-location. The east range, limekiln, and malting oven have a different pattern of deposition. The much lower amounts of pottery from them clearly indicates that these structures were not primary areas of pottery deposition, even after abandonment; most of the pottery from the east range was from post-holes, and any material associated with the structure's use seems likely to have been lost through activity and disturbance subsequent to the occupation of the villa. The pottery is comparatively more fragmented, with each vessel rim measuring on average less than 10 EVE. This is consistent with weathered and re-located material, whose inclusion in the deposits within those features was quite incidental.

A comparison of fabrics across the site reveals a number of differences between feature types or areas, but the significance of these differences is difficult to determine, since the pottery cannot be linked with certainty to the use of any feature. In most cases, the distribution of pottery reflects the dating of the features from which it was recovered. Thus, samian is relatively well-represented in the 1st and 2nd century wells or cisterns, the Western Roman Complex, and ditches, but is more poorly represented in the late Roman malting oven, bath-house, and quayside deposits. Similarly, the largest proportion of shell-tempered ware was recovered from the malting oven, but this is a late Roman fabric and its presence would be expected. The distribution of vessel classes also reveals a pattern of little obvious coherence. Martin Pitts (2005) has argued that pits, wells, and shafts in late Iron Age, south-eastern Britain tended to be the focus for the deposition of deliberately selected drinking and eating vessels, which related to socially-significant communal feasting, the corollary being that ditches received higher proportions of kitchen wares. However, this does not appear to hold true at Roman Northfleet – suggesting a lack of continuity – where amphorae and beakers were better represented in ditches, compared with wells and cisterns, which contained a higher proportion of flagons; cups were equally distributed. Admittedly, jars were better represented in ditches than wells and cisterns, but mortaria were present in both types of features in similar proportions.

Status

Pottery provides a useful means of assessing status, allowing a site to be categorised according to type and placed relative to others in social or economic terms. Samian especially is an appropriate form of pottery with which to measure status, in particular the proportion of decorated examples in a given samian group, which tends to be highest at military sites and major civil centres and lowest at rural settlements (Willis 1998, 105–11). In order to permit inter-site comparison, the percentage of decorated samian from Northfleet was calculated using rim percentages (EVE), a statistically robust measure that is analogous to vessel count, by which values from other sites were derived.

Overall, 12% of Northfleet's samian by EVE is decorated, mainly consisting of Drag 37 bowls. The Western Roman Complex and main villa complex are reasonably comparable (10% and 12%, respectively), suggesting that the two sites had equal access to samian supply. The overall value is noticeably higher than those obtained for other villa sites in north Kent: 7% by vessel count at Darenth (Bird 1984, 95–6), 6% at Orpington (Bird 1996, 62), and 10% at Lullingstone (Simpson 1987, table v). Moving further south into mid-Kent, the value from Thurnham villa was very low – just 4% by EVE (Lyne 2006, table 15). Northfleet, therefore, appears to be well-placed in social or economic terms compared with other villas. J Mills' observation (above) that the paucity of repaired samian evident at the site suggests regular supply and general prosperity is consistent with this view. The paucity, too, of worn samian may tell a similar story, although this may merely reflect use (see below), since, if samian was discarded at the first appearance of wear in favour of new, pristine vessels, then worn samian would still be expected within the assemblage. Samian did not always arrive at the villa complex in such quantity, however; during the first, early Roman, phase of the villa, the site received no decorated samian. This mainly reflects the limited supply during this period, and that the main phase of activity did not occur until the Antonine period. However, it also mirrors the pattern of supply recorded at other early Roman villa sites, such as Lullingstone, Salford Priors, Warwickshire, and the Phase II palace at Fishbourne, which yielded relatively little decorated samian.

Another indication of relative status is provided by the proportion of amphorae in an assemblage; the lower status sites – 'small towns' and rural settlements –

tended to receive fewer amphorae than higher status sites, such as large civil centres and military sites (Evans 2001, 33). At Northfleet, then, amphorae account for 1.4% of the entire assemblage by sherd count, or 2.1% by EVE. Calculating values for comparative sites such as those mentioned above is impossible, since fabric quantifications have been largely omitted. However, the value obtained for Northfleet seems to be relatively high, placing the villa well above 'small towns' and a villa listed by Evans, though some way below military sites (*ibid*, table 11); amphorae took a 1.1% share by sherd count at Springhead.

Just as important as a measure of status is how the inhabitants of a settlement used pottery. Evans (2001, 28), for example, argues that assemblages belonging to sites where indigenous food preparation and eating habits remained the norm, chiefly basic rural sites, are more jar-dominant compared with settlements exhibiting evidence of Roman-style dining; these tend to contain a larger proportion of dishes. At Northfleet during the early Roman period, there were three jars to every one platter or dish (calculated from EVE). In the mid- and late Roman periods, the ratio was 2:1. Two mica-coated dishes from deposits 12588 and 19202 (see below) are a striking symbol of that change from jar-based food preparation to something more Continental; the vessels were probably used to make Italian-style bread and, along with olive oil and wine carried in amphorae, suggest that the inhabitants dined in the Roman fashion. It should be noted, however, that the relationship between dishes and jars from later Roman sites along the Rail Link, and indeed the wider region, generally became more equal (Booth 2006c), blurring distinctions between sites.

Evidence of Use

Burnt vessels

Burnt marks or traces of sooting were noted on 21 vessels. More examples undoubtedly exist in the assemblage, but, appearing on jars, were not considered especially remarkable and escaped recording. The examples that have been recorded, however, reveal something about vessel use beyond the obvious connection between jars and cooking.

Two mica-dusted dishes (MON 5F2, residual in contexts 12588 and 19202 associated with the late Roman crop dryer 12591) were burnt before breakage on the external surface (Fig 62, 60–1). One is burnt on the underside of the base, while the other is burnt on the corner of the base and on the lower wall. The dishes, one mica-dusted on the internal surface and the other dusted on the rim only, are reminiscent of shallow Pompeian red ware vessels and may have been produced in London during the late 1st or early 2nd century (Davies *et al* 1994, 136) where similar dishes have been found. Pompeian red ware vessels were used for breadmaking, and flat loaves have been found in examples from Pompeii (*ibid*, 131). The mica-dusted surfaces of British copies replicate the 'cook ware' surfaces of the Italian prototypes and a similar breadmaking function can be proposed. The external burning seen on the vessels adds weight to this suggestion. Interestingly Pompeian red-ware dishes were found at Springhead. Dating earlier than their copies, the prototypes may have provided certain elite members of the town's population with the introduction to this particular style of cooking and dining - habits that the individuals were keen to continue when moving into their country residence. A bead-rimmed dish in a coarse, gritty oxidised fabric from mid-Roman pit 15685 is burnt and may have been used for cooking also. Small feet on the base (Fig 61, 16), which raised the vessel slightly off the ground, may have separated the vessel from direct heat or very hot embers.

Three *Verulamium* whiteware flagons or probable flagons were burnt before breakage: two are burnt externally around the base and lower wall, while another is burnt on the rim. The possibility that flagons were used for heating liquids has been discussed by, among others, F Hanut in relation to evidence from Germany and north-eastern Gaul (Roman pottery conference paper, Arras, October 1998), and the examples from Northfleet offer further evidence for this. Mortaria appear to be more certainly associated with cooking. Burning was noted on the flange and rim of two vessels from Northfleet (contexts 10120 and 15340), and these join an expanding dataset of burnt mortaria from other sites. At the Chemistry Research Laboratory site in Oxford, for instance, a number of Oxfordshire whiteware mortaria were uniformly burnt on the flanges and rims and were suggested to have been inverted over cooking vessels set on the hearth (Biddulph 2005, 163). Instructions to recipes in *Apicius*, supported by experimental cooking, suggest that hot embers could have been heaped on top of the inverted vessel and held by the underside of the flange to create an oven in the form of a *testum*, heating the vessel – and food within – from above and below (Grocock and Grainger 2006, 77–82). It is notable that one of the burnt mortaria from Northfleet is an Oxfordshire whiteware product, but in any case, the regular appearance of near-identical burning marks on mortaria from a number of sites suggests that the vessels were used in similar ways across a wide geographical area.

Fineware vessels were not immune to being burnt. Five Oxfordshire red colour-coated ware bowls haved vidence of burning, including two hemispherical flanged bowls (Young C51). Samian burnt before breakage includes a Drag 18/31 dish and a Drag 27 cup.

Use wear

The evidence of burning reminds us that some ceramic vessels, even relatively fine products, were used in very practical ways. This view is further supported by wear marks. Inevitably, these are seen best on colour-coated vessels where the slip has been removed to reveal the underlying fabric, and consequently all recorded

examples are Oxfordshire colour-coated or samian ware vessels. Two Drag 33 conical cups have characteristic rings of wear (*cf* Biddulph *et al* forthcoming) around the internal junction of the base and wall, possibly created through the stirring of liquids, such as wine (Biddulph 2008). Another cup (Drag 35) is worn internally across the centre of the base, as are a number of Oxfordshire colour-coated and samian ware bowls, including Drag 38 flanged, hemispherical types. The heavy, and generally concentrated, wear, recorded on identical types from other sites (Biddulph *et al* forthcoming), suggests a robust and specific use, perhaps mixing or grinding ingredients. A more unusual wear pattern was also noted on a Drag 38 bowl from ditch fill 20061, appearing as an oval spot of wear on the lower wall of the vessel. In this case, the vessel may already have been broken, with the wear representing secondary use.

Potters' marks and graffiti relating to vessel use

The painted graffito on a Pélichet 47 wine amphora from southern Gaul (Fig 63, 72) almost certainly refers to the vessel's capacity, with the three short stokes painted on the shoulder taken to mean three *modii*. This is, admittedly, on the low side for the type, as the minimum capacity was 3.4 Italian *modii*, or about 30 litres (Laubenheimer 1985, 265). However, this amphora recalls another container of the same type from Newstead on which the rather fuller dipinto, '... a jar of three *modii*', was painted (*RIB* II 1995b, 2492.7), suggesting that marks of capacity were indicative, and not necessarily quantitative. A graffito on a second amphora, a Catalan Pascual 1 type, is not so easily understood. A vertical cut, made with two conjoining strokes on the collar (Fig 63, 73) before firing, may have represented the personal mark of the potter, though the graffito has little form and may simply be accidental. Alternatively, it records the capacity of the vessel, being, perhaps, a poorly-executed 'II', but this would be too low for the type, which had a probable capacity of about 25 litres, or 3 *modii* (P Sealey, pers comm).

A graffito cut before firing on the base of a Thameside greyware jar is more definitely interpreted as a number, the deeply-incised 'IX' being 9 or 11 (Fig 63, 74). That the graffito was made by the potter is beyond dispute, but its intention remains unclear. The number seems too small to represent a tally, certainly when viewed against an inscription on a greyware flask acquired by the Gravesend Historical Society in *c* 1905 (and so presumably found in north Kent), which records a potter's tally of 505 items (*RIB* II 1995b, 2502.62), although the graffito may be symbolic or abbreviated (*cf* C Poole, this vol). A personal name seems implausible, although a post-fired graffito interpreted as a name on a jar from Somerset reads, 'IX+' (RIB II 1995b, 2503.301). Capacity or weight seems a better possibility, perhaps 9 or 11 *sextarii*, which is equivalent to a half or three-quarters of a *modius*, though that implies that the potter knew the intended contents of the vessel.

Other graffiti

Five graffiti cut after firing were recorded. One is a complex X-graffito (Fig 63, 75) of a kind traditionally interpreted as illiterate marks of ownership (*cf* Evans 1987; Biddulph 2008). Two X-graffiti are cut into the underside of the base of a samian decorated bowl (Fig 63, 78) Another graffito, within the footing of a samian ware cup (Fig 63, 76), may be the single letter T. Interestingly, the graffito is almost identical to one noted within the footring of a Drag 27 cup from Alcester, Warwickshire (*RIB* II.7 1995a, fig 1, 3). It is uncertain whether the Northfleet graffito had been cut before or after the footring had come away from the main part of the vessel, but the piece is worn smooth at the break, suggesting that it had been retained and handled for some time after breakage before being deposited. If the graffito had been cut after breakage, then a mark of ownership would seem inappropriate and alternative explanations should be sought. For example, the symbol may have been cut to give the piece talismanic properties in a similar way that the letter X appears to have been used to represent wheel symbols, the cross forming the spokes and the edge of the base the wheel rim (Biddulph *et al* forthcoming; see also Going 1992b, 108 for related discussion). Of seemingly more obvious religious significance is a trident-like symbol cut on a Thameside greyware jar base (Fig 63, 77; see below for further discussion). The final example of graffiti, scratched on a Thameside greyware vessel, is a literate graffito, VO[N], which is likely to have formed a personal name. Unfortunately, the piece was lost before it could be illustrated.

Religious/Ritual Activity

Despite its proximity to Springhead, Northfleet villa lacked structures or objects that served an obvious religious function (though probably religious acts accompanied many day-to-day activities, such as stepping outside the house, drawing water, or visiting the bath-house), but a few pieces may have held religious significance. The life-size pipeclay theatre mask is one of them. The fragment (Fig 63, 81), from an early Roman ditch and revealing part of the nose, right cheek, and right eye socket, belongs to a grotesque face with a toothy grin, warts, and wrinkles. Few examples have been recovered from British sites: Baldock produced one, Dover another (Jenkins 1981, 166), and a number of pieces have been recovered from London (Marsh 1979), but many more have been found in Germany, where production is attested. The connection between the masks and conventional theatrical performances is less likely than an association with temples, and the discovery of over 30 masks from the Altbachtal Temple in Trier (*ibid*, Gose 1972) lends considerable weight to this view. We only need recall the inscription recording the events of Saecular Games of Rome in 17 BC to know how important theatrical performances (*ludi scaenici*)

were within religious ceremony (Beard *et al* 1998, 139–43). Many other religious festivals are likely to have had some sort of show or procession; an illustration panel from the calendar of Filocalus, dated AD 354, gives a representation of Saturnalia, celebrated in December, and depicts a theatre mask (*ibid*, 135). In Britain, while sites lacked masks, the theatre and temple were often built within the same complex (at least in urban/semi-urban contexts), and appear to be functionally linked; pairings are known at, among other places, *Verulamium*, Gosbecks (Colchester), and Canterbury (*cf* Creighton 2006, 123–56). We may also note the temple complex and associated amphitheatre-type building at Frilford/Marcham, Oxfordshire (Gosden and Lock 2003). But just how the mask came to be at Northfleet villa is far from certain. Given the religious association, it seems reasonable to suggest that the mask saw use at Springhead and that theatrical performances were undertaken there during festivals. Possibly a performer, or more likely a civic and religious official from the town, lived at Northfleet. However, the face-mask need not have been used in any performance. In her survey of ceramic faces in the Roman world, Braithwaite (2007, 466) draws on evidence that suggests that masks were not used actively, but rather suspended between columns or from the roof of verandas of urban houses, villas, and temples. In any case, its rarity and quality gave the mask a value that placed it in the hands of a resident living at Northfleet during the late 1st or early 2nd century AD who was familiar with a tradition that was rare in Britain but more commonly recorded in western Gaul and Germany.

A trident-like symbol, inscribed on the base of a greyware jar recovered from a mid-Roman ditch at the Western Roman Complex, may also be of religious significance (Fig 63, 77). The trident inevitably conjures up Neptune, the Roman god of water and the sea; that the trident was among the god's attributes is confirmed by an altar from Newcastle-upon-Tyne and dedicated to Neptune that depicted a trident in its main panel (*RIB* I 1965, 1319). Objects that mention Neptune tend to come from sites next to water. The god was invoked in four curse tablets, all found in rivers: the Hamble, the Thames, the Little Ouse, and the Tas (Tomlin 1997, 455). Of the nine or so monumental inscriptions from Britain that name the deity, five were found in coastal or riverside sites, among them Chichester (*RIB* I 1965, 91) and Maryport (*RIB* I 1965, 839). Worshippers were drawn mainly from military and urban environments and, perhaps, like the prefect of the *Classis Britannica* (*RIB* I 1965, 66) who dedicated an altar to the god at Lympne, Kent, were bound by a vested interest in the sea and placating Neptune. The connections between god, location, and occupation are more explicit at Domburg on Holland's North Sea coast, where a 2nd and 3rd century temple complex dedicated to Nehalennia was built (Hondius-Crone 1955). Many of the monuments name the goddess, but also show Neptune, complete with trident. Among the altars was one dedicated to Nehalennia and erected by Marcus Secundarius Silvanus, a pottery merchant (*negotiator cretarius*). The merchant's maritime trading makes his need to seek protection of the sea quite understandable, although Neptune is absent from that monument. However, since Neptune appears on others dedicated to Nehalennia, the two were almost certainly combined in worship.

Given the riverside location of the Northfleet villa complex and its proximity to the Thames estuary, the association between the graffito and the deity is an attractive one. This is strengthened by the discovery at Springhead of a similar trident graffito (see above; Fig 59, 890). Like the Northfleet example, the symbol is inscribed on the underside of a jar base. Its context – a late Roman layer – is uninformative but association with the religious activity in the town is tempting and it is not entirely implausible that the temples, from time to time at least, witnessed the worship of Neptune (see Vol 1, Chap 4). The Lympne inscription is of particular interest, since, along with the Springhead and Northfleet tridents, it is one of four Neptune-related objects from Kent. The fourth is a fragment of wall-plaster from a villa building uncovered at East Malling (*RIB* II Fasc 4 1994, 2447.23), which shows an incised trident alongside three other symbols (the interpretation of the others is uncertain, though one of them is reminiscent of Mercury's *caduceus*, his serpent-entwined staff). These find-spots potentially give Kent a keener association with the deity than most regions. However, the use of Neptune symbolism was widespread – tridents have been revealed at, for example, *Vindolanda* (*RIB* II Fasc 3 1991, 2440.53) and a villa at Box, Wiltshire (Green 1976, 27) – and more work on its distribution is required.

An alternative interpretation of the trident graffito tangentially links it with the *retiarius*, the infamous trident-wielding net-fighter of gladiatorial combat. The Colchester Vase, a colour-coated beaker with applied decoration, depicts the figure complete with trident (Toynbee 1962, no 158, pls 176–7), but it would be hard to imagine the relevance of the symbol at Northfleet. Equally unconvincing is the possibility that the trident hides ligatured letters, perhaps I and E, as the form of the ligature would be extremely unusual. The symbol may yet be a mark of ownership and recalls trident-like graffiti on two samian cups from the Roman cemetery at Ospringe (Whiting *et al* 1931, pl 52, nos 140 and 581). One of these was one of three graffiti on the same vessel, and so may record the personal mark of a gift-giver (*cf* Biddulph 2008). If the trident is simply a mark of ownership, then it is suitably distinctive. Possibly it identified the vessel's user as somehow connected with riverine trade, fishing, or the fish trade. But even if the vessel was never used directly in the worship of Neptune, its owner cannot have failed to appreciate, in adopting the trident as a personal badge, the religious qualities of the symbol; indeed, the allusion may have been quite deliberate.

A final ceramic object of possible religious use is the lamp-chimney or chimney pot from mid-Roman pit 16086. The vessel is wheel-turned and has triangular vents and heavy, frilled, cordons. It brings to mind the lamp recovered from the Triangular Temple at *Verulamium* (Wheeler and Wheeler 1936, 190), which may have been used to produce light conditions to evoke a mysterious and sacred atmosphere (Henig 1984, 159). A similar lamp-chimney was found in the shrine at Higham Ferrers, Northamptonshire (Lawrence and Smith 2009). A number of similar pieces have turned up in Kent, but curiously all at villa sites or sites of masonry buildings in the north-west of the county, including Keston (Philp *et al* 1991, fig 55), Chalk (Lowther 1972, 146), New Ash Green, Lullingstone (Pollard 1987, 273), North Cray (Lowther 1976, 41), and Cobham, near Rochester (Tester 1961). Most are regarded as vented chimney-pots that mounted the roof (*cf* Lowther 1976, group B), though the typological differences between vessels called lamp-covers and chimney pots seem to be subtle to the point of irrelevance.

Catalogue of illustrated pottery

Middle Roman

(Fig 61)

Well 16516, contexts 16386 and 16387. AD 120/40–50

1. Ring-necked flagon (MON 1E1). North Kent white-slipped oxidised ware.
2. S-profiled bowl (MON 4A1). Thameside/Upchurch grey ware.
3. Bowl, unspecified greyware.
4. Curving-sided flanged bowl (Drag 38). Central Gaulish samian ware.
5. Bead-rimmed dish (MON 5C0). Thameside/Upchurch grey ware.
6. Bead-rimmed dish (MON 5C). Thameside/Upchurch grey ware.
7. Bead-rimmed dish (MON 5D). Black-Burnished ware category 2.
8. Bead-rimmed dish (MON 5D). Black-Burnished ware category 2.
9. Plain-rimmed dish (MON 5E). Thameside/Upchurch greyware.
10. Bead-rimmed dish (Drag 18/31). Central Gaulish samian ware.
11. Bell-shaped cup (Drag 27). Central Gaulish samian ware. Black surface, probably burnt.
12. Globular amphora (Dressel 20). Dressel 20 amphora fabric.

Pit 15685, context 15686. AD 170–200

13. Ring-necked flagon (MON 1E2). North Kent white-slipped oxidised ware.
14. Storage jar (MON 3D1). North Kent/south Essex shelly ware.
15. Folded beaker (MON 2D1). Oxidised ware.
16. Straight-sided dish with ledge-rim; the base has at least two 'feet' which lift the base. Coarse, gritty oxidised ware.
17. Straight-sided dish with ledge-rim. Coarse, gritty oxidised ware.
18. Plain-rimmed dish (MON 5E2). Coarse, gritty oxidised ware.

Late Roman

Rubble/demolition deposit, context 15372. AD 325–410

19. Disc-necked flask or flagon. Thameside/Upchurch greyware.
20. Flask. Thameside/Upchurch greyware.
21. Necked, everted-rim jar (MON 3H). Thameside/Upchurch greyware.
22. Necked, everted-rim jar (MON 3H). Thameside/Upchurch greyware.
23. Necked, everted-rim jar (MON 3H). Thameside/Upchurch greyware.
24. Necked, everted-rim jar (MON 3H). Portchester 'D' ware.
25. 'Cooking pot'-type jar (MON 3J). Thameside/Upchurch greyware.
26. Wall-sided, carinated bowl (Young P24). Oxfordshire parchment ware.
27. Bead-and-flanged dish (MON 5A). Thameside/Upchurch greyware.
28. Bead-and-flanged dish (MON 5A). Thameside/Upchurch greyware.
29. Bead-and-flanged dish (MON 5A). Thameside/Upchurch greyware.
30. Plain-rimmed dish (MON 5E). Alice Holt greyware.
31. Plain-rimmed dish with curving-sided walls (MON 5E2). Chalk-tempered ware.

(Fig 62)

32. Plain-rimmed dish (MON 5E). Thameside/Upchurch greyware.
33. Plain-rimmed dish (MON 5E). Thameside/Upchurch greyware.

Rubble/demolition deposit, context 10402. AD 350–410

34. Storage jar (MON 3D), Thameside/Upchurch greyware.
35. Necked, everted-rim jar (MON 3H5), Thameside/Upchurch greyware.
36. Necked, everted-rim jar (MON 3H), Thameside/Upchurch greyware.
37. Necked, everted-rim jar (MON 3H), Portchester 'D' ware.
38. Necked, everted-rim jar (Going G27), Late shelly ware.
39. Everted-rim bowl (MON 4D), with vertical indented decoration, Thameside/Upchurch greyware.
40. Handled, carinated bowl (Young C85), Oxfordshire colour-coated ware.
41. Bowl (Fulford and Bird 1975, fig 8.1), *Eifelkeramik*.
42. Bead-and-flanged dish (MON 5A), Alice Holt greyware.
43. Bead-and-flanged dish (MON 5A), Alice Holt greyware.
44. Bead-and-flanged dish (MON 5A), Alice Holt greyware.
45. Bead-and-flanged dish (MON 5A), Thameside/Upchurch greyware.
46. Bead-and-flanged dish (MON 5A), Thameside/Upchurch greyware.

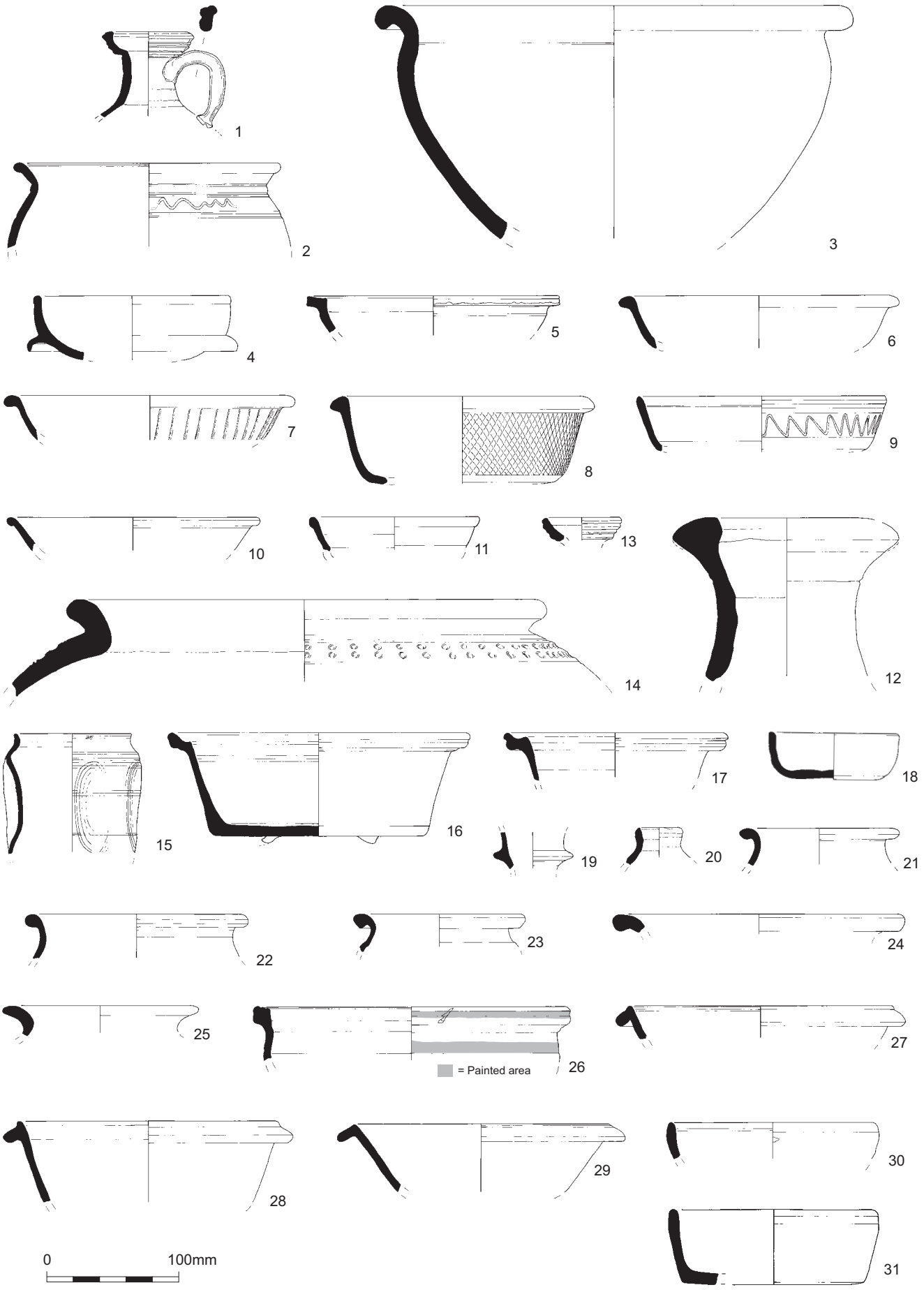


Figure 61 Northfleet: pottery groups, Nos 1–31

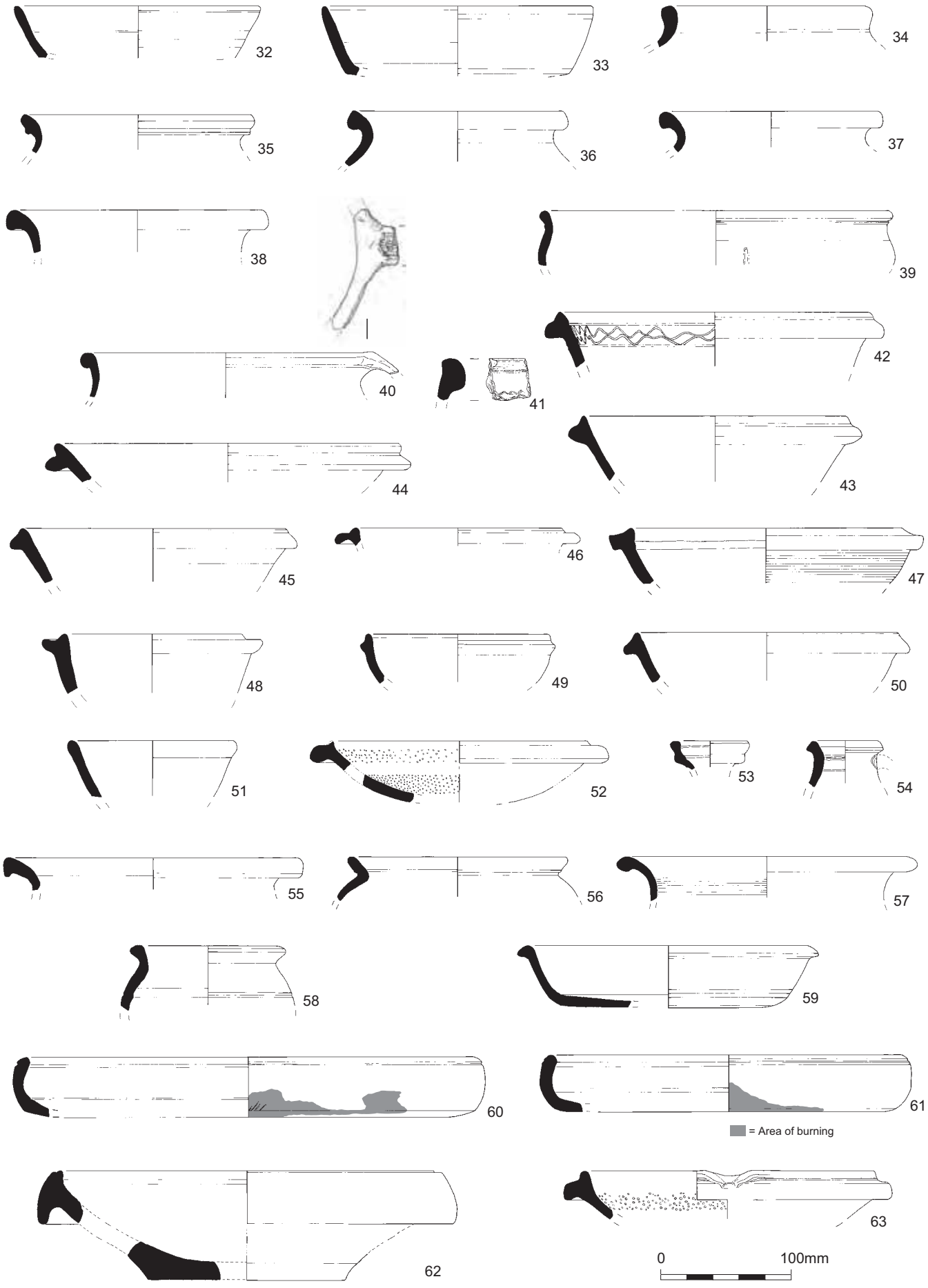


Figure 62 Northfleet: pottery groups, Nos 32–63

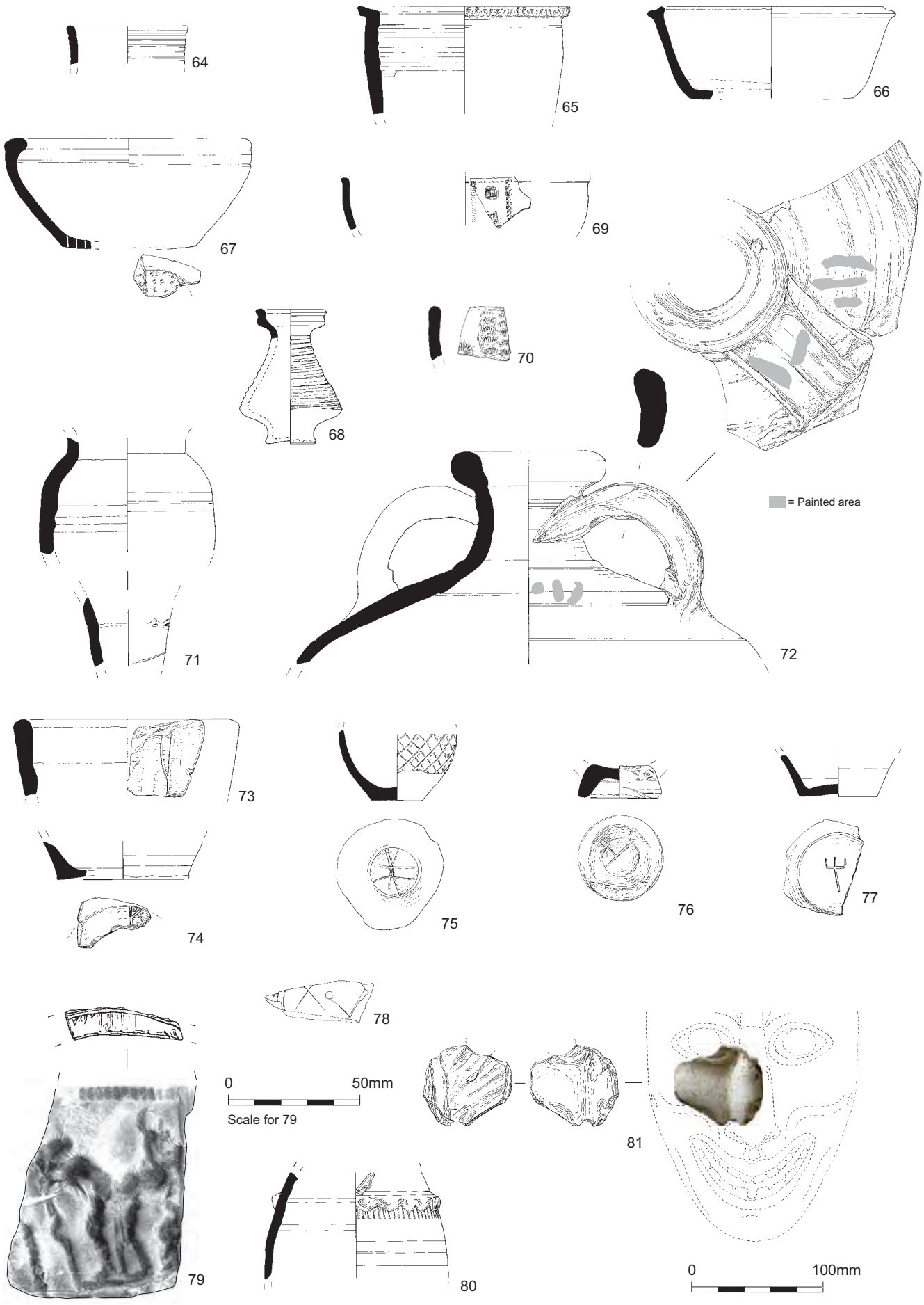


Figure 63 Northfleet: Roman pottery in post-Roman contexts, graffiti, modified sherds, and pieces of special interest, Nos 64–81

47. Bead-and-flanged dish (Going B5), Late shelly ware.
48. Bead-and-flanged dish (MON 5A), hard, gritty grog-tempered ware.
49. Bead-and-flanged dish (Pollard 205), hard, gritty grog-tempered ware.
50. Bead-and-flanged dish (Pollard 205), hard, gritty grog-tempered ware.
51. Plain-rimmed dish (Pollard 204), hard, gritty grog-tempered ware.
52. Bead-and-flanged mortarium (Young WC7), Oxfordshire white-slipped red ware mortarium fabric.

Post-Roman

Context 12588, deposit sealing late Roman malting oven 12591. AD 450–700

53. Flagon. Oxidised ware with light brown surfaces and grey core; fine sandy fabric with chalk fragments, *cf* Pollard 1987, fabric 20.
54. Flagon. Oxidised ware.
55. Necked, everted-rim jar (MON 3H1). Thameside/Upchurch greyware.
56. Lid-seated jar (MON 3L1). Thameside/Upchurch greyware.
57. Jar. Alice Holt greyware.
58. Oval-bodied jar. Mica-dusted ware; black or sooted external surface, oxidised internal surface.
59. Bead-rimmed dish (MON 5C). Black-Burnished ware category 2.
60. Curving-sided dish with grooved rim (MON 5F2). Mica-dusted ware, oxidised surfaces and fabric. Mica-dusted on internal surface only; form and surface treatment are reminiscent of Pompeian red ware vessels, eg, Davies *et al* 1994, 139.
61. Curving-sided dish with grooved rim (MON 5F2). Mica-dusted ware, oxidised surfaces and fabric. Identical vessel to No 60, except that only the rim is mica-dusted; the internal surface is plain.
62. Wall-sided mortarium (Cam 498). Colchester mortarium fabric.
63. Bead-and-flanged mortarium (Young M22). Oxfordshire whiteware mortarium fabric.

(Fig 63)

Pieces of intrinsic interest

64. Flagon (MON 1E). Mica-dusted ware. Context 10242, fill of mid-Roman ditch 10584.
65. Wide-mouthed jar (MON 3I) or structural piece (eg, drain or chimney). Oxidised ware. Rouletted decoration to the rim. Context 20501, fill of mid-Roman pit 20498.
66. Bead-and-flanged dish (MON 5A). Hard, gritty grog-tempered ware. Context 15037, late Roman rubble/demolition deposit.
67. Strainer bowl (*cf* Lyne and Jefferies 1979, type 5C2). Portchester 'D' ware. Context 15431, fill of late Roman pit 16562.
68. *Unguentarium* (Cam 389). White ware from Colchester. Context 16105, fill of late 1st/2nd century pit 16428.
69. Body sherd in an unidentified colour-coated ware (?Oxfordshire red colour-coated ware) with stamped decoration. Context 10076, late Roman or post-Roman hillwash.
70. Wall-sided mortarium with rosette stamps on rim (Young C99). Oxfordshire red colour-coated ware mortarium fabric. Context 10004, post-Roman deposit overlying villa.
71. Body sherds from an Almagro 50 amphora. Context 15770, a post-Roman deposit overlying a late Roman quarry.
72. Gallic amphora (Pélichet 47). A painted graffito (dipinto) on the shoulder reads, 'III' - probably 'three' referring to capacity, *cf RIB* II, 1995b, 2492.7 ('…a jar of three *modii*'). An alternative reading of 'VIII' is suggested by an apparent, albeit poorly executed, 'V' on the handle. Context 12619, surface associated with the late Roman wharf.
73. Catalan amphora (Pascual 1). The collar around the mouth was deliberately scratched before firing. Context 10939, late Roman demolition/rubble deposit associated with the villa.
74. Jar base, Thameside/Upchurch grey ware. Graffito deeply scored before firing on the external edge of the base: 'IX' (9 or 11). Context 15279, Anglo-Saxon deposit associated with watermill.
75. Base from 'cooking pot'-type jar, Thameside/Upchurch grey ware. Complex X-graffito scored after firing on exterior surface. Context 15122, fill of mid-Roman ditch 15119.
76. Base, Central Gaulish samian ware. Illiterate graffito scored within the footing after firing. The base is very worn, and the scratches may relate to post-breakage use. Context 10179, fill of Anglo-Saxon sunken-featured building 16635.
77. Jar base, Thameside/Upchurch grey ware. Trident graffito scored after firing. Assigned to cut of early Roman ditch 20371.
78. Base of Drag 37 bowl, Central Gaulish samian ware. Two X-graffiti cut on base externally after firing. Context 20446, fill of mid-Roman ditch 20444.
79. Decorated fragment from Drag 37 bowl, Central Gaulish samian ware (see Mills, Decorated Samian Catalogue No 5 above). The decorated panel, showing an erotic scene, appears to have been deliberately removed from the vessel or larger fragment and trimmed, probably to be retained as a keepsake. Context 15413, fill of late Roman quarry 15412.

Other ceramic objects

80. Fragment from chimney pot or lamp-chimney. Flint-tempered ware, oxidised. Context 15923, fill of mid-Roman pit 16086. Its dating links the chimney-pot in chronological terms with the bath-house, though it was not found there and could be from the roof on another part of the villa complex. Chimney-pots are known from a number of sites in Kent: a stone-built Roman structure from Chalk, near Gravesend (Lowther 1972,

146–7), Lullingstone villa (Pollard 1987, fig 86, 405A), and from Cobham (Lowther 1976, fig 1.3). Alternatively, the vessel was a lamp-cover for ritual use, similar to that found at the Triangular Temple in *Verulamium* (Wheeler and Wheeler 1936, 190). Chimney-pots, never common on Roman sites in Britain, tend to be 2nd century in date (Lowther 1976), an impression that the Northfleet example reinforces. (Compare with chimney pot in a ceramic building material (Fig 132, 1)).

81. Fragment from near-life size face-mask; part of right side of face (upper cheek, top of nose, and lower rim of eye) present. Pipeclay, probable Rhineland source. Context 15793, fill of early Roman ditch 15796. This is a rare object-type in Britain, with just a handful of examples known. The best parallel comes from Baldock; there, an entire mask was uncovered, the face frozen in a grimace (Wacher 1974, fig 23). The accentuated cheek of the Northfleet example suggests that the mask also had a grimacing face. Production of the type is known at Cologne and possibly Trier and Holdeurn (Anderson 2002, 200). Masks have tended to be found in small towns, forts, or larger urban centres such as Baldock, Catterick, Dover, and London and so the presence of a mask at Northfleet villa suggests a connection between the villa and Springhead.

Chapter 2
Coins

by Nicholas Cooke and David Holman

The coins summarised in this report were recovered from a number of different phases of fieldwork in and around the Roman town of Springhead and at the Northfleet Villa site ahead of construction of the HS1 and associated works. In total, 1756 coins and tokens were examined as part of this study. The number of coins recovered from the sites excavated can be seen in Table 36.

The assemblages are dealt with on a site by site basis, with synthetic analysis where appropriate. The physically contiguous Springhead Roadside settlement sites (ARC SHN02 and W51724) have been combined here for ease of analysis. Full details of each of the individual coins can be found in archive, whilst summary tables are presented in the text. The Saxon and later coins are reported on separately below, but are included in Figures 64 and 67 here.

Coins from Springhead Roadside Settlement

A large assemblage of Iron Age and Roman coins was recovered from the two excavations on the Roman Roadside settlement flanking Watling Street and secondary road leading north-west towards Northfleet (the Springhead Nursery site). Of the 841 coins recovered, 94 are too badly worn or corroded to be identified to period, and most can only be dated to broad periods on the basis of size and weight. The remaining 737 coins can be dated closely within the late Iron Age and Roman periods (see Fig 64).

Like the Springhead Sanctuary (ARC SPH00) site, the pattern of Roman coin loss on the Roadside settlement site is dominated by major peaks of coin loss in the late 3rd and mid–late 4th centuries, although there is a clear difference between this site and the Sanctuary site in the number of pre-Conquest coins recovered (see Fig 65). This difference is so marked that there can be little doubt that the Sanctuary site was a major focus of late Iron activity, partially focused on the springs, possibly involving some ritual deposition or disposal of coinage, whilst the lower levels of pre-Conquest coins from the settlement site suggests that activity there is likely to have been peripheral.

The overall patterns of coin loss in the post-Conquest period on the two sites are remarkably similar. Both see good numbers of Claudian (period 2) coins, followed by smaller quantities of Neronian coins (period 3), and then a peak of coin loss in the Flavian period (period 4) before tailing off during the 2nd century, with the next major periods of coin loss during the late 3rd century, when large quantities of radiate *antoniniani* are lost. The only difference here lies in the scale of these peaks, with more coins lost on the Springhead Roadside settlement site than on the Sanctuary site. The sites also have almost identical patterns of coin loss in the 4th century, with major peaks in period 17 followed by a drop in period 18, followed in turn by an increase in Valentinianic coins (period 19). Smaller quantities of coins of periods 20 and 21 confirm that activity continued on the sites into the late 4th and early 5th centuries.

Iron Age Coins
by David Holman

Six late Iron Age coins, all struck bronzes, were recovered from this site. Little can be drawn from an assemblage as small as this although, it can be noted that their chronological profile closely matches the coins from the Springhead Sanctuary site. The five legible coins are all Kentish issues and are all of types well represented at Springhead, with three coins attributed to the Kentish Uninscribed Series and one each of Sam and Eppillus. Of the coins from this site, three came

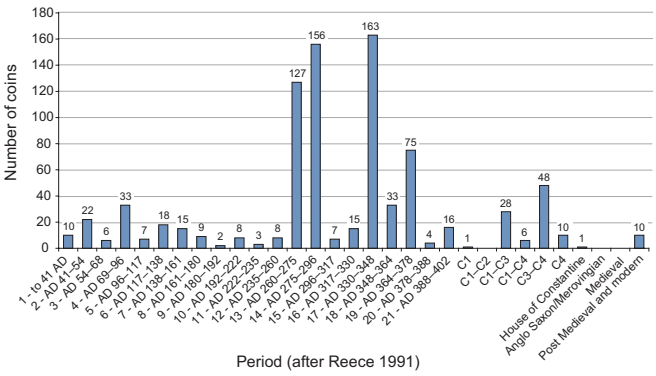


Figure 64 All coins from the Springhead Roadside Settlement by period

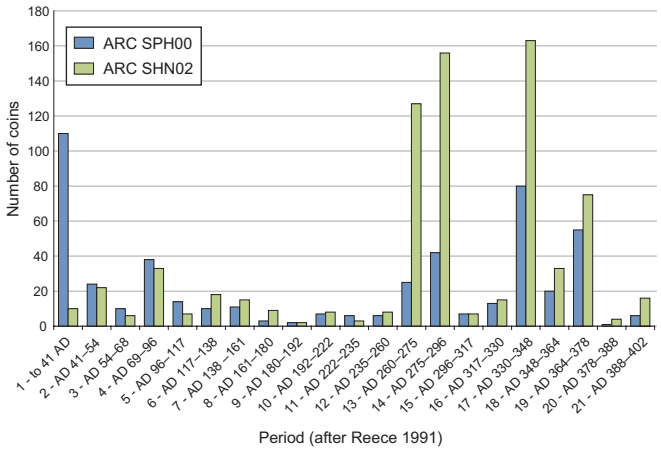


Figure 65 Comparison of the closely dated coins recovered from the Springhead Sanctuary and Roadside Settlement

from Blocks 3 and 5, just to the west of the springs. As such, they probably represent strays from there, perhaps having been displaced during the Roman period.

Roman Coins

by Nicholas Cooke

Pre-Conquest coins

Four of the coins were minted prior to the Conquest. Of these, the two *asses* of Agrippa, probably minted in the reign of Gaius Caligula, are common finds. Both of the others, however, are unusual. The first appears to be a copy of a 'Divus Augustus' *dupondius*, with the portrait reversed, whilst the second, a *denarius*, is an unusual mule. The obverse bears a republican design (bearing the mark of C Memmius, who minted coins in 55 BC), whilst the reverse is clearly a 'Caesar Divi F' type stuck by Augustus in 32–29 BC. To find a mule with two such chronologically mismatched faces is unusual. It is likely to have been struck in the 1st century AD, possibly after the Conquest (Reece, pers comm). All of these coins are worn, and may have been lost in the late 1st century AD, although the possibility that the *denarius* was imported prior to the Conquest cannot be discounted.

Claudian coins (Period 2)

The 22 Claudian coins from the site are predominantly bronze coins, with only a single *denarius* recovered. *Denarii* of Claudius are unusual finds in Britain (Reece, pers comm) and the presence of one at Springhead clearly suggests early post-Conquest activity on the site. The bronze coinage is dominated by *asses*, many of which are irregular copies. Of the 21 bronze coins recovered, over half (12 coins) are considered irregular or probably irregular. All except one of these are copies depicting Minerva advancing with a shield and spear on the reverse, a type which also dominates the 'official' coinage from the site. Included within this group are both 'good' and 'inferior' copies, with the former probably representing earlier phases of copying (Hammerson 1988, 420). Unfortunately, most of the coins examined are too corroded for an assessment of their wear to be made, so we cannot be certain how long these coins remained in circulation. Their presence in some quantities in Flavian and Hadrianic layers, however, suggests that they remained in circulation for a long time. Some, however, were recovered from stratigraphically early contexts, both on this site and on the Sanctuary site and imply activity in the area shortly after the Conquest.

Neronian coins (Period 3)

Only a small number of coins of Nero were recovered from the Roadside settlement. The single silver *denarius* is an early issue, dating to AD 59–60, pre-dating Nero's debasement of the *denarius*. This too is unusual amongst British site finds. The remainder are bronze issues, with *asses* dominant. Only one is sufficiently legible for the mint to be determined. This is an as struck at the Lugdunum mint, which was responsible for supplying Britain with the vast majority of new coins imported into the province in this period (Walker 1988, 286)

Flavian coins (Period 4)

The Flavian period is dominated by coins of Vespasian and Domitian, The former include issues from both Lugdunum and Rome – the latter less common in Britain – although most are either too worn or corroded for their mint to be determined. Where the coins of Domitian could be dated closely, they were minted in AD 85 (one coin), AD 86 (two coins), and AD 87 (one coin). This corresponds well with the main period of supply of coinage to Britain in Domitian's reign (see Walker 1988, 286 for further details).

The 2nd century (periods 5–9)

The reign of Nerva seems to have seen a shift in Imperial policy regarding the supply of coinage to Britain. Prior to this time, the main thrust of monetary policy regarding Britain had been to ensure sufficient silver reached the province to allow taxes to be paid. Supply of

Table 36 Coins recovered from the excavated sites

Site	Iron Age	Roman	Post-Roman	Total
Springhead Roadside Settlement (ARC SHN02 / W51724)	6	825	10	841
Springhead Sanctuary (ARC SPH00)	100	550	28	678
Springhead watching brief (ARC 342E02) and other sites	2	44	1	47
Ebbsfleet River Crossing (ARC ERC01)	0	8	0	8
Northfleet villa (ARC EBB01)	0	178	4	182
Total	108	1605	43	1756

bronze coinage to the province was sporadic at best and dominated by the smaller denomination *as*, with lesser quantities of the larger bronze denominations (the *dupondius* and *sestertius*). Once these coins reached Britain, they appear to have had only a local circulation, with silver and gold coin almost certainly the preferred method of transferring wealth from one province to another, both for the state and private individuals. David Walker, in his report on the coin assemblage from the Roman spring at Bath has highlighted the differences between British, Italian and German coin supply (1988, 286–8) and demonstrated that until the end of the 3rd century, once bronze coinage had arrived in Britain, it continued in circulation until lost. There was no mechanism for the removal of old or worn copper coinage from circulation, and it circulated at a token value above its metal value.

From the first year of Nerva's reign (AD 98), however, the mint at Rome seems to have supplied batches of coinage to Britain on an annual basis. This was done on a less *ad hoc* basis than previously, with greater numbers of the larger denomination *sestertius* and *dupondius* supplied. Whilst no doubt this was undertaken for reasons of cost effectiveness, with a *dupondius* representing twice the value of an *as*, despite being of similar weight, it may also indicate the point at which the emerging economy of Roman Britain became fully integrated into the Roman monetary system (Walker 1988, 288).

This change in policy can be seen in the assemblage of bronze coinage from the Springhead Roadside settlement (see Table 37). Although the assemblage is small, the increased numbers of *sestertii* in the assemblage is evident, as is the gradual decline in the numbers of *asses* in circulation minted after AD 96.

There seems to have been little interruption in the supply of coinage to Britain during the reigns of Trajan (AD 98–117), Hadrian (117–38), and Antoninus Pius (138–61), which reached a peak under Marcus Aurelius (161–80) and then beginning to decline under Commodus (180–92). During this period the token value of bronze coinage remained unaltered, as did that of the silver *denarius*.

However, the silver content of the coin had decreased over time. Republican *denarii* (with the exception of those struck by Marcus Antonius) were struck at approximately 95% purity, a standard maintained under Augustus, Tiberius, Gaius, and Claudius. Nero 'reformed' the coinage in approximately AD 64, introducing gold and silver coins struck at a lower purity. There was further reform under Trajan, when he recalled much of the old silver coinage in circulation and issued new coinage, probably at only around 80% purity. Hadrian maintained this standard, although it may have fallen again under Antoninus Pius or Marcus Aurelius before yet another major debasement under Commodus.

Inevitably these changes to the silver coinage have an impact on the coins found on sites. *Denarii* of the Republican period and 1st century AD are less likely to have remained in circulation much after the end of the 1st century, as both the state and private individuals had a vested interest in removing them from circulation, and as news of successive devaluations became common this effect is likely to have been repeated.

The 3rd century to AD 260 (periods 10–12)

Although the Augustan system of bronze coinage as introduced to Britain under Claudius continued in use throughout this period, the supply of new bronze coinage appears to have ceased altogether in approximately AD 197. This explains why the only coins from the Springhead Roadside settlement in this period are silver denominations.

The debasement of the silver coinage under Commodus was compounded by a further debasement under Septimius Severus. He further reduced the silver content of coins, probably in order to enable him to mint sufficient coinage to meet the bonuses he had promised his armies during the civil war which brought him to power. This had the effect of reducing silver content of the *denarius* to roughly 48%, and allowed him to withdraw older *denarii* from circulation and recoin them as part of a massive new issue of *denarii*. Three of these debased *denarii* were recovered from the Roadside settlement, along with *denarii* of Caracalla and Geta, all struck at similarly low levels of purity.

The reign of Caracalla, the son of Septimius Severus, saw the introduction of a new silver coin – the *antoninianus*. This was larger than the *denarius* and struck in the same debased silver, and probably intended to act as a multiple (either one and a half or two *denarii*).

Table 37 Coins: numbers of bronze coins from the Springhead Roadside settlement by period

Period	*Sestertii*	*Dupondii*	*Asses*	*Quadrans*	*Asses/Dupondii* uncertain
AD 41–54	0	1	20	0	1
AD 54–69	0	0	4	0	1
AD 69–96	0	7	12	0	12
AD 96–117	2	0	4	0	0
AD 117–138	6	3	3	1	4
AD 138–161	4	1	4	0	4
AD 161–180	4	1	1	0	1
AD 180–192	2	0	0	0	0
Total pre-AD 96	0	8	36	0	14
Total after AD 96	18	5	12	1	9

Table 39 Coin loss from the Springhead Roadside Settlement by broad period (after Reece 1991)

No coins	Properties 3–5	Property 2 (Temple)	Other Properties	Road	All
A to AD 260	81	12	32	2	127
B AD 260–296	200	66	7	5	278
C AD 296–330	16	3	2	1	22
D AD 330–402	198	44	16	14	272
B/A	2.469	5.5	0.21875	2.5	2.1889
D/A	2.444	3.6667	0.5	7	2.1417

This bore a portrait of the emperor wearing a radiate crown (a feature used to differentiate *dupondii* from the lower denomination *asses*). The earliest such coin from the Roadside settlement was one of Elagabalus (218–22).

Period 11 (222–38) saw the last *denarii* to be issued. The silver content of these coins continued to fall and the worth of the *denarius* and *antoninanus* with it. The three coins recovered from the sites in this period are all *denarii*. Although there was a minimal resumption of the supply of bronze coinage after AD 222, these coins are rare, and none were recovered from the Springhead Roadside settlement. Continued devaluation of the 'silver' coinage under successive emperors 238 and 260 saw purity fall to as little as 5–8% by 260. Although bronze coinage continued to play a role in the monetary exchange system, the absence of widespread episodes of copying in the periods of little supply suggests that it no longer played an important role.

The end of the 3rd century (periods 13 and 14)

The Augustan system of coinage was effectively abandoned by *c* 260. Bronze coinage was no longer struck, and the only coins struck regularly were gold coins, the purity of which also varied, and the radiate *antoninianus*, which continued to fall in purity, reaching approximately 2% by 268 (Reece 2002, 20). These *antoniniani* were struck in large quantities, with most of the issues in Britain being minted by emperors of the Gallic Empire (Postumus, Victorinus, Tetricus I and II). This is reflected in the large quantities of coins of period 13 recovered from the sites (although this number includes recognisable copies of coins of these Emperors, the majority of which were probably minted after 274). Of the 127 coins in period 13, some 59 are copies or probable copies.

This phase of copying was probably caused by a reform of coinage by Aurelian in 274. This was intended to remove the existing radiates from circulation, and replace them with a larger, well-struck, radiate coin of slightly higher purity (*c* 4% silver), while also striking gold coins of higher purity. The effect of this seems to have been to spark a massive episode of copying which produced large quantities of copper alloy small change. The most likely explanation for this is that these small coins were useful to the consumer, rather than the Empire, which was predominantly concerned with recovering its taxes in 'good coin'. The majority of the coins in period 14 (136 of the 156) are either copies or probable copies. The small numbers of official coinage during this period are dominated by coins struck by the British usurpers Carausius and Allectus between 286 and 296.

The 4th century (periods 15–21)

A major reform of the coinage, instituted in AD 294, set the tone for much of the following century. This reform saw high quality gold and silver coins struck alongside a token copper alloy coinage. Although the silver declined rapidly in purity and many of the new copper alloy denominations were drastically reduced in size between 294 and 317, further reforms were undertaken in the reign of Constantine I, including the re-issue of a new high standard silver coin in 327. By 330, the pattern was largely set, with small quantities of high purity silver and gold coins struck, supplemented by large quantities of token copper alloy coins, although the value of the latter seems to have fluctuated throughout the period (Reece 2002, 28).

There are small numbers of coins from periods 15 and 16, predominantly from the mints in London and Trier. These may have circulated for a while alongside the irregular and regular radiate *antoniniani* of the preceeding periods. The reformed coinage of Constantine I was clearly a success, judging from the quantity of coins recovered from period 17. Once again, there appear to have been gaps in the coinage reaching Britain. The coinage from the site in period 17 is dominated by issues minted in the western mints (Trier, Arles, and Lyons). These appear to have operated sporadically and were closed between 341 and 346. This led to another large scale bout of copying, predominantly of coins minted between 330 and 341. Half of the coins from the Roadside settlement (81 of the 162 coins) may have been minted as part of these episodes of copying. These coins, like the radiate copies before them, appear to have circulated in the same fashion as 'official' issues.

The marked decline in coins of the following period (348–64) followed a reform in the copper coinage, which raised the value of the copper coins. Another wave of copying (particularly of the 'Fel Temp Reparatio' issues depicting a soldier spearing a fallen horseman) followed – only three of the 33 coins of this period are 'official' issues, with over half of the copied coins being copies of the 'Fallen Horseman' issues.

The coinage of the House of Valentinian (period 19) came to Britain in large numbers and certainly circulated and was lost in some quantity. Copies of these coins are far rarer, despite the apparent lull in supply in the following period (378–88). Supply resumed in some quantity after 388, but ceased after 402. This last coinage appears to have continued in use for some time into the 5th century, although the absence of significant episode of copying suggests that coin use declined significantly. The coins from periods 20 and 21 on the

Springhead Roadside settlement indicate that there was continued activity and coin loss and deposition on the site into the 5th century.

Patterns of Coin Loss and Distribution

Analysis of the patterns of coin loss has established that coins were being lost on a regular basis on the Roadside settlement from the 1st century through to the end of the 4th or into the 5th century. Variations in these patterns are significantly influenced by the supply of coinage to the province of Britain, but are also likely to be influenced by the history of the site itself as well as the pace at which the monetary economy was adopted at both local and national level. The archaeological evidence suggests that there was activity on the sites early in the post-Conquest period, with the roads built, roadside ditches dug and properties (1–12) laid out on either side of the roads (see Vol 1, Chap 2, Fig 2.62). Structural evidence and dated deposits suggest that these roadside properties were established in the 3rd quarter of the 1st century AD and thrived throughout much of the 2nd century, but that the area declined in the later 2nd and early 3rd centuries. There is little late Roman structural activity on the site, apart from the use of a building, interpreted as a temple, in property 2, between Watling Street and the springs. This structure was clearly associated with the use and loss of late Roman pottery, highlighting the absence of similar material elsewhere on the site.

In the light of this, the quantity of coins of the late 3rd century and 4th centuries is somewhat surprising, with little correlation between coin loss and evidence for contemporary activity on the site. *Table 38* shows the number of coins recovered from each of the properties in the Roadside settlement (see Vol 1, Fig 2.62). From this it is clear that the majority of the coins recovered from the sites came from properties 2, 3, 4, and 5, all to the east of the line of Watling Street, and all of which also backed on to the western edge of the spring and upper reaches of the Ebbsfleet. The majority of the late 3rd and 4th century coins were also recovered from these properties.

This pattern can be emphasised using the broad periods of coin loss established by Reece (1991), and simplifying the properties examined. Reece's groups split the assemblage into groups reflecting significant episodes in the history of coin supply to the province. The number of coins recovered from the different parts of the site can be seen in Table 39. The four blocks used appear to represent four slightly differing patterns of coin loss.

Looking at Period A (the 'Augustan' system of coinage), which continued in use from the 1st century AD until *c* AD 260, there is good evidence for coin use and loss across the site. While the area may not have had a fully developed monetary economy, coins of this date were found in all properties, although the largest number was recovered from properties 3–5. The

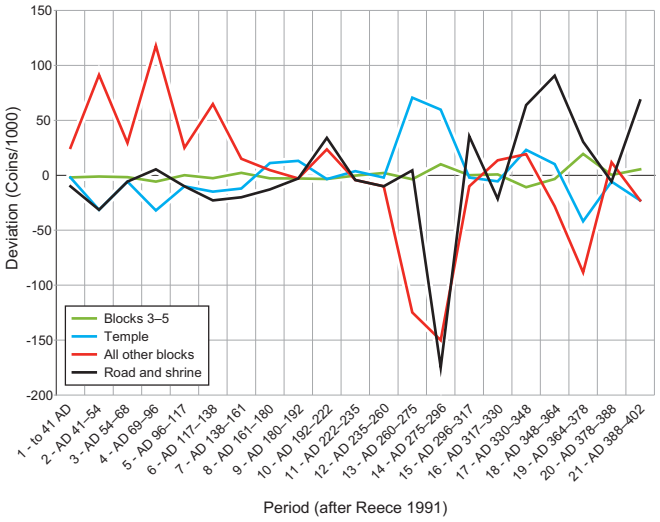


Figure 66 Deviation from the overall mean (permills) for the different areas of the Springhead Roadside Settlement

significant change in coin loss, however, occurs in Period B, where there is a marked increase in the number of coins recovered from properties 2 and 3–5, and also in the small assemblage recovered from the road, but the number of coins from the remainder of the site falls in this period. The figures for Period C can be more or less disregarded, as coins of this period are rarely found in any numbers. The main concentrations of Period D coins show a similar pattern to Period B (Table 39).

The final two rows in the table emphasise this further. The first shows the ratio of coins lost in Period B divided by those in Period A (in other words the number of coins minted between 260 and 296 and those minted before 260), whilst the second shows the number of coins minted in Period D divided by those in Period A. From this it is clear that coin use fell dramatically in most areas, but with continued levels of coin use in property 2 (containing the late temple), properties 3–5 and the road.

Because of the disproportionate sizes of the different assemblages, it is important to look at the number of coins lost per period from each of these areas as a proportion of the whole. In order to do this, the following formula is applied (after Reece 1991):

$$\frac{\text{Number of coins per period x 1000}}{\text{Number of coins from the assemblage}}$$

This provides us with a proportional value for coin loss during each period on each of the different areas identified (expressed as 'permills'). This can then be compared to the overall mean for the whole site in order to examine changes in coin loss over time. The deviation of each of the four main areas of coin loss from the site mean can be seen in Figure 66.

The first point to be made is that the coin assemblage from properties 3–5 stays fairly close to the site mean throughout, with the only significant deviations in the 2nd half of the 4th century. This fits the expected

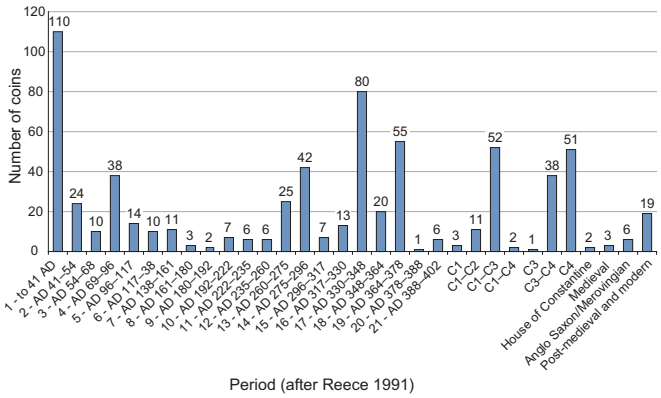


Figure 67 All coins from the Springhead Sanctuary by period

pattern, as the majority of the coins from the site come from these three properties. Property 2, however, containing a temple, shows a very different pattern, although it should be noted that some of the earliest levels were not excavated in order that the temple (constructed in the late 2nd century) could be preserved *in situ*. Coin loss associated with property 2 is consistently below the norm for much of the first two centuries AD, only rising above the site norm in periods 8 and 9. Coin loss rises significantly above the norm in the last 3rd of the 3rd century (periods 13 and 14). This may coincide with the destruction of the majority of the temple, apparently involving the dismantling of the outer rooms, leaving only the central *cella*. The levels of coin loss in periods 15 and 16 remain close to the site norm, but rise again in the periods 17 and 18. This latter group probably corresponds to continued activity associated with the remaining temple structure. The last coins from property 2, possibly associated with the final use of the temple, belong to the House of Valentinian (period 19), although the pottery from the upper deposits and overburden suggests continuity of occupation (or deposition) into the very late 4th century and probably into the 5th (see Seager Smith and Brown, this Vol, Chap 1).

The assemblage from the road is both a small and a diverse one and, therefore, the patterns observed may be distorted by the presence or absence of a small number of coins in a period. This is almost certainly the case in period 14 for example, where only a single coin of this period was recovered. Despite this, it is clear that the majority of the coins date to the 4th century. These are predominantly associated with a small rectangular structure, interpreted as a shrine, at the junction between Watling Street and the branch road. The coins suggest that this shrine was in use throughout the 4th century. The latest coins date to period 20 (378–88) and could well have been in circulation into the 5th century.

Perhaps the most interesting pattern of coin loss, however, relates to the coins from the remainder of the site. Once again, the assemblage is not a large one, but the pattern that emerges tallies closely with the archaeological sequence. Here, there is consistently above average coin loss for the 1st and 2nd centuries. This culminates with an above average peak in period 10 (192–222) and is followed by a rapid decline in coin loss for the rest of the 3rd century. The absence of coins of periods 13 and 14, so numerous elsewhere, is particularly marked. This strongly suggests that the majority of these plots had fallen into disuse earlier in the 3rd century.

Although there appears to be a return to levels of coin loss close to the norm in periods 15 and 16, this is related to the small number of coins recovered. The picture for the rest of the 4th century seems slightly confused with an above average level of coin loss in period 17 followed by significantly below average values in periods 18 and 19, and then an above average value for period 20. Once again, this is, in part, due to the small size of the assemblage, especially the value for period 20. However, closer examination of Table 38 indicates that all 15 of the 4th century coins in this group were found in properties 11 and 12, to the north-west of the junction between Watling Street and the branch road leading towards Northfleet. A small inhumation cemetery was established in this area, probably after the properties fell into disuse; the 4th century coins recovered may hint at activity associated with this cemetery. Twelve of the 15 coins date to 330–48 (period 17), with only three from the 2nd half of the 4th century (one each from periods 18–20); this may reflect the main period of use of the cemetery.

We can be less certain regarding the continued use and loss of coins in properties 3–5 in the 4th century. In all three properties, structures were built close to Watling Street in the 1st and 2nd centuries. Activity associated with these appears to have declined in the 3rd century, and there is no evidence for later structures in any of the three properties. All three, however, also backed on to the Ebbsfleet river, and there is evidence for waterfront revetments in this area, suggesting that it may have been used for mooring and loading or unloading boats. Detailed study of the contexts from which the majority of the late 3rd and 4th century coins came indicates that they were recovered from layers in the vicinity of the waterfront, including some from within the fills of the channel. It seems clear that there was continued activity in the area of the waterfront after the structures here fell into disuse. It is not clear, however, what form this activity took, as the pottery assemblage from these areas contained few late forms or fabrics, but the number of coins recovered clearly suggests some coin use, perhaps trading.

Coins from Springhead Sanctuary

The excavations at Springhead Sanctuary also produced a substantial coin assemblage. The springs and pool at the head of the Ebbsfleet seem to have been the main focus of activity in the early and mid-Roman periods, with early activity in the form of a road, burials, and

structures being replaced by a sanctuary complex around the middle of the 2nd century. This complex was a focus for ritual activity into the early 3rd century, when it appears to have fallen into disrepair, although coin finds suggest that it might not have finally been abandoned until the late 3rd century.

A total of 678 coins was recovered, a large number of which are too badly worn or corroded to be identified to period –161 were only dated to broad periods within the Roman period. However, 489 coins could be dated closely within the late Iron Age or Roman periods (see Fig 67). The disproportionately large number of poorly dated coins from this site (24.76% of the Iron Age and Roman coins compared to 11.33% from the Roadside settlement) reflects the large number of badly corroded coins recovered from deposits within the springs/pool at the head of the Ebbsfleet – 99 Roman coins from the springs could not be identified to period, largely as the result of corrosion. In many cases, coins are heavily concreted and were dated only on the basis of their size and weight. The pattern of coin loss over time depicted in Figure 67 is an extremely unusual one, mainly as a result of the large quantities of late Iron Age coins recovered from the site. Although there are many similarities with the patterns of Roman coin loss observed on the adjacent Roadside settlement, particularly in terms of the large numbers of late 3rd and 4th century coins recovered and the peaks and troughs of coin loss throughout the Roman period, the major peak of coin loss in period 1 – the pre-Conquest period – sets the site apart.

Iron Age Coins

by David Holman

A total of 99 late Iron Age coins plus one Siculo-Punic bronze was recovered from the Springhead Sanctuary site, principally from Blocks 20–23 (Fig 68). This total includes all of the gold and silver coins from the various HS1 excavations. All of the issuing authorities which one would expect from a Kentish site are present. The largest component of the assemblage is formed by bronze issues of the Kentish Uninscribed Series, especially VA 154–1, with 15 examples. Also fairly common are the phase 7 issues of Dubnovellaunos, particularly VA 166, with nine examples. Other rulers are represented by much smaller numbers, even Cunobelin, whose coins are not uncommon finds in Kent, being represented by only six coins. There is only one British coin from beyond south-east England and only three Gaulish imports and, in this regard, the assemblage closely reflects the coinage available in the surrounding area.

Among the Iron Age coins from the Sanctuary site are a number of types worthy of individual mention. Unique to Springhead is a single example (SF 501) of a silver coin which, although bearing no inscription, can probably be attributed to the shadowy Kentish figure

Coin Catalogue: Springhead Roadside settlement

Date range/ emperor or mint	Denomination	Reference/ description	No
Late Iron Age			
Kentish Uninscribed Series	AE unit	van Arsdell 0154-1	1
Kentish Uninscribed Series	AE unit	van Arsdell 0154-5	1
Kentish Uninscribed Series	AE unit	As CCI 03.0078 or 02.1098	1
Sam	AE half unit	As CCI 99.0002	1
Eppillus	AE unit	van Arsdell 0452	1
Uncertain	AE unit	uncertain	1
			6
Pre AD 41			
Octavian?	Denarius	RRC 427/1 and RIC I, Augustus, 252	1
Augustus	Dupondius	unknown	1
Agrippa	As	? copy as RIC I, Gaius, 58	2
			4
AD 41–54			
Claudius	Denarius	As RIC I, Claudius, 22	1
	Dupondius	RIC I, Claudius, 94	1
	As	RIC I, Claudius, 94	1
	As	RIC I, Claudius, 95	1
	As	RIC I, Claudius, 97	1
	As	RIC I, Claudius, 100	3
	As	As RIC I, Claudius, 100	1
	As	? copy as RIC I, Claudius, 95	1
	As	? copy as RIC I, Claudius, 100	6
	As	Copy as RIC I, Claudius, 100	5
	As/Dupondius	uncertain	1
			22
AD 54–69			
Nero	Denarius	As RIC I, Nero, 26	1
	As/Dupondius	As RIC I, Nero, 300	1
	As	As RIC I, Nero, 314	1
	As	As RIC I, Nero, 351	1
	As	RIC I, Nero, 544	1
	As	uncertain	1
			6
AD 69–96			
Vespasian	Dupondius	RIC II, Vesp, 473	1
	Dupondius	As RIC II, Vespasian, 479	1
	Dupondius	RIC II, Vesp, 753a	1
	Dupondius	uncertain	1
	As	RIC II, Vesp, 494	1
	As	RIC II, Vesp, 500	1
	As	RIC II, Vesp, 528b	1
	As	RIC II, Vesp, 595	1
	As	RIC II, Vesp, 758	1
	As	uncertain	5
	As/Dupondius	RIC II, Vespasian, 766a	1
	As/Dupondius	uncertain	9
Titus	Denarius	RIC II, Vesp, 366	1
Domitian	Denarius	As RIC II, Dom, 67	1
	Dupondius	RIC II, Dom, 326a	1
	Dupondius	uncertain	2
	As	RIC II, Dom, 356	1
	As	uncertain	1
	As/Dupondius	As RIC II, Dom, 293	1
	As/Dupondius	uncertain	1
			33

Date range/ emperor or mint	Denomination	Reference/ description	No
AD 96–117			
Nerva	Sestertius	uncertain	1
Trajan	Denarius	uncertain	1
	Sestertius	uncertain	1
	As	As RIC II, Trajan, 395	1
	As	uncertain	3
			7
AD 117–138			
Hadrian	Sestertius	RIC II, Had, 790	1
	Sestertius	RIC II, Had, 969	1
	Sestertius	As RIC II, Had, 551a	1
	Sestertius	uncertain	3
	Dupondius	RIC II, Had, 604b	1
	Dupondius	RIC II, Had, 605	1
	Dupondius	uncertain	1
	As	RIC II, Had, 725	1
	As	As RIC II, Had, 873	1
	As/Dupondius	uncertain	3
	Quadrans	RIC II, Had, 621	1
Sabina	Denarius	RIC II, Had, 401	1
	As	RIC II, Had, 1024	1
	As/Dupondius	RIC II, Had, 1044	1
			18
AD 138–161			
Antoninus Pius	Denarius	RIC III, Ant Pius, 62	1
	Sestertius	uncertain	2
	Dupondius	As RIC III, Ant Pius, 658	1
	As	RIC III, Ant Pius, 860a	1
	As	RIC III, Ant Pius, 862a	1
	As/Dupondius	uncertain	2
Faustina I	Denarius	As RIC III, Ant Pius, 344	1
	Sestertius	uncertain	1
	As	RIC III, Ant Pius, 1192A	1
Faustina II	Sestertius	As RIC III, Ant Pius, 1388	1
	As	RIC III, Ant Pius, 1408	1
	As/Dupondius	RIC III, Ant Pius, 1395	1
	As/Dupondius	uncertain	1
			15
AD 161–180			
Marcus Aurelius	Denarius	uncertain	1
	Sestertius	uncertain	2
	Dupondius	uncertain	1
	As/Dupondius	uncertain	1
Faustina II	Sestertius	uncertain	1
	As	uncertain	1
Commodus	Sestertius	As RIC III, M Aurelius, 1588	1
Lucilla	Denarius	RIC III, M Aurelius, 786	1
			9
AD 180–192			
Commodus	Sestertius	RIC III, Comm, 529	1
Lucilla	Sestertius	uncertain	1
			2
AD 193–222			
Septimius Severus	Denarius	RIC IV, S Severus, 167a	1
	Denarius	uncertain	2
Caracalla	Denarius	RIC IV, pt I, Caracalla, 44	1
Geta	Denarius	As RIC IV, pt I, Geta, 9b	1
	Denarius	uncertain	1
Elagabalus	Antoninianus	As RIC IV, pt I, Elagabalus, 138	1
Julia Maesa	Denarius	uncertain	1
			8
AD 222–238			
Severus Alexander	Denarius	RIC IV, pt II, S Alexander, 61	1
	Denarius	uncertain	1
Julia Mamaea	Denarius	RIC IV, pt II, SAlexander, 362	1
			3

Date range/ emperor or mint	Denomination	Reference/ description	No
AD 238–259			
Gordian III	Antoninianus	RIC IV, pt III, Gordian III, 34	1
Philip I	Antoninianus	RIC IV, pt III, Phillip I, 53	1
Trebonianus Gallus	Antoninianus	RIC IV, pt III, T Gallus, 32	1
Salonina	Antoninianus	As RIC V, pt I, Salonina, 28	1
	Antoninianus	RIC V, pt I, Gallienus, 5a	1
Valerian I	Antoninianus	RIC V, pt I, Valerian, 86	1
Valerian II	Antoninianus	RIC V, pt I, Valerian II, 9	1
Gallienus	Antoninianus	As RIC V, pt I, Gallienus, 17	1
			8
AD 260–275			
Gallienus	Antoninianus	RIC V, pt I, Gallienus, 160	1
	Antoninianus	RIC V, pt I, Gallienus, 180	1
	Antoninianus	RIC V, pt I, Gallienus, 256	1
	Antoninianus	RIC V, pt I, Gallienus, 344	1
	Antoninianus	As RIC V, pt I, Gallienus, 180	1
	Antoninianus	As RIC V, pt I, Gallienus, 181	1
	Antoninianus	As RIC V, pt I, Gallienus, 230	1
	Antoninianus	As RIC V, pt I, Gallienus, 244	1
	Antoninianus	As RIC V, pt I, Gallienus, 267	1
	Antoninianus	uncertain	3
	Irregular radiate copy ?	uncertain	1
	Irregular radiate copy	uncertain	1
Salonina	Antoninianus	RIC V, pt I, Gallienus, 32	1
	Antoninianus	uncertain	1
Postumus	Antoninianus	RIC V, pt II, Postumus, 80	1
	Antoninianus	RIC V, pt II, Postumus, 329	1
	Antoninianus	As RIC V, pt II, Postumus, 59	1
	Antoninianus	As RIC V, pt II, Postumus, 77	1
	Antoninianus	As RIC V, pt II, Postumus, 318	1
	Antoninianus	As RIC V, pt II, Postumus, 329	1
	Antoninianus	uncertain	5
Victorinus	Antoninianus	RIC V, pt II, Victorinus, 41	1
	Antoninianus	RIC V, pt II, Victorinus, 78	2
	Antoninianus	As RIC V, pt II, Victorinus, 55	2
	Antoninianus	As RIC V, pt II, Victorinus, 61	1
	Antoninianus	As RIC V, pt II, Victorinus, 71	1
	Antoninianus	? copy as RIC V, pt II, Victorinus, 65	1
	Antoninianus	uncertain	3
	Irregular radiate copy ?	uncertain	1
	Irregular radiate copy	uncertain	5
Claudius II	Antoninianus	As RIC V, pt I, Claudius II, 265	4
	Antoninianus	uncertain	2
	Irregular radiate copy ?	uncertain	2
	Irregular radiate copy	uncertain	16

Date range/ emperor or mint	Denomination	Reference/ description	No
Tetricus I	Antoninianus	RIC V, pt II, Tetricus I, 79	1
	Antoninianus	RIC V, pt II, Tetricus I, 90	1
	Antoninianus	RIC V, pt II, Tetricus I, 123	1
	Antoninianus	As RIC V, pt II, Tetricus I, 56	1
	Antoninianus	As RIC V, pt II, Tetricus I, 70	1
	Antoninianus	As RIC V, pt II, Tetricus I, 79	1
	Antoninianus	As RIC V, pt II, Tetricus I, 86	1
	Antoninianus	As RIC V, pt II, Tetricus I, 89	1
	Antoninianus	As RIC V, pt II, Tetricus I, 100	1
	Antoninianus	As RIC V, pt II, Tetricus I, 121	1
	Antoninianus	? Copy as RIC V, pt II, Tetricus I, 80	1
	Antoninianus	uncertain	5
	Irregular radiate copy?	uncertain	8
	Irregular radiate copy	uncertain	14
Tetricus II	Antoninianus	RIC V, pt II, Tetricus II, 248	2
	Antoninianus	RIC V, pt II, Tetricus II, 260	1
	Antoninianus	RIC V, pt II, Tetricus II, 271	1
	Antoninianus	As RIC V, pt II, Tetricus II, 126	1
	Antoninianus	As RIC V, pt II, Tetricus II, 270	1
	Antoninianus	uncertain	4
	Irregular radiate copy ?	uncertain	2
	Irregular radiate copy	uncertain	9
			127
AD 275–296			
Tacitus	Antoninianus	RIC V, pt I, Tacitus, 14	1
	Antoninianus	RIC V, pt I, Tacitus, 24	1
	Antoninianus	uncertain	1
Probus	Antoninianus	RIC V, pt II, Probus, 104	1
	Antoninianus	As RIC V, pt II, Probus, 91	1
	Antoninianus	uncertain	1
Carausius	Antoninianus	RIC V, pt II, Carausius, 300	1
	Antoninianus	RIC V, pt II, Carausius, 475	1
	Antoninianus	RIC V, pt II, Carausius, 617	1
	Antoninianus	As RIC V, pt II, Carausius, 101	1
	Antoninianus	As RIC V, pt II, Carausius, 878	1
	Antoninianus	As RIC V, pt II, Carausius, 879	1
	Antoninianus	uncertain	2
Allectus	Quinarius	RIC V, pt II, Allectus, 55	2
	Quinarius	RIC V, pt II, Allectus, 127	1
	Quinarius	RIC V, pt II, Allectus, 128	1
	Quinarius	As RIC V, pt II, Allectus, 128	1
	Antoninianus	uncertain	1
Uncertain	Irregular radiate copy ?	uncertain	36
	Irregular radiate copy	uncertain	100
			156

Date range/ emperor or mint	Denomination	Reference/ description	No
AD 296–317			
London	Nummus	RIC VI, Lon, 117b	1
	Nummus	RIC VII, Lon, 5	1
	Nummus	RIC VII, Lon, 88	1
	Nummus	RIC VII, Lon, 93	1
Trier	Nummus	RIC VII, Trier, 41	1
	Nummus	RIC VII, Trier, 120	1
Ticinium	Nummus	RIC VII, Tic, 8	1
			7
AD 317–330			
London	Nummus	RIC VII, London, 163	1
Trier	Nummus	RIC VII, Trier, 305	1
	Nummus	RIC VII, Trier, 308	2
	Nummus	RIC VII, Trier, 342	1
	Nummus	RIC VII, Trier, 347	1
	Nummus	RIC VII, Trier, 368	1
	Nummus	RIC VII, Trier, 416	1
	Nummus	RIC VII, Trier, 431	1
	Nummus	RIC VII, Trier, 441	1
	Nummus	HK 33	1
Uncertain	Nummus	As RIC VII, Lon, 166	1
	Nummus	As RIC VII, Lon, 216	1
	Nummus	As RIC VII, Lon, 291	1
	Nummus	uncertain	1
			15
AD 330–348			
Trier	Nummus	HK 50	1
	Nummus	HK51	2
	Nummus	HK 56	2
	Nummus	HK 58	4
	Nummus	HK 59	1
	Nummus	HK 63	1
	Nummus	HK 64	2
	Nummus	HK 70	3
	Nummus	HK 92	1
	Nummus	HK 93	2
	Nummus	HK 112	1
	Nummus	HK 113	1
	Nummus	HK 120	1
	Nummus	HK 131	1
	Nummus	HK 138	1
	Nummus	HK 145	3
	Nummus	As HK 48	2
	Nummus	As HK 53	1
	Nummus	As HK 93	2
	Nummus	As HK 113	1
	Nummus	As HK 145	1
	Nummus	? Copy as HK, 51	1
	Nummus	? Copy of HK, 48a	1
	Nummus	? Copy of HK, 119	2
	Nummus	? Copy of HK, 163	1
	Nummus	Copy as HK, 63	1
	Nummus	Copy as HK, 87	1
	Nummus	Copy of HK, 49	1
	Nummus	As HK 113	1
Arles	Nummus	HK 355	1
	Nummus	HK 362	1
	Nummus	HK 383	1
Lyons	Nummus	HK 181	1
	Nummus	HK 184	1
	Nummus	HK 188	1
	Nummus	HK 190	1
	Nummus	As HK, 180	2
	Nummus	? Copy as HK, 180	1
	Nummus	? Copy as HK, 184	1
	Nummus	? Copy of HK, 181	1
	Nummus	? Copy of HK, 185	1
	Nummus	Copy of HK, 181	1
	Nummus	Copy of HK, 184	1
Rome	Nummus	As CK, 581	1
	Nummus	? Copy as CK, 531	1
	Nummus	? Copy of HK, 564	1
	Nummus	? Copy as HK, 591	1
Siscia	Nummus	As HK, 747	1

Date range/ emperor or mint	Denomination	Reference/ description	No
Uncertain	Nummus	As HK 48	4
	Nummus	As HK 49	4
	Nummus	As HK 51	7
	Nummus	As HK 52	6
	Nummus	As HK 72	1
	Nummus	As HK 87	2
	Nummus	As HK 88	1
	Nummus	As HK 104	2
	Nummus	As HK 105	1
	Nummus	As HK 106	1
	Nummus	As HK 137	3
	Nummus	As HK 148	1
	Nummus	As HK 207	1
	Nummus	? Copy as HK, 48	1
	Nummus	? Copy as HK 51	2
	Nummus	? Copy as HK 52	4
	Nummus	? Copy as HK 87	9
	Nummus	? Copy as HK, 88	3
	Nummus	? Copy as HK 100	3
	Nummus	? Copy as HK 104	3
	Nummus	? Copy as HK 105	2
	Nummus	? Copy as HK 137	3
	Nummus	? Copy as HK, 145	1
	Nummus	? Copy as HK 226	1
	Nummus	? Copy as HK 672	1
	Nummus	Copy as HK 48	3
	Nummus	Copy as HK 49	1
	Nummus	Copy as HK 51	5
	Nummus	Copy as HK 52	9
	Nummus	Copy as HK 78	1
	Nummus	Copy as HK 87	9
	Nummus	Copy as HK 89	1
	Nummus	Copy as HK 137	3
			162
AD 348–364			
Trier	Nummus	CK 35	1
	Nummus	CK 43	1
	Nummus	CK 50	1
	Nummus	Copy as CK 47	1
Siscia	Nummus	Copy as CK, 1202	1
Thessalonica	Nummus	Copy as CK, 1673	1
Uncertain	Nummus	? Copy as CK 25	2
	Nummus	? Copy as CK 660	1
	Nummus	Copy as CK 8	1
	Nummus	Copy as CK, 25	16
	Nummus	Copy as CK 47	4
	Nummus	Copy as CK, 56	1
	Nummus	Copy as CK 70	1
	Nummus	Copy as CK 660	1
			33
AD 364–378			
Trier	Nummus	CK 82	1
	Nummus	CK 118	1
Arles	Nummus	CK, 482	1
	Nummus	CK, 523a	1
	Nummus	CK, 526	2
	Nummus	CK, 528	1
	Nummus	CK, 529	2
	Nummus	CK, 533	1
	Nummus	As CK, 477	1
	Nummus	As CK, 479	2
	Nummus	As CK, 503	3
	Nummus	As CK, 525	1
	Nummus	As CK, 527	1
Lyons	Nummus	CK, 304	1
	Nummus	CK, 316	1
	Nummus	CK, 322	1
	Nummus	CK, 338	1
	Nummus	CK, 363	1
	Nummus	As CK 324	1
	Nummus	As CK, 338	1
	Nummus	As CK, 365	1

Date range/ emperor or mint	Denomination	Reference/ description	No
Rome	Nummus	As CK, 725	1
Siscia	Nummus	? Copy as CK1283	1
Aquilea	Nummus	As CK, 967	1
	Nummus	CK, 970	1
	Nummus	CK, 1035	1
Antioch	Nummus	CK, 1011	1
Nicomedia	Nummus	CK, 2329	1
	Nummus	As CK, 2334	1
Unknown	Nummus	As CK, 78	11
	Nummus	As CK 81	1
	Nummus	As CK, 82	14
	Nummus	As CK, 86	1
	Nummus	As CK, 98	1
	Nummus	As CK 279	3
	Nummus	As CK 280	4
	Nummus	As CK 338	1
	Nummus	As CK, 481	1
	Nummus	As CK, 503	1
	Nummus	As CK 1323	1
	Nummus	? Copy as CK, 78	1
	Nummus	? Copy as CK, 279	1
			75
AD 378–388			
Lyons	Nummus	CK 370	1
Thessalonica	Nummus	As CK, 1840	1
Unknown	Nummus	As CK 144	2
			4
AD 388–402			
Arles	Nummus	As CK 562	1
Lyons	Nummus	CK, 389	1
	Nummus	As CK 389	3
Rome	Nummus	As CK,796	1
Unknown	Nummus	As CK, 159	1
	Nummus	As CK, 162	5
	Nummus	As CK 164	2
	Nummus	As CK 796	1
	Nummus	? Copy as CK, 796	1
			16
Illegible			
	As/Dupondius	C1	1
	Denarius	C1–C3	3
	Sestertius	C1–C3	5
	As	C1–C3	2
	As/Dupondius	C1–C3	18
	Uncertain	C1–C4	6
	Antoninianus/ Nummus	C3–C4	48
	Nummus	AD 330–360	1
	Nummus	C4	10
			94
Post-medieval and modern			
	C17 Token	Richard Wicking (AD 1650–1670)	1
	Half penny	George III	2
	Farthing	William IV	1
	Farthing	Victoria	1
	Farthing	George V	1
	Half Penny	George V	1
	Unknown	uncertain	3
			10

known to us as Vosenos on the basis of the style, the distinctive motifs, and the type of flan, all of which have their closest parallel in VA 186, another silver type which carries a variation on this name. Also currently unique to Springhead is a silver fraction (SF 298) bearing an inscription apparently reading SOL, although consideration should be given to the possibility that it reads VOS retrograde, ie, Vosenos, as the type appears to fall within phase 7. A small number of Kentish silver fractions have been recognised in recent years, so a Kentish attribution need not be discounted. (Another three SOL fractions have also appeared in the numismatic trade with a Springhead provenance.) Another excavation find is a bronze unit (SF 304) apparently bearing the name SAM which has enabled the identification of three other examples found elsewhere in Kent that are too poorly preserved to have been previously recognised as a new type. There is also one specimen (SF 391) of a silver fraction of Amminus which was first recognised from excavations at the Harlow temple site. Known, but unexpected types, from Springhead include a Corieltauvian silver unit of Aun Cost (SF 371) and a plated silver unit of the Parisii (SF 1772), one of only three Gaulish imports recovered.

The Siculo-Punic bronze coin, dated to the early 3rd century BC, is one of a number of coins of Mediterranean origin found in Kent. There is relatively little doubt that it entered Britain some time after this but the dating of these, and other coins of Mediterranean origin, in a British context is problematic. This subject has been most recently discussed by Holman (2005a, 39–41) in relation to such finds from Kent.

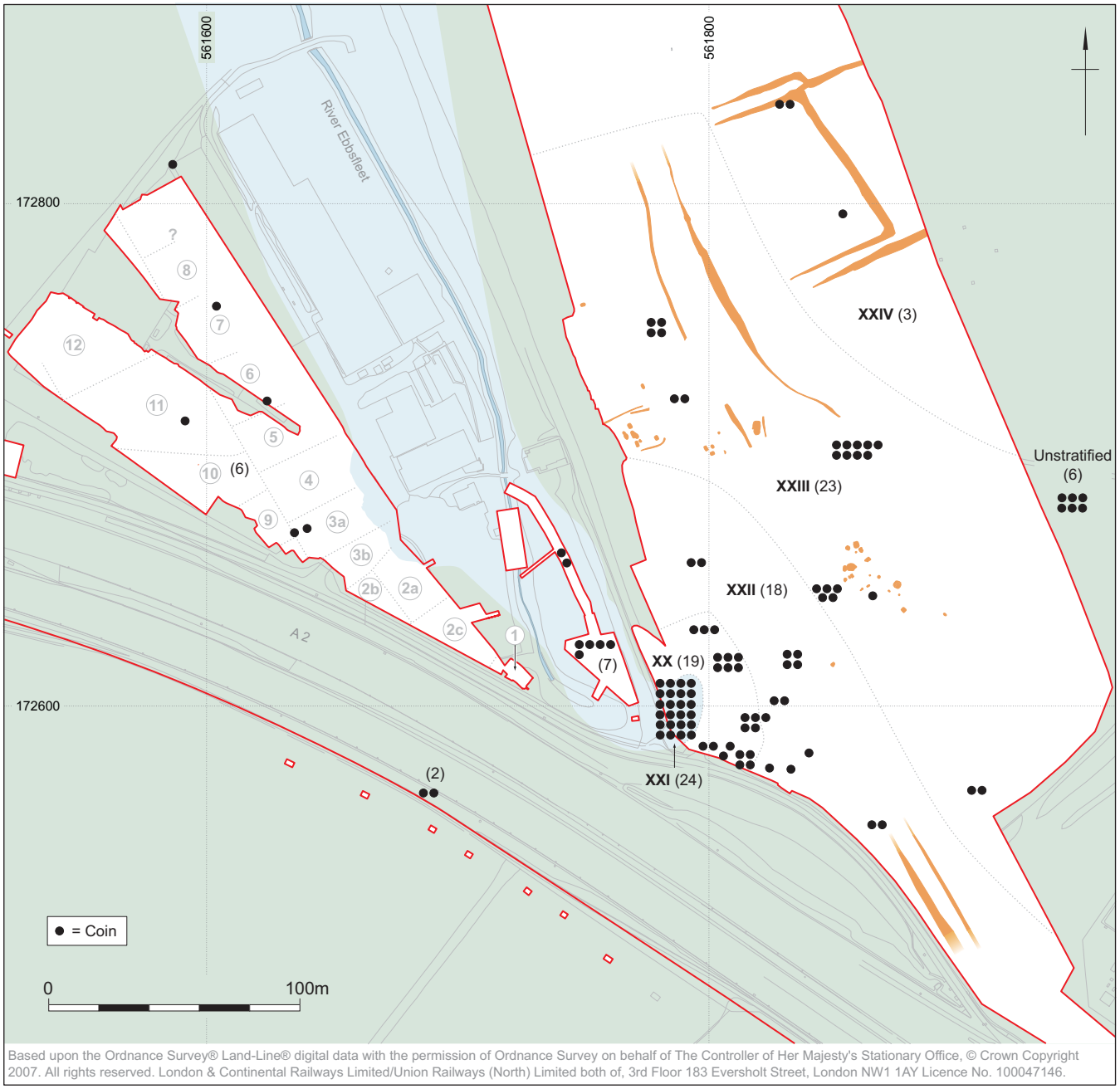


Figure 68 Distribution of Iron Age coins at Springhead

Roman Coins

by Nicholas Cooke

Pre-Conquest coins

Ten pre-Conquest coins struck during the Roman Republic or the early years of the Roman Empire were recovered. These include four *denarii* – one very worn *denarius* struck during the Republic, a second struck under Julius Caesar, and two minted by Augustus. The remaining six coins are all copper alloy *asses*, five of which were struck during the early years of the Empire. Four of these (including the three coins minted under Agrippa's name) were probably minted in the reign of Gaius Caligula.

This small group of pre-Conquest coins could either represent coins which entered Britain at the time of the Conquest or shortly afterwards, as part of the pay of the invading army, or coins which crossed the Channel through trade or exchange with Gaul, either before or after the Conquest. The presence of both continental coins amongst the assemblage of Iron Age coins and a good number of Claudian coins from the excavations at Springhead means that neither possibility can be completely discounted.

Claudian coins (period 2)

Twenty-four Claudian coins were recovered from the site. These are exclusively bronze denominations with all but one of the coins being *asses* (the single exception is a *dupondius*). As with the coins from the Roadside settlement, these bronze coins include large quantities likely to be irregular copies (see *Table 40*). On both sites the assemblage is dominated by issues depicting Minerva advancing on the reverse (*RIC* 100), with Ceres Augusta issues (*RIC* 94) the only other Claudian coins found in any numbers. The coins from the Sanctuary site were recovered from a diverse array of contexts, ranging from stratigraphically early deposits associated with the earliest Roman activity in the area of the springs to deposits sealing the final abandonment levels of the site.

It is perhaps significant, however, that 16 of the 24 coins from the Sanctuary site were recovered from the area of the springs (both from silting deposits and later layers) and a further three were recovered from the area immediately adjacent to the springs occupied by the early road and buildings and later built over by the Sanctuary complex.

Neronian and Civil War coins (period 3)

Eight bronze coins of Nero were recovered, with *asses* outnumbering *dupondii*. Five of the coins were sufficiently legible for their mint to be identified, with four minted in Lugdunum, and only one minted in Rome. Two silver *denarii* minted during the civil wars of AD 69 – one minted by Galba and a second by Vitellius – also belong to this phase. Neither is likely to have remained in circulation for long after they were struck – the reform of coinage under Trajan recalled many of the silver coins in circulation and issued debased new *denarii*. Both were recovered from the area of the springs – one from a mixed deposit, and the second from a stratigraphically early context, pre-dating the construction of the Sanctuary on the site. Where the Neronian coins were recovered from securely stratified contexts, these contexts were generally phased to the late 1st or early 2nd century, although two were recovered from more mixed deposits with wider date ranges.

Flavian coins (period 4)

The 32 Flavian coins from the site comprise a similar assemblage to those from the Roadside settlement. Once again coins of Vespasian and Domitian dominate. Where the mint for the coins can be determined, coins minted in Rome are more common than those minted in Lugdunum (eight out of 13 legible coins), although a considerable number are too worn or corroded for the mint to be identified. The assemblages from the Sanctuary site and the Roadside settlement are similar in size and composition, with both dominated by *asses* and *dupondii*, along with smaller numbers of *denarii*. *Sestertii* are rare, with only two recovered, both from the Sanctuary site. Flavian coins were recovered from contexts ranging in date from the late 1st century to the mid-3rd century, with many clearly remaining in circulation for a long time.

The 2nd century (periods 5–9)

The increased supply of bronze coinage from the reign of Nerva onwards is reflected in the higher proportions of *sestertii* and *dupondii* struck after AD 96 in relation to the *asses*, which dominate the late 1st century (see Table 41).

In both of the large Springhead assemblages, considerably fewer of the *asses* were minted after rather than before AD 96. It seems likely that the increase in

Table 41 Coins: numbers of bronze coins from the Springhead Sanctuary site by period

Period	*Sestertii*	*Dupondii*	*Asses*	*Quadrans*	*Asses/Dupondii* uncertain
AD 41–54	0	1	23	0	
AD 54–69	0	1	5	0	2
AD 69–96	2	5	18	0	9
AD 96–117	3	6	4	0	0
AD 117–138	2	0	1	0	3
AD 138–161	4	2	1	0	3
AD 161–180	3	0	0	0	0
AD 180–192	1	0	0	0	0
Total pre-AD 96	2	7	46	0	11
Total after AD 96	13	8	6	0	6

the larger denomination bronze coins redressed the imbalance evident in the 1st century, where there was a preponderance of the smaller denomination *asses*, and few *dupondii* and *sestertii*, with no official mechanism for the removal of old bronze coinage from circulation. Seven *denarii* dating to the 2nd century were found, four of which were minted in the reign of Hadrian. All are regular issues, and there is no particular significance to their distribution.

The 3rd century to AD 260 (periods 10–12)
All of the period 10 coins from the site are silver *denarii*, reflecting the cessation of supply of bronze coins in this period. Much of the bronze coinage supplied in the preceding periods would still have been in circulation and continued to act as small change. The seven *denarii* are split more or less evenly between issues of Septimius Severus and those of his wife Julia Domna. The four *denarii* of the following period, all minted by Severus Alexander, belong to the final phase of minting of *denarii*, whilst the two bronze coins derived from the sporadic resumption of supply of bronze coinage. By period 12 (238–59), the debased *antoniniani* had replaced the *denarius* entirely. These dominate the small assemblage in this period (four of the six coins are *antoniniani* – with the exceptions being two *asses*, one of Gordian III and the second of Philip II). Shortly after this, the earlier system of *aes* coinage seems to have been abandoned in its entirety in favour of the heavily debased *antoniniani* coinage.

The end of the 3rd century (periods 13 and 14)
The assemblage of the late 3rd century is dominated by the debased radiate *antoniniani* and their contemporary copies. As before, these copies form a significant part of the assemblage from each period (with 14 of the 25 coins of period 13 either probable copies or copies along with some 39 of the 42 period 14 coins). The official coinage in the latter period is once more dominated by issues of Carausius, struck late in the period. In this, the assemblage closely mirrors that from the adjacent Roadside settlement. The main difference between the two assemblages in the late 3rd century, however, lies in their significance as a proportion of the overall assemblage. On the Roadside settlement, the numbers of period 13 and 14 radiate *antoniniani* lost form a greater proportion of the overall assemblage than on this site. This may reflect differences in the levels of activity in the two areas, with the area in and around the Sanctuary less frequented after the temple(s) and their associated structures fell into disuse.

The 4th century (periods 15 to 21)
The excavated evidence from the Sanctuary complex indicates that the final structure on the site was abandoned during the early 3rd century, though the demolition deposits appear to be associated with radiate coins of the late 3rd century. Very little 4th century pottery has been recovered from the site and very few features or deposits could be dated to this period with any confidence. Despite this, there is strong evidence for continued coin loss, with 182 closely dated 4th century coins recovered, along with a further 51 illegible coins thought likely to be 4th century in date.

The pattern of 4th century coin loss on this site corresponds fairly closely with that on the adjacent Roadside settlement. The low rates of coin loss in the early 4th century (periods 15 and 16, once again dominated by coins minted in London and Trier) are followed by a significant peak of coins minted between AD 330 and 348 (period 17). As on the Roadside settlement site, these contain a significant proportion of probable or certain copies (56 of the 80) and are dominated by coins from Trier, Arles, and Lyons. The lower numbers of period 18 coins follows the expected pattern, as does the high proportion of contemporary copies (11 of the 20 coins). Worthy of note in this group are two silver *siliquae* of Julian, both found unstratified. The peak of coins in the Valentinianic period (period 19) reflects the increase in coin supply of this period, whilst the significantly smaller numbers of coins of periods 20 and 21 suggest that there was a decline in coin use and loss on the site in the last years of the 4th and into the 5th centuries.

Patterns of Coin Loss and Distribution

In order to facilitate the analysis of the distribution of coins recovered from the site, the excavated area has been split into a number of blocks. Block XX comprises the central part of the Sanctuary complex at the head of the springs, XXI includes the area of the springs/pool themselves, XXII comprises the remaining area within the ditch (400017) enclosing the sanctuary, XXIII covers the steep hillslope above the enclosing ditch, and XXIV extends over the excavated area at the top of the slope, including the late Iron Age enclosure 400012 (see Fig 68). As on the Roadside settlement, a significant number of the coins was recovered unstratified during metal-detecting of the topsoil, sub-soil and colluvial layers on the site. Where possible these have been related to the block from which they originated.

Some 444 of the 489 legible coins could be assigned to an area of the site with some confidence (see *Table 42*). Of these, 98 were struck in the late Iron Age or pre-Conquest period. There is clearly evidence for some activity in the vicinity of the springs, with 29 coins recovered from the spring deposits themselves (Block XXI), and a further 28 recovered from the area to the south-east on which the Roman Sanctuary complex was later built (Block XX). There is also further evidence for activity both at the base of the slope within the area later defined by the Sanctuary enclosing ditch (Block XXII) and on the upper slopes of the valley side (Block XXIII). The only area in which there is little strong evidence for Iron Age activity as represented by coin loss is on the flatter ground at the top of the slope (Block XXIV). This spatial distribution pattern broadly corresponds with our understanding of Iron Age activity

on the site which focused not only on the springs and their immediate vicinity, but also on the valley side, and in particular on the 'processional way' (400010) and its associated features.

A comparison of the distribution of the Iron Age coins across different areas of the site is shown in *Table 42*. Although the numbers of coins from each area are on the low side and the statistical results have to be regarded with the usual degree of caution where small assemblages are concerned, a number of features are evident. An analysis of the 84 identified Iron Age coins from Blocks XX–XXIII shows that the springs themselves (Block XXI) appear to be the initial focus with more than half of the 23 identified coins being phase 6 issues. All but one of the 24 coins from Block XXI are struck bronzes, and it may be significant that none of the plated coins (discussed in detail below) is from here. Perhaps it was considered unacceptable to deposit such coins in the springs, rather there were separate foci in the vicinity more suited to the acceptance of plated coins. Although Block XX, the central part of the Roman Sanctuary complex, has a small amount of potin coinage, totally absent in Block XXI, it has its main period of activity with phase 7 coins, suggesting that the potins, which are late types, were probably old coins at the time of their deposition. One plated coin comes from Block XX. It should be noted that the ratio of phase 8.1 coins to those of phase 7 is higher in Block XXI, suggesting that deposition in Block XX perhaps tailed off relative to Block XXI after phase 7.

The 18 coins from Block XXII are again mostly phase 6 and 7 issues but also include two of the three Gaulish imports from the site (the other is unstratified). The proportion of silver here (33%) is significantly higher than elsewhere on the site and half of the six silver coins are plated. The plated coins here, among others, derive from a colluvial layer on the lower part of the valley slope but were probably originally deposited higher up the slope. The thirteen identified coins from Block XXIII are mostly unstratified metal-detecting finds and are all of phases 6, 7, and 8.1; they are mostly struck bronzes, the three exceptions all being plated coins, including one of gold (SF 1240). The Siculo-Punic bronze coin also came from this area.

Block XXIV, relating mainly to a late Iron Age enclosure (400012) on top of the hill, also includes one potin among the three Iron Age coins recovered from there. The remainder of the Sanctuary site produced a further 12 Iron Age coins, of which six are unstratified and six have no context, though the latter (all metal-detector finds from sub-soil) are thought most likely to derive from Block XXIII. For what it is worth, it can be said that both the chronological and metal-type distributions of these unassigned coins is very close to those from Block XXI. They also include the only 'genuine' gold coin from the site, a quarter-stater of Cunobelin (SF 1457).

There are hints of Iron Age activity in the Sanctuary area prior to the period suggested by the bulk of the excavated coins. The hilltop immediately to the east of Block XXIV – not part of the HS1 work – which was subject to excavations in 2005–6, produced only two further coins but perhaps significantly these are both potins, including the only Kentish Primary Series (Thurrock type) potin from the site, which may conceivably indicate an area of earlier activity and deposition in the vicinity.

In addition to the coins struck in the late Iron Age, a small assemblage of pre-Conquest Roman coinage was also recovered. All ten of these coins could be assigned to an area. These share a similar distribution to the late Iron Age coins, with two recovered from the site of the later Sanctuary complex (Block XX), five from the springs (Block XXI), and the remaining three from the base of the hillslope (Block XXII, two coins), and the upper slopes (Block XXIII, one coin).

We cannot be certain to what degree these pre-Conquest coins represent a genuine pattern of Iron Age coin deposition or whether some or all of these coins were lost or deposited in the early Roman period. Unfortunately, the combination of various post-depositional factors (such as disturbance by later features and colluviation) makes it difficult to be certain how many of these were found away from their original location. Certainly a high proportion was recovered from later, predominantly Roman, deposits.

In contrast to the more dispersed distribution shown by the late Iron Age coins, the Claudian coins are closely concentrated on the area of the springs and immediately surrounding area (Blocks XX and XXI), areas which were to remain the primary foci of coin loss for the remainder of the 1st century AD. On the basis of this, while assuming that the springs were indeed the primary focus of the Iron Age coin deposition, it seems reasonable to suggest that the majority of the Iron Age coins were lost or deposited in the pre-Conquest period and that the differences in the distribution of the pre- and immediate post-Conquest coins reflects a real shift in the focus of activity on the site. Certainly, the internal chronological distribution of the Iron Age coins, with coins of phases 6 and 7 being significantly more numerous than those of phase 8, makes it highly unlikely that they were deposited as late as the Flavian period. This is borne out by the archaeology, with the immediate post-Conquest features on the site focusing on the springs and the area immediately to the south-east (see Vol 1, Chap 2). The presence of small numbers of Neronian and particularly Flavian coinage in other areas, notably the slopes of the valley, may point to more widespread activity towards the end of the 1st century, perhaps along similar lines to the late Iron Age use of these areas. A small hoard of bronze coins, probably deposited early in the 2nd century was recovered from the hillslope (Block XXIII) and is discussed further below.

The mid-2nd century saw the construction of the Sanctuary complex in Block XXII on the edge of the springs, and the enclosure of much of the lower hillslope with a large ditch (encompassing Area XXII). The small

2nd century assemblage recovered came almost exclusively from the areas within this enclosing ditch (400017), suggesting that this ditch now defined the main area of activity on the site. The construction of the Sanctuary complex appears, if anything, to have led to a reduction in the number of coins lost on the site. Although 2nd century coins were recovered from both the Sanctuary complex and the springs, the quantities are so small that they are unlikely to be derived from any use of coins as votive offerings, even when the possibility of some of the earlier coins remaining in circulation at this time is taken into account.

By the early 3rd century, the Sanctuary complex seems to have been in terminal decline. Very few features later than this date were identified. However, substantial quantities of late 3rd and 4th century coins from the site attest to continued coin loss. Whilst many of these can be attributed to specific areas or zones of activity, others have no clear stratigraphic or spatial associations. Coins of the 3rd and 4th centuries still appear to have been lost or deposited in the spring area in relatively large quantities (see discussion on the coins from the springs below), whilst a late group of coins recovered from the upper fill of one of the ditches of the Iron Age enclosure (400012) on top of the hill appears to represent a dispersed hoard, probably buried in the 360s.

Late 3rd century coins were among the material recovered from the latest Roman deposits on the Sanctuary site – a crude chalk 'platform' thought to date to the early 3rd century, a date based on the associated pottery assemblage. The late 3rd century *antoniniani* presumably relate to its final phase of use or provide an approximate *terminus ante quem* for its destruction or abandonment. The majority of the coins of the late 3rd century were recovered from the springs (Block XXI) or from layers sealing the last occupation deposits in Blocks XX and XXII (layers which are thought to be predominantly colluvial in origin). Small numbers were recovered from the area of the Iron Age ditched enclosure (400012) on top of the hill in Block XXIV (see below) and a few from trackway 300045 running downslope towards the Sanctuary complex.

A similar pattern of deposition is evident in the coins dated to the 4th century. Large numbers of 4th century coins were recovered from the springs and from a probable hoard placed in the upper fill of the hilltop enclosure ditch (400012). Eighty-five well-dated 4th century coins were recovered from the springs, with a further 34 from the probable hoard (representing some 46% and 19% of the well-dated 4th century coins respectively), whilst 41 of the 51 illegible 4th century coins also came from the springs. Smaller quantities were found in colluvial layers sealing blocks XX, XXII, and XXIII, as well as from a late spread in front of the remains of the portico structure (400020) in the Sanctuary complex, from the fills of quarry hollows and the upper fills of late Iron Age ditch 300269, possibly part of an enclosure at the head of the Ebbsfleet Valley. Clearly most of these are associated with specific areas of activity linked to coin use. The recovery of small numbers of period 21 coins (388–402) confirms that some activity continued on the site into the late 4th and, possibly, into the early 5th centuries. Therefore, despite the decline and disuse of the Sanctuary complex, it is clear that there was continued activity on the site in the 4th century, largely focused on the area of the springs.

Coins recovered from the springs

The excavations at Springhead recovered a large number of late Iron Age and Roman coins, many of them coming from the areas of the Roman Sanctuary complex and the springs. There can be little doubt that the springs formed a focus of some religious activity in the Roman period and the quantity of brooches recovered points to the use of items of metalwork in acts of deposition (Schuster, this Vol, Chap 3). In this light it is tempting to assume that the coins recovered from the vicinity of the springs represent offerings similar to those recovered from the Roman spring at Bath (Walker 1988) or that at Coventina's Well (Allason-Jones and McKay 1985), which form the two closest British parallels for such an assemblage.

The evidence for the deliberate deposition of coins in the springs at Springhead is at best ambiguous, and there are a number of complications with drawing direct comparisons with the assemblages from Bath and Coventina's Well. We cannot be certain that either of the latter is complete (see Walker 1988, 283) for a discussion on the possible biases in the coin assemblage caused by opening the sluice to the east of the spring at Bath, and Allason-Jones and McKay (1985, 1) for a discussion of the privations visited upon the Coventina's Well assemblage). Neither can we claim that the coin assemblage recovered from the excavated area of the springs at Springhead is complete. A significant area of the large pool formed by the springs at the head of the Ebbsfleet lay beyond the areas excavated, and it is certain to contain yet more coins. Additionally, while the coins recovered from the Springhead site came from the area closest to the Sanctuary complex, the apparent use of parts of the pool as a landing place for boats at various points in time means that we cannot be certain that the assemblage is directly associated with the ritual use of the site.

The small size of the Springhead assemblage also presents problems. Both Bath and Coventina's Well are extremely large assemblages (Bath: 12,595; Coventina's Well: 13,490 of which 8362 survived to be catalogued by Allason-Jones and McKay). In comparison, only 289 Iron Age and Roman coins were recovered from the excavated area of the springs at Springhead (Fig 69).

With so small an assemblage, analysis of the number of the Roman coins deposited or lost per year is of limited value (*Table 43*). For most of the period in which the site was occupied, the average level of deposition of coins within the springs was less than one a year, while at Bath and Coventina's Well, deposition rates reach values of 47.55 and 51.65 coins per year respectively at their peak.

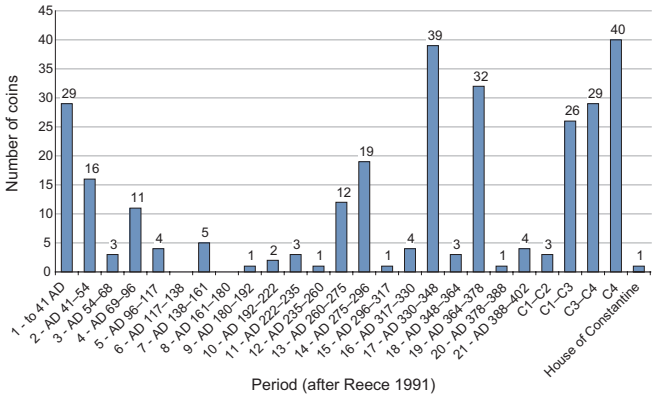


Figure 69 All coins from the Sanctuary spring by period

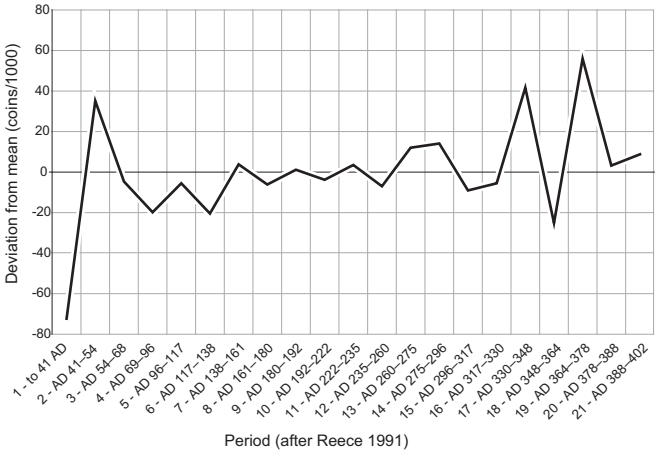


Figure 70 Coins from the spring: deviation from the site mean

Furthermore, there is little in the make-up of the assemblage from the spring which suggests that it contains coins specially selected for deposition. In order to demonstrate this, we can look at the coins struck prior to AD 238. These comprise issues struck using the denominational system established early in the Empire and which remained relatively unchanged until the introduction of the *antoninianus*. *Table 44* compares the proportions of these different denominations recovered from the springs compared to those from the larger excavation areas at Springhead. From this it is clear that the spring area closely mirrors the pattern observed on both sites.

A similar study on the denominations selected for deposition at Bath suggested that there was a bias in favour of small denomination bronze coins for offerings, with a ratio of 24.84 bronze coins for every silver coin before AD 238, compared to Richborough, where the ratio was one silver to 5.77 bronze (Walker 1988, 284). All of the Springhead figures are much closer to those from Richborough. Indeed, if anything, a slightly higher proportion of silver *denarii* were recovered from the spring at Springhead than from the excavations on land, at a ratio of 1 silver to every 4.64 bronze compared to 1:5.46 on the Roadside settlement and 1:5.88 on the Springhead Sanctuary (with the spring coins excluded).

This need not suggest that there was any element of selection in favour of *denarii*, however. It is generally held that the accidental losses which comprise most site finds are likely to contain greater proportions of smaller denominational coins than were actually in circulation, with one of the factors influencing this being the likelihood that greater effort would have been expended recovering a more valuable lost coin than a less valuable one. It may be that the coins recovered from the springs bear this out to some degree, with the higher proportion of silver coins perhaps reflecting the difficulties of recovering coins once they were in the water. In other words, the proportions of the denominations recovered from the springs may more closely mirror the proportions of coins in circulation and in use on the site prior to *c* AD 238. The absence of any bullion coinage of the late Roman period combined with our incomplete understanding of the denominations minted at this time make it impractical to undertake a similar exercise for those coins minted in the late 3rd and 4th centuries.

Analysis of the Springhead assemblage is further complicated by the presence of a number of Iron Age coins. The distribution of Iron Age coins from the site (Fig 68) suggests that the majority are likely to have been lost in the late Iron Age. Less than a quarter of the Iron Age coins found on the site certainly came from the springs, suggesting that even if they were deposited deliberately, then the springs were only one of the foci for this deposition. It is also clear that the majority of Iron Age coins from the spring belong to period 6 (Holman above) and that deposition in the spring fell away in later periods.

Indeed, a comparison of the coins recovered from the springs with the overall mean for the site suggests that Iron Age coins are, if anything, under-represented in the assemblage from the springs (see Fig 70), even though the springs seem to be the initial focus of the Iron Age coin deposition. It is also worth noting that the main periods in which the assemblage is significantly higher than the site mean lie in the Claudian period and in the late 3rd and 4th centuries – outside the period in which the Sanctuary complex was in use. In both periods, there is also evidence for the use of the pool at the head of the Ebbsfleet as a landing place for boats.

On balance, it seems unlikely that the deposition of coins in the springs played an important part in the ritual activities associated with the site. The first problem lies with the small number of coins recovered from the springs – a significantly greater assemblage might be expected if coin deposition had been an important ritual on the site, especially as the area excavated included the spring pool directly in front of the Sanctuary. Furthermore, the lowest rates of coin deposition in the spring coincide with the periods in which the Sanctuary complex was in use and, with annual rates of deposition consistently below one coin a year, there is little strong evidence in favour of a ritual interpretation. This does not preclude the possibility that some of the coins were deposited as offerings or in thanks but it does imply that such actions were not undertaken regularly. If anything, the figures support the suggestion that more coins were lost in the spring while it was being used as a landing

place. This is supported by the make-up of the assemblage, which appears to closely resemble the overall pattern of coin loss on the site but shows no evidence for the selection of lower denomination bronze coins for deposition evident at both Bath and Coventina's Well. Perhaps the sole exception to this may be the Iron Age assemblage – though our understanding of the role played by Iron Age coins, and in particular the small bronze issues which dominate the Springhead assemblage, is not well developed. If these do indeed represent Iron Age acts of deposition, however, then these are at best likely to have been occasional acts.

Coins from the Sanctuary complex

In addition to the coins recovered from the springs themselves, a substantial assemblage of coins was associated with the temple and Sanctuary complex covering Block XX and much of Block XXII. However, not all of the coins from these areas can be directly associated with the complex, which seems to have been first built in the mid-2nd century, and was only in use for a relatively short period before being abandoned, probably in the early 3rd century. While it is possible, through stratigraphic analysis, to identify the features and deposits associated with the construction, use, and disuse of this complex, we cannot be certain that all of the coins recovered from these layers relate to its use. Because of the nature of the stratigraphy involved, a proportion of the coins may be residual, having been disturbed from earlier layers. The assemblage of coins likely to be associated with the use of the Sanctuary complex amounts to just 86 coins, 71 of which could be dated to period. Despite this, however, there is some merit in examining the pattern of coin loss from layers directly associated with the Sanctuary complex to see whether it differs significantly from that of the site as a whole (Fig 71).

Superficially, the pattern that emerges is similar to that from the springs, with a substantial group of late Iron Age coins, a solid group of coins of the 1st century AD, fewer 2nd century coins, and rather more coins of the late 3rd and 4th centuries. The latter cannot be directly linked to the use of the Sanctuary complex although their presence does suggest some continued use on the site. One group of coins, for example, was found in a layer adjacent to the portico structure close to the edge of the springs but it is unclear whether the portico structure was extant at this time. Apart from the substantial group of Iron Age coins, however, there is nothing in the assemblage to indicate that coin use or loss in this area was significantly affected by the presence of the Sanctuary complex.

An early Roman coin hoard from Block XXIII

A small group of early Roman copper alloy coins was recovered during the initial machining in Block XXIII. The 16 coins were found in close association during the removal of a large hedgerow. Because of their close association, these coins were assigned a group number (coin group 1484) although, because they were recovered during machining, their exact location was not recorded three dimensionally.

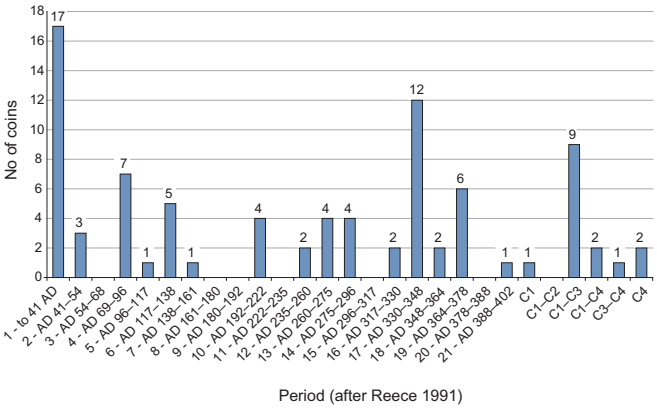


Figure 71 Coins recovered from the Sanctuary complex (except the spring)

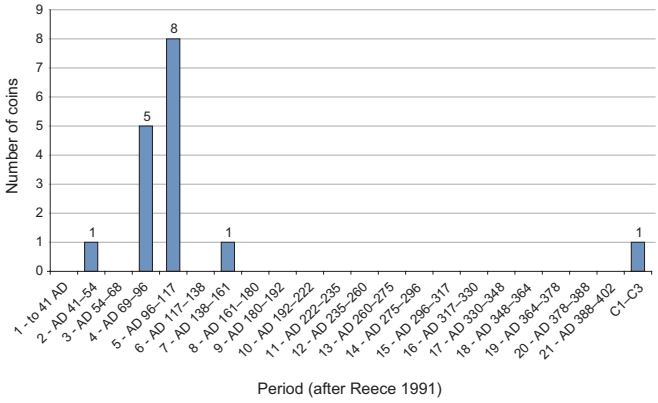


Figure 72 Early 2nd century coin hoard (Coin group 1484) recovered from Block XXIV

Although these coins were not recovered from a stratified context, it is clear that they form a largely coherent group almost certainly representing a small hoard (Fig 72). Fifteen of the 16 coins were identified to period – the only poorly-dated coin is an *as*/*dupondius* of the 1st–3rd centuries. The earliest well-dated coin is an as of Claudius (probably an 'official' issue). Five Flavian coins are present: an *as* and an *as*/*dupondius* of Vespasian and two *asses* and a *dupondius* minted by Domitian. Eight coins minted in the reigns of Nerva and Trajan were recovered – a *dupondius* and a *sestertius* of Nerva and four *asses* and two *dupondii* of Trajan. These coins represent over half (57%) of the 14 period 5 coins recovered from the site as a whole. The only coin which seems not to fit comfortably into the hoard is the latest – a corroded *as*/*dupondius* of Antoninus Pius. This was minted AD 154–5 and is one of the 'Britannia COS III' issues.

While it is not impossible for any of the coins in this assemblage to have been in circulation during the 2nd half of the 2nd century, the large number of the (comparatively rare) period 5 coins suggests, as does the absence of any coins of Hadrian from the hoard, that it was deposited earlier than this. It seems more likely that this group of coins represents a small hoard buried in the early years of the 2nd century, either late in the reign of Trajan or early in Hadrian's reign. Whilst we cannot be

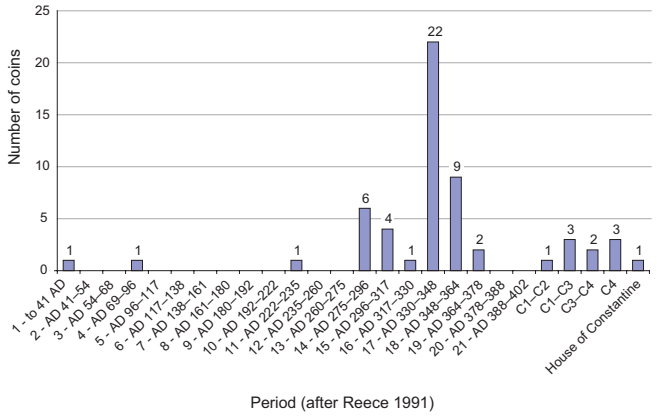


Figure 73 Probable Valentinianic hoard recovered from ditch 3321 in Block XXIV

certain of this, some support for this case may be drawn from the numbering of the objects – two sequences of small finds numbers were assigned to the coins from coin group 1484. The first of these (SF 203 and 204) were assigned to the coins of Claudius and Antoninus Pius, whilst the remaining coins were all assigned numbers between 1588 and 1601. This suggests that the former were found separately from the latter and may not form part of the same group. In the light of this it seems safest to assume that the 14 coins assigned consecutive numbers are certainly part of a small hoard of *aes*, probably buried in the early 2nd century.

A late Roman coin assemblage from Block XXIV

The coin assemblage from Block XXIV is dominated by a group of coins recovered from an early/mid-Roman dump layer in the top of ditch 3321, part of late Iron Age enclosure 400012. This upper fill may have suffered some truncation and we cannot be certain that the entire group was recovered during the excavation as elements may have been dispersed by earlier disturbance. Fifty-seven coins were recovered, the majority of which date to the 2nd half of the 4th century. Apart from a single Iron Age coin recovered from a post-hole, these are the only Iron Age and Roman coins found *in situ* in this area. The remaining coins of this date were recovered unstratified during machining.

The assemblage is plotted by period in Figure 73. There are a number of unusual aspects to this assemblage which strongly suggest that it is a hoard. These coins were recovered from a discrete deposit confined to one particular corner of the enclosure ditch. The latest well-dated coins in this assemblage are two *nummi* of the House of Valentinian. Coins of this period are generally far better represented in assemblages than those of the preceding period. The proportion of early 4th century coins is also higher than might be expected were this an assemblage representing coin loss on, say, a settlement. On the basis of this, it is likely that the coins recovered represent the remains of a scattered hoard put together in the early years of the House of Valentinian, probably in the 360s. The small number of earlier coins need not be of great concern in this interpretation as similar 'tails' of earlier coins have been recorded in other hoards. There is also the possibility that these earlier coins did not form part of the hoard but were residual finds in the upper fill of the ditch. This fill contained 1st and 2nd century metalwork as well as 3rd century pottery, but nothing certainly later, and this would suggest that the coin hoard represents a later deposition in the top of the ditch.

Conclusions

Analysis of the Iron Age and Roman coins from Springhead has established that the assemblage from the Sanctuary site is similar in many respects to that from the adjacent Roadside settlement with the obvious exception of the differences in the Iron Age coins recovered. The disparity in the number of Iron Age coins between the sites confirms that the Sanctuary site was clearly a focus of activity at this time, while analysis of the distribution of the coins suggests that this activity focused on both the springs and the immediate environs and the valley side to the east. Whilst we cannot be certain of the nature of these activities, some at least seem likely to have been ritual, and the use or deposition of coins may have played a part in these.

The distribution of Iron Age coins broadly coincides with the areas of known Iron Age activity but is at odds with those of early post-Conquest activity. This suggests that the majority of coins were indeed lost or deposited in the late Iron Age. The distribution of coins minted under Claudius (the largest group of pre-Flavian Roman coins) coincides with the earliest areas of post-Conquest activity.

For much of the late 1st century, 2nd and early 3rd centuries, the pattern of coin loss is consistent with the use of the site – predominantly focused on the Sanctuary complex and the springs but with some activity on the hillslope. There is little evidence to suggest that the deliberate deposition of coins formed a regular part of ritual activities associated with the Sanctuary complex in the same fashion as is suggested by the metalwork, or that the construction and use of the Sanctuary complex influenced patterns of coin use or loss. The assemblage from the springs themselves seems, as far as can be determined, entirely consistent with the patterns established elsewhere on the site.

The patterns of coin loss in the late 3rd and 4th centuries tend to focus more closely on specific areas of activity, as they do on the Roadside settlement. Here the main areas of coin loss or deposition are the springs and the immediate environs, with smaller numbers found elsewhere, whilst a small late Roman hoard was buried in the top of a largely silted enclosure ditch on top of the hill.

Coin Catalogue: Springhead Sanctuary

Date/emperor/ issuer/mint	Denomination	Reference/ description	No
Late Iron Age			
Kentish Flat Linear I	Potin	van Arsdell 0133	1
Kentish Flat Linear II	Potin	van Arsdell 0139	1
	Potin	van Arsdell 0135–0139	1
Kentish Uninscribed Series	AV/AE unit	van Arsdell 0158	1
	AR/AE unit	As CCI 98.1158	1
	AE unit	van Arsdell 0154-1	15
	AE unit	van Arsdell 0154-3	3
	AE unit	van Arsdell 0154-5	5
	AE unit	van Arsdell 0154-9	6
	AE unit	As CCI 03.0078	5
	AE unit	As CCI 03.0078 or 02.1098	2
Dubnovellaunos (Kent)	AR unit	van Arsdell 0165	2
	AR/AE unit	van Arsdell 0165	1
	AR/AE unit	van Arsdell 0178	1
	AR unit	As CCI 04.1181	1
	AE unit	van Arsdell 0166	9
	AE unit	van Arsdell 0180	3
	AE unit	van Arsdell 0181-1	1
	AE unit	van Arsdell 0181-1 or var.	1
	AE unit	As CCI 94.1182	1
Dubnovellaunos (Kent or Essex)	AR/AE unit	As CCI 88.0148	1
Vosenos	AE unit	van Arsdell 0167	1
	AR unit	New type (boar r/deer r)	1
Sam	AE unit	van Arsdell 0187	1
	AE unit	As CCI 94.0361 (lion l/horse l)	1
	AE half unit	As CCI 99.0002	3
Sol	AR quarter unit	As CCI 02.0442	1
Eppillus	AE unit	van Arsdell 0450 or 0451	1
	AE unit	van Arsdell 0451	1
	AE unit	van Arsdell 0452	2
	AE unit	van Arsdell 0453	1
Amminus	AR quarter unit	As CCI 90.0297	1
North Thames Uninscribed Series	AE unit	As CCI 01.0215	1
Addedomaros	AR/AE unit	van Arsdell 1643	1
	AE unit	van Arsdell 1646	1
Tasciovanus	AE unit	van Arsdell 1705	1
	AE unit	van Arsdell 1713	1
	AE unit	As CCI 90.0202	1
Tasciovanus-Sego	AE unit	van Arsdell 1855	1
	AE unit	van Arsdell 1855 or var. as CCI 94.0337	1
Andoco	AE unit	van Arsdell 1873	1
Cunobelin	AV quarter stater	van Arsdell 2015	1
	AE unit	van Arsdell 1973-1	2
	AE unit	van Arsdell 1977	1
	AE unit	van Arsdell 2085/2131	1
	AE unit	van Arsdell 2095	1
Corieltauvi, Aun Cost	AR unit	van Arsdell 0914–1	1
Meldi (Gaulish)	AE unit	SCH 144, Cl. 2 (DLT 7608)	1
Aduatuci (Gaulish)	Potin	SCH 190, Cl. IV	1
Parisii (Gaulish)	AR/AE unit	DLT 7858	1
Siculo-Punic	AE unit	Calciati, Kartago 21	1
Uncertain	AE unit	uncertain	4
			100

Date/emperor/ issuer/mint	Denomination	Reference/ description	No
Pre-AD 41			
Roman Republic	Denarius	Crawford 448/3	1
Julius Caesar	Denarius	Crawford 468/1	1
Augustus	Denarius	RIC I, Aug, 174	1
	Denarius	As RIC I, Aug, 207	1
	As	RIC I, Aug, 428	1
Tiberius	As	RIC I, Tiberius 81	1
Gaius	As	As RIC I, Gaius, 38	1
Agrippa	As	RIC I, Gaius, 58	1
	As	As RIC I, Gaius, 58	1
	As	? copy as RIC I, Gaius, 58	1
			10
AD 41–54			
Claudius	Dupondius	RIC I, Claudius, 94	1
	As	As RIC I, Claudius, 94	2
	As	As RIC I, Claudius, 100	3
	As	? copy as RIC I, Claudius, 100	8
	As	Copy as RIC I, Claudius, 100	10
			24
AD 54–69			
Nero	Dupondius	As RIC I, Nero, 343	1
	Dupondius	As RIC I, Nero, 655	1
	As	RIC I, Nero, 416	1
	As	RIC I, Nero, 544	1
	As	As RIC I, Nero, 300	1
	As	As RIC I, Nero, 314	1
	As	As RIC I, Nero, 542	1
	As/Dupondius	uncertain	1
Galba	Denarius	as RIC I, Galba 13, but erroneous obverse	1
Vitellius	Denarius	As RIC I, Vitellius, 62	1
			10
AD 69–96			
Vespasian	Dupondius	uncertain	1
	As	RIC II, Vesp, 486	1
	As	RIC II, Vesp, 497	1
	As	RIC II, Vesp, 599	1
	As	RIC II, Vesp, 758	1
	As	As RIC II, Vesp, 494	1
	As	As RIC II, Vesp, 497	1
	As	As RIC II, Vesp, 502	1
	As	As RIC II, Vesp, 528	2
	As	As RIC II, Vesp, 763	1
	As	uncertain	3
	As/Dupondius	RIC II, Vesp, 494	1
	As/Dupondius	As RIC II, Vesp, 753b	1
	As/Dupondius	uncertain	5
Vespasian/Titus	As/Dupondius	uncertain	1
Titus	Denarius	RIC II, Vesp, 781b	1
	Denarius	? Copy of RIC II, Titus, 30	1
	Dupondius	RIC II, Vesp, 775	1

Date/emperor/ issuer/mint	Denomination	Reference/ description	No
Domitian	Denarius	RIC II, Dom, 146	1
	Denarius	RIC II, Dom, 146	1
	Sestertius	uncertain	2
	Dupondius	RIC II, Dom, 327	1
	Dupondius	As RIC II, Dom, 327	1
	Dupondius	uncertain	1
	As	RIC II, Dom, 302a	1
	As	RIC II, Dom, 350	1
	As	RIC II, Dom, 724	1
	As	As RIC II, Dom, 335	1
	As	uncertain	1
	As/Dupondius	uncertain	1
			38
AD 96–117			
Nerva	Sestertius	RIC II, Nerva, 93	1
	Dupondius	uncertain	1
Trajan	Denarius	As RIC II, Trajan, 116	1
	Sestertius	RIC II, Trajan, 432	1
	Sestertius	uncertain	1
	Dupondius	RIC II, Trajan, 382	1
	Dupondius	RIC II, Trajan, 467	1
	Dupondius	uncertain	3
	As	RIC II, Trajan, 393	1
	As	RIC II, Trajan, 500	1
	As	RIC II, Trajan, 561	1
	As	As RIC II, Trajan, 562	1
			14
AD 117–138			
Hadrian	Denarius	RIC II, Had, 42	1
	Denarius	RIC II, Had, 178	1
	Denarius	RIC II, Had, 241A	1
	Denarius	RIC II, Had, 310	1
	Sestertius	uncertain	2
	As/Dupondius	uncertain	3
Sabina	As	uncertain	1
			10
AD 138–161			
Antoninus Pius	Sestertius	uncertain	4
	Dupondius	RIC III, Antoninus Pius, 930	1
	Dupondius	RIC III, Antoninus Pius, 933	1
	As	RIC III, Antoninus Pius, 934	1
	As/Dupondius	RIC III, Antoninus Pius, 930	1
	As/Dupondius	uncertain	1
Faustina I	Denarius	RIC III, Antoninus Pius, 497	1
Faustina II	As/Dupondius	uncertain	1
			11
AD 161–180			
Marcus Aurelius	Sestertius	RIC III, Marcus Aurelius, 1266	1
	Sestertius	uncertain	1
			3
AD 180 – 192			
Commodus	Denarius	RIC III, Commodus, 124	1
	Sestertius	RIC III, Commodus, 608	1
			2

Date/emperor/ issuer/mint	Denomination	Reference/ description	No
AD 193–222			
Septimius Severus	Denarius	RIC IV, pt, S Severus, 120c	1
	Denarius	RIC IV, pt I, S Severus, 220	1
	Denarius	As RIC IV, pt I, S Severus, 265	1
	Denarius	uncertain	1
Julia Domna	Denarius	RIC IV, pt I, S Severus, 551	1
	Denarius	RIC IV, pt I, S Severus, 572	1
	Denarius	RIC IV, pt I, SSeverus, 574	1
			7
AD 222–238			
Severus Alexander	Denarius	RIC IV, pt II, S Alexander, 5	1
	Denarius	RIC IV, pt II, S Alexander, 61	1
	Denarius	Mule, rev as RIC IV, pt II, Julia Mamaea 343	1
	Denarius	uncertain	1
	As	RIC IV, pt II, S Alexander, 486	1
Julia Mamaea	As/Dupondius	uncertain	1
			6
AD 238–259			
Gordian III	Antoninianus	RIC IV, pt III, Gordian III, 34	1
	As	RIC IV, pt III, Gordian III, 319b	1
Philip II	As	RIC IV, pt III, Phillip II, 265b	1
Salonina	Antoninianus	RIC V, pt I, Salonina, 59	1
	Antoninianus	uncertain	1
Valerian I	Antoninianus	RIC V, pt I, Valerian, 110	1
			6
AD 260–275			
Gallienus	Antoninianus	RIC V, pt I, Gallienus, 253	1
	Antoninianus	RIC V, pt I, Gallienus, 321	1
	Antoninianus	uncertain	2
Salonina	Antoninianus	RIC V, pt I, Gallienus, 24	2
	Antoninianus	RIC V, pt I, Gallienus, 29	1
Postumus	Antoninianus	RIC V, pt II, Postumus, 52	1
	Antoninianus	RIC V, pt II, Postumus, 309	1
Victorinus	Antoninianus	uncertain	1
Claudius II	Antoninianus	RIC V, pt I, C Gothicus, 103	1
	Antoninianus	As RIC V, pt I, C Gothicus, 265	2
	Irregular radiate copy	uncertain	5
Tetricus I	Antoninianus	As RIC V, pt II, Tetricus I, 100	1
	Irregular radiate copy	uncertain	5
Tetricus II	Irregular radiate copy	uncertain	1
			25

Date/emperor/ issuer/mint	Denomination	Reference/ description	No
AD 275–296			
Probus	Antoninianus	RIC V. pt II, Probus, 155	1
Carausius	Antoninianus	RIC V, pt II, Carausius, 49	1
	Antoninianus	? Copy as RIC V, pt II, Carausius, 893	1
	Irregular radiate copy ?	uncertain	1
	Antoninianus	uncertain	3
Uncertain	Irregular radiate copy ?	uncertain	8
	Irregular radiate copy	uncertain	27
			42
AD 296–317			
London	Nummus	RIC VI, Lon, 117b	1
	Nummus	RIC VI, Lon, 209b	1
	Nummus	RIC VII, Lon, 10	1
	Nummus	RIC VII, Lon, 88	1
Trier	Nummus	RIC VII, Trier, 53	1
	Nummus	As RIC VII, Trier, 700	1
Uncertain	Nummus	As RIC VII, London 5	1
			7
AD 317–330			
London	Nummus	As RIC VII, Lon, 200	1
	Nummus	As RIC VII, Lon, 223	1
Trier	Nummus	RIC VII, Trier, 209	1
	Nummus	RIC VII, Trier, 291	1
	Nummus	RIC VII, Trier, 368	2
	Nummus	RIC VII, Trier, 464	1
	Nummus	Copy as HK, 12	1
Arles	Nummus	As HK, 291	1
Rome	Nummus	RIC VII, Rome, 232	1
	Nummus	RIC VII, Rome, 282	1
Thessalonica	Nummus	As HK, 811	1
Uncertain	Nummus	? copy As RIC VII, Trier, 487	1
			13
AD 330–348			
Trier	Nummus	HK 59	5
	Nummus	HK 61	1
	Nummus	HK 66	1
	Nummus	HK 122	1
	Nummus	As HK 53	1
	Nummus	As HK 87	1
	Nummus	As HK 139	1
	Nummus	? Copy as HK, 89	1
	Nummus	? Copy as HK, 106	1
	Nummus	Copy as HK, 53	1
	Nummus	Copy as HK, 145	1
	Nummus	Copy of HK, 61	1
	Nummus	Copy of HK, 63	1
	Nummus	Copy of HK, 127	1
Arles	Nummus	HK 367	2
	Nummus	As HK 352	1
	Nummus	As HK 378	1
	Nummus	?copy as HK, 441	1
Lyons	Nummus	HK 184	1
	Nummus	? Copy as HK, 205	1
	Nummus	Copy as HK, 222	1
	Nummus	? Copy of HK, 240	1
	Nummus	Copy of HK, 184	1
Constantinople	Nummus	HK, 1067	1
Uncertain	Nummus	As HK 48	3
	Nummus	As HK 51	1
	Nummus	As HK 52	2
	Nummus	As HK 137	1
	Nummus	? Copy as HK, 48	3
	Nummus	? Copy as HK, 49	1
	Nummus	? Copy as HK 51	1
	Nummus	? Copy as HK 52	3
	Nummus	? Copy as HK 87	4
	Nummus	? Copy as HK 100	1
	Nummus	? Copy as HK 105	1
	Nummus	? Copy as HK 137	6
	Nummus	? Copy as HK, 145	1
	Nummus	Copy as HK 48	1
	Nummus	Copy as HK 49	2
	Nummus	Copy as HK 51	3
	Nummus	Copy as HK 52	5
	Nummus	Copy as HK 87	6
	Nummus	Copy as HK 88	1
	Nummus	Copy as HK 132	1
	Nummus	Copy as HK 137	2
	Nummus	Mule of HK 51/52	2
			80
AD 348–364			
Trier	Siliqua	RIC VIII, Trier, 365	1
Arles	Siliqua	RIC VIII, Arles, 295	1
Lyons	Nummus	CK 187	1
	Nummus	CK 248	1
Rome	Nummus	CK 604	1
Uncertain	Nummus	As CK 25	1
	Nummus	As CK 49	3
	Nummus	? Copy as CK, 72	1
	Nummus	Copy as CK, 25	7
	Nummus	Copy as CK, 56	1
	Nummus	Copy as CK 137	1
	Nummus	Copy as CK 414	1
			20
AD 364–378			
Arles	Nummus	CK, 486	1
	Nummus	CK, 529	1
	Nummus	CK, 533	1
	Nummus	As CK, 78	1
	Nummus	As CK, 479	1
	Nummus	As CK, 503	6
	Nummus	As CK, 525	2
	Nummus	? Copy as CK, 502	1
	Nummus	? Copy as CK, 511	1
Lyons	Nummus	CK, 274	1
	Nummus	CK, 293 or 294	1
	Nummus	CK, 368	1
Siscia	Nummus	CK, 1394	1
	Nummus	As CK, 1408	1
	Nummus	? Copy as CK, 1408	1
Unknown	Nummus	As CK, 78	12
	Nummus	As CK, 82	12
	Nummus	As CK, 98	1
	Nummus	As CK 279	4
	Nummus	As CK 280	1
	Nummus	? Copy as CK, 78	1
	Nummus	? Copy as CK, 82	1
	Nummus	? Copy as CK, 280	1
	Nummus	uncertain	1
			55
AD 378–388			
Lyons	Nummus	CK 378	1
			1

Date/emperor/ issuer/mint	Denomination	Reference/ description	No
AD 388–402			
Arles	Nummus	As CK 562	1
Rome	Nummus	As CK,796	1
Unknown	Nummus	As CK, 162	1
	Nummus	? Copy as CK, 796	3
			6
Illegible			
	As/Dupondius	C1	3
	Sestertius	C1–C2	2
	Dupondius	C1–C2	1
	As	C1–C2	2
	As/Dupondius	C1–C2	6
	Denarius	C1–C3	3
	Sestertius	C1–C3	6
	As	C1–C3	2
	As/Dupondius	C1–C3	39
	Uncertain	C1–C3	1
	Uncertain	C1–C4	2
	Denarius	early C3 empress	1
	Antoninianus/Nummus	C3–C4	38
	Nummus	AD 330–360	3
	Nummus	C4	51
			160
Post-medieval and modern	Denier	Carolingian/Anglo-Saxon	1
	Sceatta	Anglo-Saxon	2
	Penny	C13	1
	Penny	Edward I	3
	Farthing	Richard II	1
	Jeton	C15 Tournai	1
	Token	C18 uncertain	1
	Half penny	George III	1
	Penny	George III	1
	Farthing	George IV	1
	Farthing	Victoria	1
	Penny	Victoria	1
	Half Penny	Victoria	2
	Farthing	Edward VII	1
	Half Penny	Edward VII	2
	Half Penny	Elizabeth II	1
	Farthing	C18–C19	1
	Penny	C18–C19	1
	Half Penny	C18–C19	2
	Farthing	C19	1
	Half Penny	uncertain	1
	Unknown	uncertain	1
			28

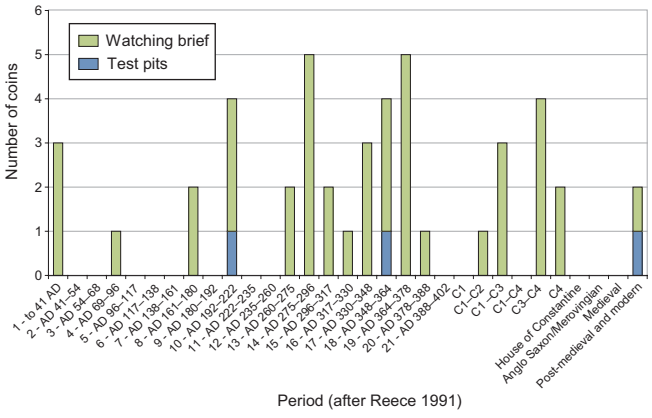


Figure 74 All coins from ARC 342E2 and ARC SAT02 by period

Coins from the Springhead Watching Brief, Test Pits, and the Springhead Walled Cemetery

by Nicholas Cooke

A further 47 coins were recovered during excavations, evaluations, and a watching brief elsewhere in the Springhead area. Most relate to the occupation of the Roman town, although two coins (a plated copy of a silver *antoninianus* of Gordian III and an illegible coin of the 3rd or 4th century, both found unstratified) were recovered from the Roman walled cemetery to the south-east of the town (ARC WCY02). The remaining 45 coins came from two adjacent areas within the Roman town, both to the south of the current line of the A2.

The works to the south of the A2 included a watching brief on the insertion of a sewer pipe and associated works (ARC 342E02) and a series of hand-dug test pits excavated to establish the depth of the archaeological horizons (ARC SAT02). A total of 42 coins was recovered from the former, with two coins and a post-medieval coin from the latter. Although this is not a large assemblage, it provides us with an opportunity to examine coin loss close to the centre of the town. Extensive excavations have previously been undertaken in this area by the Springhead Excavations Group, but the coin assemblages from these have yet to be published and material is not accessible for comparative study. In the light of this, this small group of coins assumes a greater importance than it might otherwise have done, even though, because of the nature of the works, the majority were recovered unstratified, and are less useful as dating tools.

Iron Age and Roman Coins

The coins recovered can be seen in Figure 74. Interestingly, in such a small assemblage, three were minted prior to the Roman Conquest. Two of these are late Iron Age copper alloy units, the one identifiable coin being a type well represented elsewhere at Springhead, whilst the third, a Republican *denarius*, struck in 119 BC, may have arrived in Britain either before or after the Conquest. The latter, in particular, is heavily worn although it is unlikely to have remained in circulation beyond the end of the 1st century AD because of its high silver content compared to the less pure issues of this period. The small numbers of coins in periods 4 and 8 are unremarkable, as these coincide with periods in which coinage was regularly supplied to Britain, but the presence of four *denarii* minted between AD 193 and 222 is slightly surprising. At this time, there appears to have been little or no supply of new bronze coinage to Britain, with the small change being used at the time comprising coins already in circulation. The presence, then, of silver *denarii* as the only coins

minted in this period is no surprise, rather it is the presence of four coins of this date in so small an assemblage that is worthy of comment. There is little else remarkable about the peaks of coin loss in the late 3rd or early 4th century coins, although it is unusual to have more period 18 coins from a site than period 17, which, combined with the peak of period 19 coins might indicate a *floruit* of coin use and loss in the second half of the 4th century. The absence of any period 21 coins need not be significant in so small an assemblage – indeed an interim report on previous excavations in the area comments on the presence of Theodosian coins in the coin assemblages recovered, indicating that there was activity in the town into the late 4th century, and probably into the early 5th.

Coins from Excavations at the Ebbsfleet River Crossing

by Nicholas Cooke

Eight coins were recovered from the excavations on the site of the Ebbsfleet River Crossing (ARC ERC01). All of these are small copper alloy issues of the late Roman period. Four are too badly corroded to be identified to period and can only be roughly dated to the late 3rd or 4th centuries on the basis of their size and form. Of the remaining four coins, two are radiate *antoniniani* of the late 3rd century. Both are probably irregular copies. The remaining two date to the late 4th century – a *nummus* of the House of Valentinian and one of the House of Theodosius. Although the coin assemblage from the site is small, the coins do provide useful dating evidence for the stratigraphic sequence excavated.

Coin Catalogue: Springhead walled cemetery, test pits and watching brief

Date range/ emperor or mint	Denomination	Reference/ description	No
ARC WCY02 Walled cemetery, Springhead			
AD 238–259			
Gordian III	Antoninianus	Copy as RIC IV (III), Gord III, 91	1
			1
Illegible			
	Antoninianus/ Nummus	C3–C4	1
			1
ARC SAT02 Test pits, Springhead			
AD 193–222			
Caracalla	Denarius	RIC IV, pt I, Cara, 280c	1
			1
AD 348–364			
Uncertain	Nummus	Copy as CK 25	1
			1
Post-medieval			
George III	Coin weight	Withers type 1975E	1
			1
ARC 342E02 Springhead watching brief			
Late Iron Age			
Dubnovellaunos (Kent)	AE unit	van Arsdell 166	1
Uncertain	AE unit	uncertain	1
			2
Republican			
Republic	Denarius	RRC, 281/1	1
			1
AD 69–96			
Vespasian	Dupondius	uncertain	1
			1
AD 161–180			
Marcus Aurelius	Sestertius	uncertain	1
	Dupondius	uncertain	1
			2
AD 193–222			
Caracalla	Denarius	RIC IV (I), Caracalla, 184	1
Julia Domna	Denarius	Mule/hybrid	1
Elagabalus	Denarius	RIC IV (II), Elagabalus, 88	1
			3
AD 260–275			
Postumus	Antoninianus	RIC V (II), Postumus, 64	1
Claudius II	Antoninianus	Uncertain	1
			2
AD 275–296			
Carausius	Antoninianus	RIC V (II), Carausius, 879	1
Uncertain	Irregular radiate copy	uncertain	4
			5
AD 296–317			
Trier	Nummus	RIC VI, Trier, 770	1
Arles	Nummus	RIC VII, Arles 80	1
			2
AD 317–330			
Trier	Nummus	RIV VII, Trier, 368	1
			1
AD 330–348			
Trier	Nummus	HK, 76	1
Arles	Nummus	HK, 414	1
Unknown	Nummus	As HK, 52	1
			3
AD 348–364			
Unknown	Nummus	?copy as CK 25	1
	Nummus	Copy as CK 47	2
			3
AD 364–378			
Arles	Nummus	As CK 477	1
Rome	Nummus	CK 712	1
Siscia	Nummus	As CK, 1301	1
Unknown	Nummus	As CK 82	2
			5
AD 378–388			
Lyons	Nummus	CK 370	1
			1
Illegible			
	As	C1	1
	Denarius	C1–C3	1
	As/Dupondius	C1–C3	2
	Antoninianus/ Nummus	C3–C4	4
	Nummus	C4	2
			10
Post-medieval			
	Uncertain	C19	1
			1

Coin Catalogue: Ebbsfleet River Crossing

Date rangel emperor or mint	*Denomination*	*Referencel description*	*No*
AD 275–296			
Uncertain	Irregular radiate copy ?	uncertain	2
			2
AD 364–378			
Siscia	Nummus	As CK, 1271	1
			1
AD 388–402			
Uncertain	Nummus	CK 162	1
			1
Illegible			
	Antoninianus/Nummus	C3–C4	4

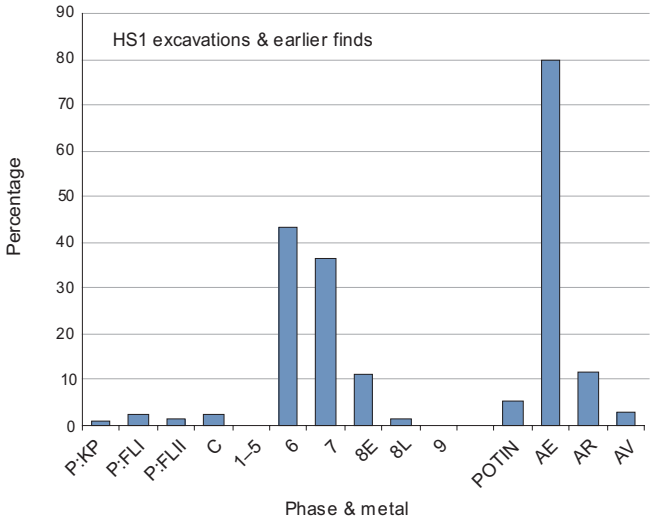


Figure 75 All Iron Age coins from Springhead by phase and metal

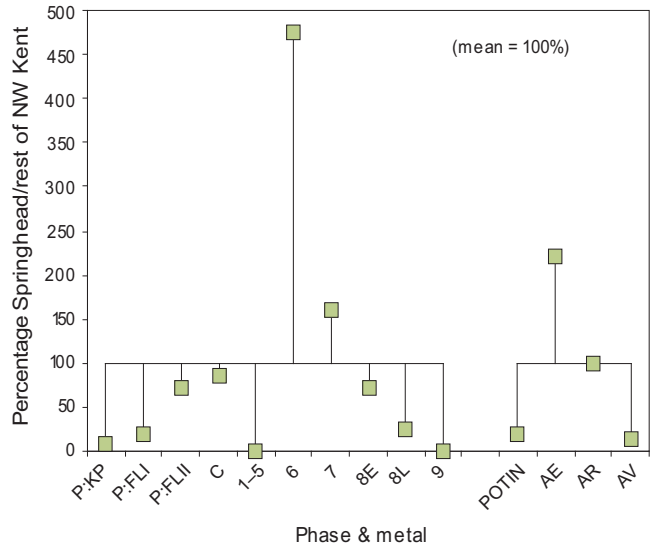


Figure 76 Springhead: Iron Age coin loss pattern against north-west Kent mean

Iron Age Coin Use and Loss at Springhead

by David Holman

A total of 108 British and Gaulish Iron Age coins and one Siculo-Punic coin were recovered from the various HS1 excavations at Springhead. This provides a welcome addition to the previously known site assemblage of just 19 coins and allows a more complete picture to be gained of coin deposition at the site in the late Iron Age (Fig 75). An interim report on the Iron Age coins from the site was published in 2005 (Holman 2005b, 277–9) but continuing excavations subsequently produced many more coins including a significant number around the spring itself, and some necessary modifications are included in this report.

Comparing Springhead with the surrounding area shows how the site fits into a regional context (Holman 2000; 2005a). (Fig 76) There are some significant differences in the coin distribution at Springhead compared with the remainder of the area between the Rivers Medway and Darent to the north of the North Downs escarpment. The first thing which is immediately apparent is that the proportion of potins and (early) gold coins at Springhead is much lower than elsewhere in the area and the struck bronzes are significantly higher, clearly demonstrating the relatively late foundation of Springhead, struck bronzes being later in date than potins. The few potins from Springhead are likely to have been old coins which had remained in circulation until the later 1st century BC or even later. Silver and, especially, gold coins are both more common finds away from the site. The north Kent coast has previously been noted as an area with a higher concentration of gold than elsewhere in the county (Holman 2000, 224). Phase 6 coins at Springhead are significantly better represented than in the surrounding area, as to a lesser extent are those of phase 7, even though that area is generally relatively well furnished with coins of the latter phase in particular. Phase 8.1 at Springhead compares well with its surroundings and the proportion of Gaulish coins from Springhead is much as expected for north-west Kent, ie, significantly lower than for several sites in east Kent. The Iron Age coins from Springhead are very heavily biased towards Kentish issues and types thought to have been produced elsewhere for use primarily in Kent (82%), with other British types accounting for 15% and Gaulish imports only 3%. There is thus no evidence at all that Springhead had direct links with Gaul, quite unlike Hayling Island, where imports are very numerous.

The percentage of plated coins at Springhead is notable, with 50% of the gold and 46% of the silver coins being plated. This is very similar to the Hayling Island temple site; indeed the proportion of plated silver is the same at both sites (Briggs *et al* 1992, 44). The much smaller size of the sample at Springhead – two gold and 13 silver coins – compared with Hayling Island which produced well in excess of 100 plated coins, should initially raise some caution as to the validity of the comparison. However, it is surely significant that the

ratio of plated coins to genuine precious-metal coins at Springhead is significantly higher than anywhere else in the surrounding area, suggesting that plated coins were indeed being deliberately deposited there, almost certainly as votive offerings, and the high proportion of plated coins from the site is probably real. The possibility of the precious-metal coins being removed at some point after their deposition has been discussed elsewhere in relation to Harlow (Fitzpatrick 1985, 57) and Hayling Island (Briggs *et al* 1992, 44–5); certainly this would provide a grossly distorted picture of coin deposition and Hayling Island has been shown to bear little comparison with other temple sites in southern England. Returning to the relative size of the samples, the other disadvantage evident at Springhead is that it lies in a bronze-using area and has a heavily Kentish assemblage, whereas Hayling Island lies within an area where bronze coinage was not produced, thus meaning that silver coins were always liable to be more readily available at the latter site.

Another potential indicator of ritual activity is the well-established phenomenon of the deliberate defacement of coins (*ibid*, 2–3; de Jersey 2005, 85–113). There is very little evidence of this practice at Springhead, where the only Iron Age coin which appears to have been clearly defaced in any way is a Kentish Uninscribed bronze from an unassigned context on the Settlement site (SF 1301) which has a score mark across the reverse.

The problems in comparing Springhead with sites beyond the Kentish currency sphere mean that comparisons should preferably be sought within Kent itself. Comparisons with Hayling Island have been made above. A comparison between the Springhead coins and those from the Harlow temple site, where the types of coin deposited are very much later in emphasis and largely deposited after AD 43 (Fitzpatrick 1985; Haselgrove 2005, 418), reveals major chronological differences. Within Kent, the closest site to Springhead where ritual activity involving coin deposition appears to have taken place is Stoke Pond, another spring 20 km to the east (Holman 2005b, 275–7), but the Iron Age coins from here are exclusively gold quarter-staters. An increasing number of Iron Age coins has been recorded in recent years from the vicinity of Cliffe, 12 km to the north-east of Springhead but no excavations have been undertaken to ascertain the context of these coins and no site in the accepted sense can, at present, be identified. In numismatic terms, the closest parallel to Springhead in Kent can be found at Goodnestone, 11 km south-east of Canterbury (Holman 2005a, 21), from where 172 Iron Age and in excess of 1800 Roman coins have been recorded to date. Both sites have a very high proportion (>75%) of struck bronze with the majority being phase 6 and 7 issues. However, the nature and status of the Goodnestone site remains conjectural in the absence of any archaeological input other than a geophysical survey of part of the site which revealed a trackway with adjoining field or property boundaries. Whether or not a religious element was present at Goodnestone is currently unknown; if so, then it might have been only one facet of this large downland site. Another Kentish site on which ritual coin deposition fairly certainly occurred is Worth, on the east coast (Holman 2005a, 8; 2005b), but the site profile here is very different from that at Springhead, with earlier potin coinage dominating. Nonetheless, the most likely explanation for many, perhaps the majority of the Iron Age coins from Springhead is that they do indeed represent votive offerings, the very low annual loss rate notwithstanding.

Earlier excavations by the Springhead Excavations Group (finds dating back to the 19th century), and recent detector finds known to have certainly come from the site (from the southern side of the A2) add another 19 coins to the site corpus. Allowing for the much smaller sample, these are broadly similar to the coins from the recent excavations, both chronologically and in terms of metal type. A list of these coins is given here (*Table 45*).

A large number of coins (122 to date) has appeared in the numismatic market in recent years with a Springhead provenance. Fitzpatrick (1985, 54) has noted a similar feature with regard to coins provenanced to Harlow, where he considered that such coins attracted that provenance because Harlow was a known productive site. It is questionable whether all the coins concerned are from Springhead; indeed, some may even come from Essex (P de Jersey, pers comm). If they are from Springhead, then from exactly where is unknown as the HS1 site was metal-detected on an official basis during the excavations. Previous excavations at the site have attracted unwelcome attention (Philp 1994, 131), but not on the scale which would be needed to accumulate so many coins and not leave any indication that the site had been attacked. Chronologically, they are broadly similar to the excavation finds, although the proportions of coins of phases 6 and 7 are reversed and an early gold import element is also present which is otherwise notably absent. The proportions of Kentish, other British and Gaulish coins are very close to the figures for the excavated coins. The slightly higher proportion of very late Iron Age coins from the trade records is statistically insignificant.

Comparing the metal types shows rather greater variation, with struck bronze accounting for little more than 60%, and silver (25%) and gold (10%) being far more in evidence. The proportion of plated silver (7%) among the trade coins is far lower than among the excavation coins, although one-third of the gold coins are plated. It is entirely possible that the much higher proportion of gold and silver coins among the trade coins is simply explained by monetary considerations and that the finders also found struck bronzes which occasioned rather less excitement and/or proved to be beyond their ability to identify and were thus of less importance in their eyes, a trait which is also frequently evident in the writings of 18th and 19th century

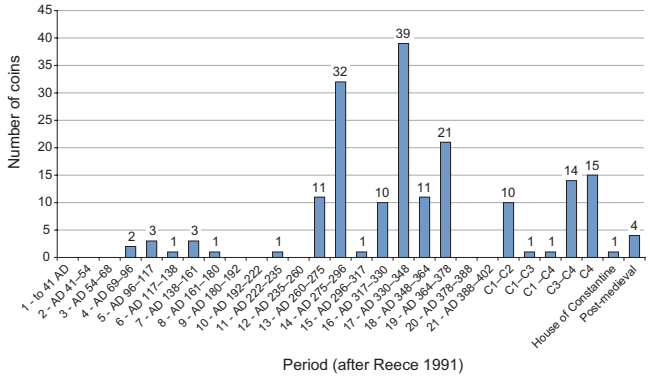


Figure 77 Coins from Northfleet villa by period

antiquaries. The chronological pattern and types included among the trade coins reflects Springhead better than the surrounding area, but the overall conclusion is that although an unknown number of the trade coins may well have come from the immediate vicinity of Springhead, sufficient question marks remain to justify removing all of these coins from the overall site corpus. However, a summary of the coins is provided here (*Table 45*) for the sake of completeness and to enable a comparison to be made with coins known to have certainly come from the site. For the purposes of the discussion about how Springhead compares with the surrounding area, the 'Springhead' trade coins have not been included.

Coins from Northfleet

by Nicholas Cooke

The excavations and watching brief on the site of the Roman villa at Northfleet (ARC EBB01) recovered 184 coins, the majority of which date to the Roman period. It is understood that an assemblage of coins was recovered from the site during the earlier excavations on the site undertaken by the Thameside Archaeological Group, but these have yet to be published and were not made available for comparative study.

The assemblage from the HS1 excavations largely dates to the Roman period (178 coins), with four coins dated to the post-medieval period. The majority of the coins recovered are small denomination copper alloy issues with only three silver coins (all *denarii*). In general, the condition of the coins is poor, with many worn or heavily worn, while a substantial number also bear areas of corrosion. This made identification of some coins difficult, resulting in 42 coins only being assigned general dates, largely on the basis of their size and weight and a further 136 coins dated to period alone (see Fig 77)

Roman Coins

The Roman coins date predominantly to the late 3rd and 4th centuries, although the earliest were minted in the reign of Vespasian (AD 69–79). The small assemblage of 1st and 2nd century coins suggests some activity and coin use in the 1st to mid-3rd centuries. Most of the bronze coins are worn and likely to have been in circulation for some time prior to their deposition. All are, however, likely to have been removed from circulation by AD 260. Neither of the two *denarii* (one of Trajan and a second of Julia Mamaea) is badly worn and they may have seen less circulation. The former is unlikely to have remained in circulation beyond the end of the 2nd century, as earlier *denarii* were increasingly being removed from circulation in the 2nd century and replaced by new *denarii* with a lower silver content.

There is a marked increase in the numbers of coins lost on the site in the late 3rd and 4th centuries (Fig 77). The first major peak of coin loss occurs in periods 13 and 14, coincident with the minting of the much debased 'silver' *antoniniani*. A very high proportion of these coins (38 out of 43, 88%) are irregular copies of official coinage. These probably functioned as small change and may have continued to do so after Diocletian's reformation of the coinage in AD 294, possibly as late as 330 (Reece 2002, 56). All five of the official issues found were minted by British Emperors – Carausius and Allectus.

The official issues of the successive periods (periods 15: AD 294–317 and 16: AD 317–330) are found in smaller quantities. Initially issued as a 25 *denarius* piece, these usually only occur in small numbers as site finds. By the 330s these appear to have become debased and the official issues are smaller and more common. They too, were heavily copied, possibly as a response to the closure of the mints of the western empire in 341 (Reece 2002, 57). Once again, there is a peak of coin loss in this period, indicating continued coin use on the site. The drop in numbers of coins minted between 348 and 364 (after another reform revalued the coinage) is mirrored elsewhere on British sites. Once again, copying is in evidence (with the 'Fallen Horseman' issues common). The latest Roman coins from the site are issues of the House of Valentinian, minted 364–78. This period probably marks the last point at which coinage was commonly in use on the site. This is supported by the absence of any coins of periods 20 and 21. Although coins of period 20 are not common as site finds the absence of any of the coin issues dated between 388 and 402 is slightly surprising given the presence of very late Roman pottery on the site. Although there is clear evidence for continued activity at the end of the 4th century, this is not reflected in coin losses.

Many of the Roman coins were recovered in later contexts, with substantial quantities (59 in all) recovered from Saxon features and deposits and, in particular, from both alluvial and colluvial deposits. Two worn Constantinian coins of the 330s and 340s were recovered from the fills of a Saxon sunken-featured building (layers 15001 and 15002), whilst a worn radiate *antoninianus* was recovered from the fill of a second (layer 30085). It is not clear whether these represent

Coin Catalogue: Northfleet

Date range/ emperor or mint	Denomination	Reference/ description	No
AD 69–96			
Vespasian	As	RIC II, Vesp, 761	1
	As/Dupondius	uncertain	1
			2
AD 96–117			
Trajan	Denarius	RIC II, Traj, 49	1
	Sestertius	uncertain	1
	Dupondius	RIC II, Traj, 563	1
			3
AD 117–138			
Hadrian	Sestertius	uncertain	1
			1
AD 138–161			
Antoninus Pius	Sestertius	uncertain	1
Faustina I	Dupondius	uncertain	1
	As/Dupondius	uncertain	1
			3
AD 161–180			
Marcus Aurelius	Sestertius	uncertain	1
			1
AD 222–238			
Julia Mamaea	Denarius	As RIC IV, S Alexander, 335	1
			1
AD 260–275			
Claudius II	Irregular radiate copy	uncertain	5
Tetricus I	Irregular radiate copy	uncertain	6
			11
AD 275–296			
Carausius	Antoninianus	As RIC V(II), Carausius, 979	1
		As RIC V(II), Carausius, 98	1
		RIC V(II), Carausius, 98	1
		RIC V(II), Carausius, 92	1
Allectus	Quinarius	RIC V(II), Allectus, 55	1
Uncertain	Irregular radiate copy	uncertain	27
			32
AD 296–317			
London	Nummus	RIC VII, Lon, 91	1
			1
AD 317–330			
London	Nummus	RIC VII, Lon, 130	1
	Nummus	RIC VII, Lon, 156	1
	Nummus	RIC VII, Lon, 287	1
Trier	Nummus	RIC VII, Trier, 226	1
	Nummus	RIC VII, Trier, 258	1
	Nummus	RIC VII, Trier, 435	1
Uncertain	Nummus	Copy as RIC VII, Trier, 223	1
	Nummus	As RIC VII, Rome, 225	1
	Nummus	As HK 21	1
	Nummus	As HK 27	1
			10

Date range/ emperor or mint	Denomination	Reference/ description	No
AD 330–348			
Trier	Nummus	HK 50	1
	Nummus	HK51	1
	Nummus	HK 55	1
	Nummus	HK 138	1
Arles	Nummus	HK 352	1
Lyons	Nummus	HK 191	1
Uncertain	Nummus	As HK 48	3
	Nummus	As HK 52	2
	Nummus	As HK 78	1
	Nummus	As HK 87	1
	Nummus	As HK 113	1
	Nummus	As HK 124	1
	Nummus	As HK 137	3
	Nummus	? copy as HK 48	2
	Nummus	? copy as HK 51	5
	Nummus	? copy as HK 87	2
	Nummus	? copy as HK 90	1
	Nummus	? copy as HK 130	1
	Nummus	? copy as HK 137	3
	Nummus	? copy as HK 156	1
	Nummus	? copy as HK 791	1
	Nummus	Copy as HK 52	1
	Nummus	Copy as HK 87	1
	Nummus	Copy as HK 137	1
	Nummus	Copy as HK 181	1
	Nummus	Copy as HK 184	1
			38
AD 348–364			
Lyons	Nummus	CK 178	1
Uncertain	Nummus	As CK49	1
	Nummus	As CK 77	1
	Nummus	As CK 138	1
	Nummus	As CK 644	1
	Nummus	Copy as CK 25	5
	Nummus	Copy of CK 72	1
			11
AD 364–378			
Aquilea	Nummus	CK 985	1
Arles	Nummus	As CK 501	1
	Nummus	As CK 503	1
	Nummus	As CK 512	1
	Nummus	As CK 517	1
Uncertain	Nummus	As CK 78	7
	Nummus	As CK 82	3
	Nummus	As CK 280	1
	Nummus	? copy as CK 78	1
	Nummus	? copy as CK 82	4
			21
Illegible			
	As/Dupondius	C1–C2	6
	Dupondius	C1–C2	1
	Sestertius	C1–C2	3
	Denarius	C1–C3	1
	Uncertain	C1–C4	1
	Antoninianus/ Nummus	C3–C4	14
	Nummus	AD 330 – 360	1
	Nummus	C4	15
			42
Post-medieval			
	Farthing	Charles I	1
	Half penny	George II	1
	Farthing	George IV	1
	Uncertain	Illegible	1

Figure 78 Coins from Northfleet villa: deviation from the national mean for villas by period

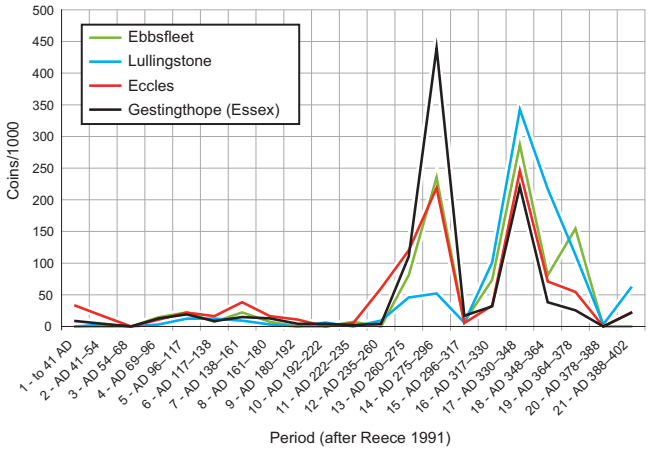


Figure 79 Coins from Northfleet villa compared to nearby villas by period

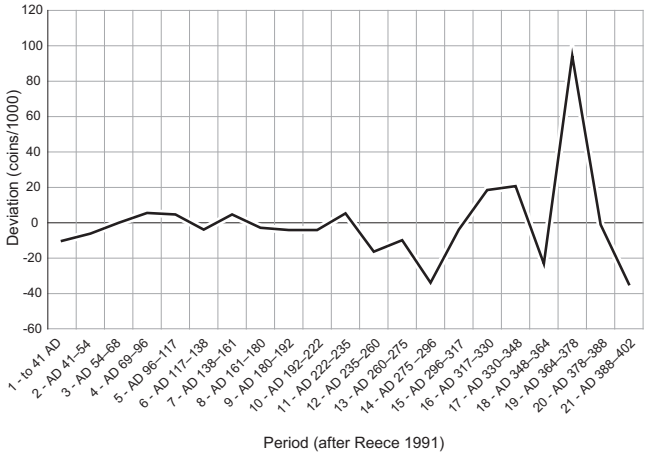


Figure 80 Coins from Northfleet villa compared to the mean for nearby villas by period

accidental inclusions in these deposits or whether these coins had been found and kept by the Saxons. None shows any signs of modification such as piercing for suspension and their significance is open to interpretation. Whether these coins held some meaning for the Saxons or not, it is clear that a substantial proportion of the Roman assemblage of coins from the site are not *in situ*, and as such, have limited usefulness as dating tools.

Despite this, and in the absence of information regarding the coin assemblage recovered from the earlier excavations, it is possible to draw some comparisons with coin assemblages from similar sites, both locally and nationally. Thanks to work undertaken by Richard Reece (1991) we can compare the pattern of coin loss at Northfleet to a national mean for coins found on villa sites (Fig 78) and there are a number of areas of significant deviation from periods 13 and 14 onwards. Here, the former is significantly lower than the mean while the latter is significantly above this. We need to be careful here, however, as this may represent methodological differences in the way that radiate copies are recorded on different sites rather than a genuine difference. On balance it seems most likely that these differences represent the former and that overall the proportion of radiates is closer to the national mean. There are a number of interesting areas in the 4th century where the pattern of coin loss deviates from the national mean. Particularly interesting are the patterns for periods 17 and 19. In both these periods, coin supply was plentiful and coins were lost in great quantities. Because of this, deviations from the mean are likely to be more reliable than in other periods where the proportions can be changed significantly by small numbers of coins. Here however, there is a clear suggestion that the proportion of period 19 (Valentinianic) coins is higher than the national mean, whilst the period 17 (Constantinian) coins are slightly lower. The Valentinianic coins are also the latest coins recovered from the site.

Having established that there are differences from the national mean, it is worth comparing the proportion of coins lost on the Northfleet villa with those from nearby villas (in this case Lullingstone (Meates 1987), Eccles (Detsicas 1989), and Gestingthorpe (Draper 1985)) in order to establish whether there is a more localised pattern of coin use and loss. The comparative proportions of coin loss can be seen in Figure 79. The patterns for the Northfleet villa appear to fit better with those for the local villas. The only area in which there appears to be a significant deviation from the other sites is with the increased peak of coins lost in period 19, which appears to go against the apparent trend in the other three sites examined. This is borne out when the pattern of coin loss from Northfleet is compared to the mean of the other three sites (Fig 80). By and large there is very little deviation from the mean apart from the coins of period 19. This strongly suggests that the peak of coin loss in this period may be related to the specific history of the site

Conclusions

Study of the coin assemblage from the Northfleet villa indicates that coinage was in regular use on the site in the 3rd and 4th centuries, and that coin use on the site may have started as early as the late 1st century AD. Comparisons with patterns of coin loss on villa sites at both a national and local level have established that the Northfleet villa has a number of significant differences from the national mean but is very consistent with a more localised pattern of coin loss for villas. Indeed, the only significant deviation from a localised mean appears to be the increased coin loss of coins struck in the Valentinianic period, which also represent the latest coins recovered from the site, although pottery recovered from the site clearly indicates later occupation.

Chapter 3
Springhead Metalwork

by Jörn Schuster with contributions by Elina Brook, Jacqui Watson, and Martin Henig

This report describes all illustrated late Iron Age and Roman small finds from the excavations at Springhead (Saxon objects can be found in Vol 4, Chap 3), but an attempt has been made – as far as possible – also to mention those finds only described in the finds database. Where necessary, the latter are referred to by their original object/small find number (SF …), which allows them to be found in the database available online at http://owarch.co.uk/hs1/springhead-northfleet/. Apart from basic descriptions and all measurements for both catalogued and non-catalogued finds, this database also contains digital photos of most non-ferrous metal objects. Grave finds are only referred to by their small find number, and these are also used on the grave plans. Most metal objects were x-radiographed and conservation was carried out on selected objects by Wiltshire Conservation Service, Salisbury (now Chippenham).

If no material type is mentioned at the end of a catalogue description and no XRF-analysis was carried out, the material is assumed to be copper alloy. In cases where an XRF-analysis of an alleged copper alloy object returned an inconclusive result, the object's material is mentioned as copper alloy. The alloy names and the compositions they represent follow those established by Bayley and Butcher (2004, 4 table 5–6).

Table 46 gives an overview of the 2633 recorded metal small finds from the various Springhead sites, identified by the HS1 event codes. The figure of 2633 includes finds from all periods, eg, the 65 recorded metal small finds from the early/mid-Saxon cemetery on the eastern side of ARC SPH00, a small number of medieval and later objects (Catalogued in Vol 4, Chap 3) as well as one copper alloy stud from a late Bronze Age ditch. Additionally, *c* 3000 nails or nail fragments were recorded as bulk finds from the entire site. This large number of metal small finds is a result of the consistent use of metal-detectors during the excavation. Site 51742 was not part of the HS1 excavation contract but as it was located at Springhead nursery immediately adjacent to the ARC SHN02 site, it was conveniently integrated in this report; objects from site 51742 have negative small find numbers, eg SF -523, which is also how they can be found in the online database. All metal small finds in this report and in the database have been grouped according to functional categories following Crummy (1983, 5–6).

The following list gives an overview of the range of small find numbers used for the various Springhead sites:

51742	SFs -565 – -500;
ARC 342E02	SFs 50900–98;
ARC ERC01	SFs 52001–20;
ARC SHN02 (Settlement)	SFs 15001–999, 18000–999, 20000–552;
ARC SPH00 (Sanctuary)	SFs 2–1900, 1959, 6001–4, 9000–467
ARC WCY02	SFs 53001–5

A breakdown by functional category of all recorded metal small finds of the late Iron Age and Roman phases is shown in Table 47. Roman objects found residually in Saxon or later layers have not been included in this table (4 in Saxon, 2 in medieval, and 12 in modern layers), neither have objects of unknown date from such layers; however, the Roman objects have been considered in the typological discussions, and they are also included in the various distribution maps (Figs 82, 85, 86, 88, 90, 93, 96, 101–2, 104).

Table 46 Springhead metal finds: material type per site of recorded metal small finds

Material type	51724	ARC 342E02	ARC ERC01	ARC SHN02	ARC SPH00	ARC WCY02	Total
Copper alloy	15	14	5	597	773	1	1405
Iron	12	7	3	426	265	1	714
Lead alloy	6	16	1	337	126	1	487
Silver	1			4	15		20
Gold				1	3		4
Other metal				3			3
Total	34	37	9	1368	1182	3	2633

Table 47 Springhead metal finds: recorded small finds of late Iron Age and Roman phases by functional category

Function Group	Total
Personal	491
Toilet/Medical	56
Textile	18
Household	64
Metrology	41
Script	18
Transport	25
Construction	3
Tools	70
Fittings	582
Agricultural	9
Militaria	33
Votive	11
Metalworking	268
Unknown	723
Total	2412

Personal Adornment or Dress

Brooches

The database contains 317 late Iron Age and Roman brooches or brooch-related entries like springs or pin fragments. This catalogue lists the 135 illustrated brooches but those only mentioned in the database have been referred to in the typological sequence. The catalogue loosely follows, where feasible, the sequence adapted for the Richborough assemblage by Bayley and Butcher (2004). The type numbers used there are an adaptation of Hull's typological sequence (*ibid*, 52 and appendix 2), which is also used in this study where possible, the type definition given as 'T00'. However, as it was not possible to check illustrations for all of Hull's types, other typologies are referred to as necessary, the most frequently used are those by Riha (1979; 1994), Feugère (1985), and Böhme (1972).

One-piece sprung brooches

Nauheim-derivative brooches T11

Flat bow

(Fig 81)

1. Incomplete, flat, narrow rectangular-sectioned bow, sharp angle at head, tapers to foot. Spring and pin missing. Large triangular catchplate. SF 1567, Context 3232, Intervention 3231 (Ditch), SG 300030 (Ditched enclosure). Late Iron Age.
2. Incomplete. Flat bow, central groove decoration. Foot and subtriangular catchplate bent upwards. Beginning of spring survives. SF 9175, Context 6447, Intervention 1001 (Spring), SG 300012 (Watercourse). Early Roman.
3. Incomplete. Flat bow, short longitudinal groove down centre, filled with punched transverse lines. Triangular catchplate. Pin missing. One spring coil remaining. SF 9360, Context 6682, Intervention 6682 (Artefact). Early Roman.
4. Complete. Flat bow decorated with wavy rocker line down length. Triangular catchplate. Four rectangular-sectioned spring coils. SF 1817, Context 6448, Intervention 6448 (Layer), SG 300271 (Post-holes). Early Roman.
5. Incomplete. Dotted decoration on flat bow runs in grooves down sides and in wavy line down centre. Rectangular to oval-sectioned pin. Four spring coils. SF 1527, Context 3391, Intervention 3391 (-).
6. Incomplete. Two fragments. Rectangular-sectioned flat bow, sharp angle at head, tapers to foot. Punched dotted wavy line decoration down bow, possibly grooves down edges. Triangular catchplate. Spring broken, pin missing. Two spring coils. SF 1815, Context 6447, Intervention 1001 (Spring), SG 300012 (Watercourse). Early Roman.
7. Complete. Flat bow, wavy dotted decoration down length, two grooves along edges. Small triangular catchplate. Bow similar to SF 1841. Four spring coils with internal chord. (Leaded) bronze. SF 1848, Context 6445, Intervention 1000 (Spring).

See also SFs 1504 (similar small catch plate at West Thurrock, *cf* Schuster 2009, fig 8, 19507), 1841, 18322 and possibly 673, 15713 and 15890 (parallels for SF 15713 eg, at Baldock (Stead 1986, 110 fig 41, 29) and Colchester (Crummy 1983, 7 fig 2, 6)).

Rod or wire bows

8. Complete. Sharp angle at head; straight, circular-sectioned bow tapers to foot. Two groups of transverse lines which continue around the back of the bow: upper set at midpoint of bow has five lines, lower set just above foot has four lines. Triangular catchplate. Four rectangular-sectioned spring coils. (Leaded) brass. SF 15723, Context 12374, Intervention 12374 (Layer), SG 300326 (Layers), Property 2.
9. Incomplete, T 12. Slightly arched bow without reverse curve, continues into foot without break. Outer edge of catch-plate with notch above pin rest. Iron. SF 15964, Context 16776, Intervention 16776 (-). Watling Street. Early Roman.

See also SF 666.

Variants

10. Incomplete. Narrow rectangular-sectioned bow, parallel sided. Sharp bend between bow and foot which continued at right angles. Lower part of foot, catchplate and pin missing. Four spring coils with internal chord. Copper alloy. SF 15725, Context 12374, Intervention 12374 (Layer), SG 300326 (Layers), Property 2.

See also SF 668. This is possibly the fragment of a Nauheim- or Nauheim-derivative brooch; it is distinguished from the brooches discussed above by the flared head of the brooch which almost looks like the buds of little wings similar to the fragment of an iron Nauheim brooch from Vienne, France (Feugère 1985, pl 53, 758).

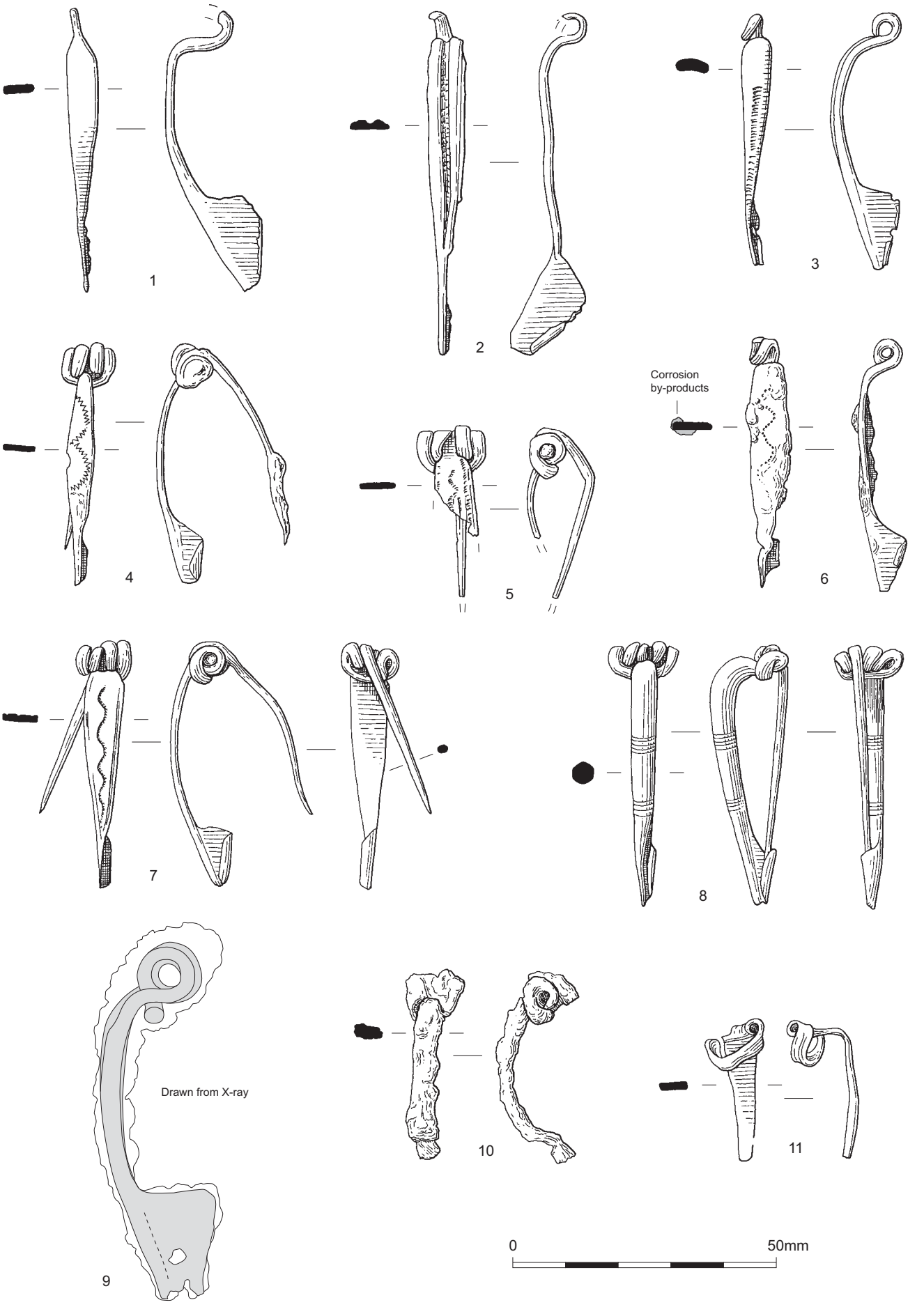


Figure 81 Springhead: copper alloy and iron brooches brooches 1–11

Hull distinguishes brooches with the reverse curve (T10) of the bow from those with a simple curve (T11). At Springhead only the latter type was found, although it might be that Cat No 2 originally had a reverse curve, but this can no longer be verfied as its foot is distorted. T11 can be sub-divided into variants depending on the treatment of the bow: 12 have a flat bow which can be plain (Cat No 1), decorated with a single longitudinal groove (Cat Nos 2 and 3) or with lateral lines filled with punched dots (SF 1504), lateral lines and a wavy line (Cat Nos 4–7, SF 1841) or punched dots (SF 18322) down the middle of the bow. While the flat bow variants are common on numerous sites in southern Britain (Bayley and Butcher 2004, 147; 192 fig 168), the wavy-line decoration – mainly consisting of punched dots but on Cat No 4 it is a rocker line – has few parallels and may be a regional variation: one is found in a period I context (50 BC–AD 40) at Harlow, Essex (Gobel 1985, 72 fig 39,1) and in that report two further examples are mentioned from the Darenth Valley in Kent and Fringinghoe in Essex (*ibid*, 75); the head of a fourth parallel was recently found at Horton, Berkshire (WA 2006a, 21; image at www.flickr.com/photos/wessexarchaeology/68984200/). It should be noted that the same ornament already occurs on Nauheim brooches of Feugère's types 5a45–49 which are mainly found in the south of France near the mouth of the Rhône and a few further upstream (Feugère 1985, 219 fig 15), but also on the northern fringes of the Keltiké, eg, in the *oppidum* on the Dünsberg, Germany (Schlott 1999, 15, Taf 1, 9.11). The sharp angle between bow and foot of the variant Cat No 10 has parallels at Colchester (Hawkes and Hull 1947, pl 92, 64), Neuss, Germany (Simpson 2000, pl 5, 5), and some Almgren 16-brooches eg, at 'De Hoorden' near Wijk bij Duurstede, Netherlands (van der Roest 1988, Taf 7, 182.194–5.199) or Maurik, Netherlands (Haalebos 1986, 93 fig 43, 129.134.136), but, unlike at Springhead, in most of those instances the flat bow is more swollen and has a line of punched dots in the middle.

Only three brooches have a rod or wire bow and one of these, Cat No 9, is the only iron brooch found in a Roman context at Springhead. Of the two copper alloy brooches, Cat No 8 has a straight decorated bow with two groups of transverse lines while SF 666 has a plain, slightly arched bow with a short groove on the inside.

Nauheim-derivatives do already occur in early 1st century AD contexts in Britain, eg, at Skeleton Green (Mackreth 1981, 131) or *Verulamium*, King Harry Lane Site (KHL) graves 270 and 317 (Stead and Rigby 1989, 89); they become more common after the Conquest. At Colchester those with a flat bow are found in Claudian to Neronian contexts (Hawkes and Hull 1947, 312), and at Baldock a distinction between flat- and the simpler

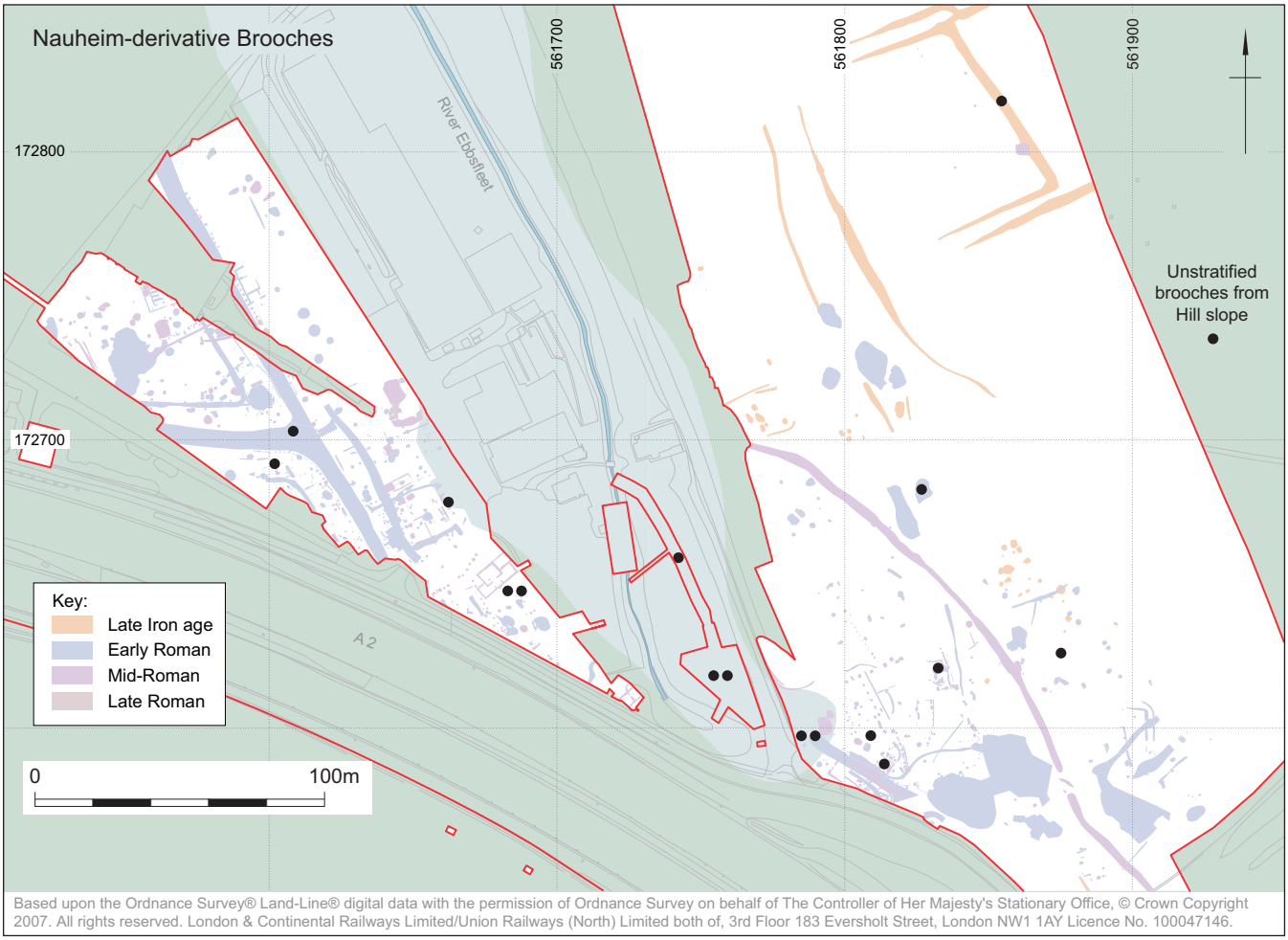


Figure 82 Springhead: distribution of Nauheim-derivative brooches

'poor man's' variants showed that the former were predominantly pre-Flavian while the latter continued to the end of the 1st century (Stead 1986, 123–4 fig 51), a distinction which cannot be demonstrated in the Springhead assemblage. While most of the Nauheim-derivatives at Springhead (Fig 82) are probably post-Conquest, found in context with pottery dates ranging between AD 50 and 160, a number may be slightly earlier, including SF 666 which was found in the base of Viewing platform 2 and Cat No 1 from the enclosure ditch 300030.

One-piece sprung brooch with sharp angle at head of bow
(Fig 81)

11. Incomplete. Part of rectangular-sectioned, sharply bent bow and spring only. Two spring coils. Leaded brass. SF 18321, Context 17425, Intervention 17425 (-).

The sharp angle of the bend of the head makes this an unusual brooch which may have had a simple spring construction of originally probably only three coils. The latter, if true, would link it to a group of probably post-Conquest Nauheim-derivatives in south-east England (Mackreth 1995, 968–70, fig 406, 54–61). In fact, Mackreth's no 54 exhibits a similar sharp angle at the head of the bow which is rectangular, not flat like Cat No 11. The closest parallel so far seems to be a brooch from Augst, Switzerland, where it was found in a context dated to the 1st half of the 1st century AD (Riha 1994, 61–2; Taf 4,1933; Riha type 1.12). It should be noted that Riha assumes this brooch to have four spring coils, but the spring is incomplete.

One-piece sprung brooches with chord held by hook

Feugère type 9b
(Fig 83)

12. Incomplete. Spring of eight spring coils intact, axial rod visible, chord held by small rectangular hook. Pin broken. Neck of bow extended slightly but no wings as such. Flat bow, single ridge decoration down entire length, tapers slightly towards foot. Perforated catchplate, partly broken. (Leaded) brass. SF 1505, Context 3390, Intervention 3390 (Layer).

This brooch is of similar construction as the 'Simple Gallic' and the Colchester brooch but with a very flat bow typical of Feugère's type 9b which is clearly distinguished from the former because of the more strongly developed wings in type 14a (Feugère 1985, 242). In Gaul at least, both types also seem to have clearly distinct distributions: type 9b in the Languedoc region (*ibid*, fig 22), while 14a occurs further north and east, in Switzerland and along the Rhine where it is found, for instance, at Hofheim (Ritterling 1905; type Hofheim Ic) or Asciburgium (Bechert 1973, Taf, 23–6, but also including two Feugère type 9b in 23, 208 and 26, 234). Stead (1986, 111 fig 42, 52) has related a very similar brooch from Baldock to some Hawkes and Hull (1947) type III brooches from Colchester which are more clearly the typical 'Simple Gallic' brooch T89, Feugère type 14a or Riha 2.2. Feugère's type 9b ranges between the end of the 1st century BC and the middle of the 1st century AD (Feugère 1985, 241); the Baldock brooch belongs early in the 1st century AD (Stead 1986, 123–4).

Simple Gallic brooches T89

13. Incomplete. Half of spring remains. Bow undecorated, diamond-shaped section, tapers slightly towards round foot end. Chord is broken, held by triangular hook. Triangular catchplate with subrectangular hole. Four spring coils. Brass. SF 323, Context 2221, Intervention 2221 (Artefact).
14. Incomplete. Small wings with two transverse grooves. Narrow rectangular-sectioned bow, tapers slightly towards foot. Part of perforated catchplate remains. Pin broken. Six spring coils. SF 389, Context 2230, Intervention 2227 (Pit), SG 300073 (Pits). Early Roman.

See also SFs 1288, 1529 and 9345.

Cat No 13 clearly has a reverse curve of the foot; however, the diamond-shaped section of the bow is less often found in these brooches, but a good parallel exists at the Titelberg, Luxemburg (Metzler 1995, 299 Abb 149, 2) and others with slightly less profiled sections are known, for instance from Baldock (Stead 1986, 111 fig 42, 54), Neuss, Germany (Simpson 2000, pl 2, 17), or a Hofheim Ic brooch from *Asciburgium*, Germany (Bechert 1973, Taf 24, 214). It is a feature similar to that found in Almgren 19a brooches with a steeper neck which are widely distributed in both the German provinces as well as outside the *limes* (Haalebos 1986, 32 fig 11; Völling 1994, Beilage 7; 1998, 45 Abb 2).

SF 1529 shares the very pronounced reverse curve of the foot but is slightly unusual in the treatment of the head above the wings in that this is formed like a rectangular block, a feature also present but less marked in Cat No 14. The very pronounced reverse curves of Cat No 13 and SF 1529 suggests a Continental origin, while SFs 9345 and 1288, with completely straight bows, and Cat No 14, with a gentle convex arch of the rectangular bow and profiled wings, lead on to the Colchester brooch which is the British variation of the type (Bayley and Butcher 2004, 148–9). At *Verulamium*, KHL, Simple Gallic brooches (Type Bb), mostly with straight or even slightly arched bows were found in graves of phases 1 and 2, covering the period from the beginning of the 1st century AD to *c* AD 55 (Stead in Stead and Rigby 1989, 89; but note the subsequent shift in the dating of all cemetery phases *c* 10–20 years earlier, summarised, for instance, in Haselgrove and Millett 1997, 291–2). Unfortunately, most of the brooches of this type from Springhead are metal-detector finds from the sub-soil, but SF 1288 was found in pit 3363 within Late Iron Age enclosure 300037, while Cat No 14 lay in early Roman pit 2227 north of the portico structure.

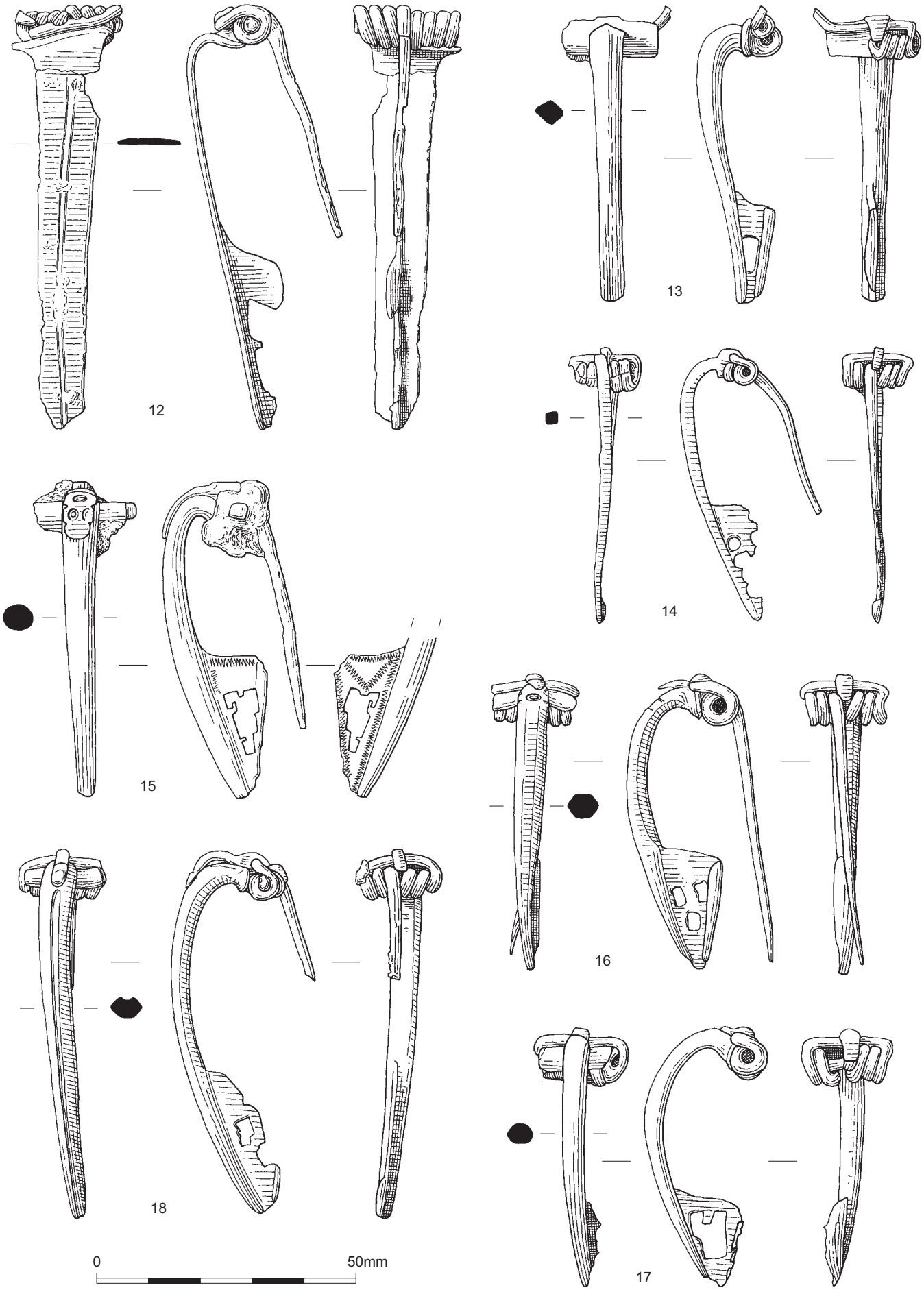


Figure 83 Springhead: copper alloy brooches 12–18

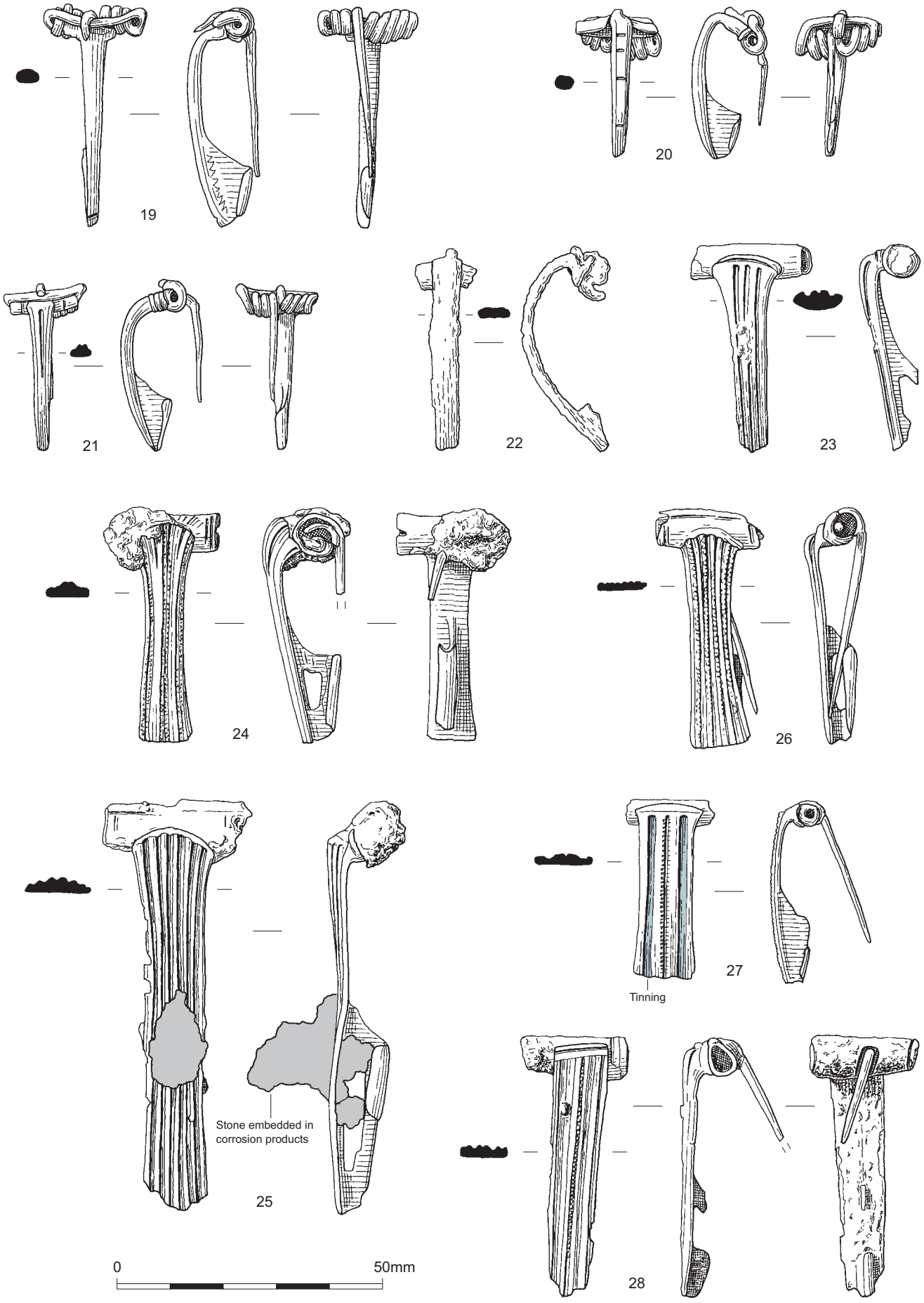


Figure 84 Springhead: copper alloy brooches 19–28

Colchester brooches T90–91

With plain bow and multiple perforated catchplate (usually three triangular holes)

15. Complete. Long hook at head with flat broad end decorated with three ring-and-dot stamps. Oval-sectioned bow. Open catchplate with zigzag decoration along inner edge and below foot. Iron corrosion around head, probably from axis bar. Brass. SF 1506, Context 3447, Intervention 3446 (Pit), SG 300243 (Pits).
16. Complete. Hexagonal-sectioned bow. Long hook, slightly tapering towards its straight end, above the hook is a punched double concentric circle with double transverse notches either side. Remainder of bow plain, tapers slightly to foot. Large triple perforated triangular catchplate. Six spring coils. Brass. SF 15741, Context 0, Intervention 0.
17. Incomplete. Plain wings. D-shape sectioned bow with pronounced arch. Catchplate originally with triangular and large trapezoidal perforation. Five spring coils. Brass. SF 1608, Context 3722, Intervention 3720 (Ditch), SG 300045 (Trackway). Early Roman.

See also SFs 361, 909, 1235, 1477, 1665, 9372, 18015 and 18339, the latter, which is badly distorted, could well belong to the preceding type.

With single groove on bow

18. Incomplete. Long hook gets thinner after chord, rounded end with circular punch decoration. Sharp angle at head, hexagonal-sectioned bow, tapers slightly to foot. Broad central groove down length, on reverse of upper part of bow Two parallel grooves faintly visible. Perforated catchplate, half missing. SF 18335, Context 17439, Intervention 17439 (Layer), SG 300599 (Layers), Property 3. Mid-Roman.

See also SFs 9342 and 18744.

Small Colchester brooches (41 mm and shorter)

(Fig 84)

19. Almost complete. Short side wings cover only half of spring on left, broken after second inner coil on right. Sharp angle at head of bow; chord hook reaches up as high as this bend. Oval-sectioned bow, tapers slightly to foot. Transverse groove visible at foot end, zigzag decoration along junction of catchplate and bow. Catchplate is subrectangular, almost triangular. Tip of pin missing. Eight spring coils. Leaded brass. SF 20266, Context 16039, Intervention 16039 (Layer), SG 300485 (Layers), Property 10. Mid-Roman.
20. Complete. Two transverse grooves decorate both wings. D-shaped sectioned bow, tapers to foot. Triangular catchplate, punched decoration along junction to bow. Seven spring coils. Brass. SF 15213, Context 10664, Intervention 10664 (Layer), SG 300407 (Layers), Property 11.
21. Almost complete. Wings have stepped decoration. D-shaped sectioned bow, tapers slightly to foot, central rib down length with groove decoration from head to mid point of bow. Triangular catchplate. Tip of pin missing. Eight spring coils. (Leaded) brass. SF 907, Context 5414, Intervention 5414 (Layer), SG 300148 (Deposits). Early Roman.

See also SFs 253, 9152 and 18809.

Variant with flat bow

22. Incomplete. Hook, part of wings, and part of spring coil remain at head. Flat cross-sectioned bow, tapers slightly, tip of foot missing. Lower part of catchplate missing. Badly corroded. SF 437, Context 2230, Intervention 2227 (Pit), SG 300073 (Pits). Early Roman.

As mentioned above, the Colchester brooches are the British variation of the 'Simple Gallic' brooch based on the LaTène III-scheme. Colchester brooches are widely distributed in south-eastern Britain. They were made in Britain from around the birth of Christ and continued in use into the 2nd half of the 1st century (Bayley and Butcher 2004, 148–9). At *Verulamium*, KHL, they are found in graves of phases 1–3, spanning the 1st half of the century (Stead in Stead and Rigby 1989, 100–1; for the earlier dates of the KHL phases see Haselgrove and Millett 1997, 291), at Colchester the majority was found in post-Conquest but pre-Boudican contexts (Hawkes and Hull 1947, 309). On the basis of a comparison of earlier types and Colchester brooches from Colchester and Canterbury, Marlowe Car Park, Mackreth (1995, 957) discussed the possibility of a gap in the occupation of both sites, since, as he argues, none of the brooches of the main run of the type nor those with later traits, like developing flanges at the heads, needs to have been deposited before AD 40–5. At Springhead, brooches with earlier traits like a sharp angle at the head similar to type Ca at KHL include Cat No 15, SF 361, 909, 1477 with plain bows and Cat No 18 with a bow with single groove decoration. However, none of the larger Colchester brooches from Springhead has the decorated wings found in the typologically earlier types, all have the plain wings found in the typical Colchester brooch Type Cd at KHL and most of those found at Colchester; decorated wings are entirely confined to the smaller variant (Cat No 20–1, SF 253).

The flat, highly arched bow of Cat No 22 is unusual, but considering the relatively sharp bend behind the head and the small rectangular hook it is probably relatively early in the sequence. It was found to the north of the portico structure in pit 2227 which contained pottery ranging AD 50–160.

Of the seven Colchester brooches subjected to XRF-analysis it is interesting to note that all are made of brass apart from Cat Nos 19 and 21 – typologically among the latest Colchesters from the site leading on to the derivatives – which have been determined as leaded- and (leaded) brass respectively; this corresponds well with the results of Bayley's study (Bayley and Butcher 2004, 148–9 figs 110–1). A very corroded Colchester brooch (SF 553) was found in the fill of Saxon grave 2827, and it is thus likely to have been an accidental inclusion rather than a deliberate deposition of a curated object.

The Colchester brooches are distributed relatively evenly between the two sides of the settlement at Springhead (Fig 85).

Brooches with spring in cylindrical cover

Langton Down brooches T21

Broad, rounded head, edges of bow tapering in a gentle curve to foot

23. Incomplete. Spring cover complete, pin missing. Reeded bow quite narrow, tapers slightly to foot. Most of originally perforated catchplate missing. SF 943, Context 6035, Intervention 6035 (Layer), SG 300087 (Deposits). Early Roman.

See also SFs 163, 765 and 9344.

Broad, rounded head, edges of bow waisted in the middle, foot as wide as head

24. Incomplete. Bow has flat cross-section with beaded rib decoration down length. Spring cover has three incised grooves at edge and radial lines on front face (only visible on the right due to corrosion and mud on other side). Sub-rectangular catchplate with triangular opening. Pin broken Brass. SF 632.
25. Incomplete. Spring cover is complete, pin missing. Longitudinal ribs decorate bow which flares out very slightly towards foot. Large sub-rectangular perforated catchplate. Stone adheres to front of bow. SF 953, Context 400106, Spring.
26. Almost complete. Cylindrical spring cover with groove running along outer edge and sides, squashed and part of inner side missing. Rectangular-sectioned bow, flares slightly towards foot end, decorated with longitudinal grooves. Triangularly perforated sub-rectangular catchplate. (Leaded) brass. SF 20165, Context 19462, Intervention 19544 (Ditch), SG 300627 (Ditch), Roadside ditch 3. Early Roman.

Straight head with sharp angle, edges of bow waisted in the middle, foot as wide as head

27. Complete. Tips of cylindrical cover slightly damaged. Bow of rectangular shape flaring out slightly towards foot. Decoration of three longitudinal grooves, outer two contain greyish/brown coloured material (trace of white metal coating), central groove with beading/zigzag decoration on ridges either side. Sub-rectangular catchplate. Brass. SF 379, Context 2220, Intervention 2220 (Artefact).

Straight head with sharp angle to straight-sided bow

28. Incomplete. Flat-sectioned bow with reeded decoration, tapers slightly, small part of open catchplate

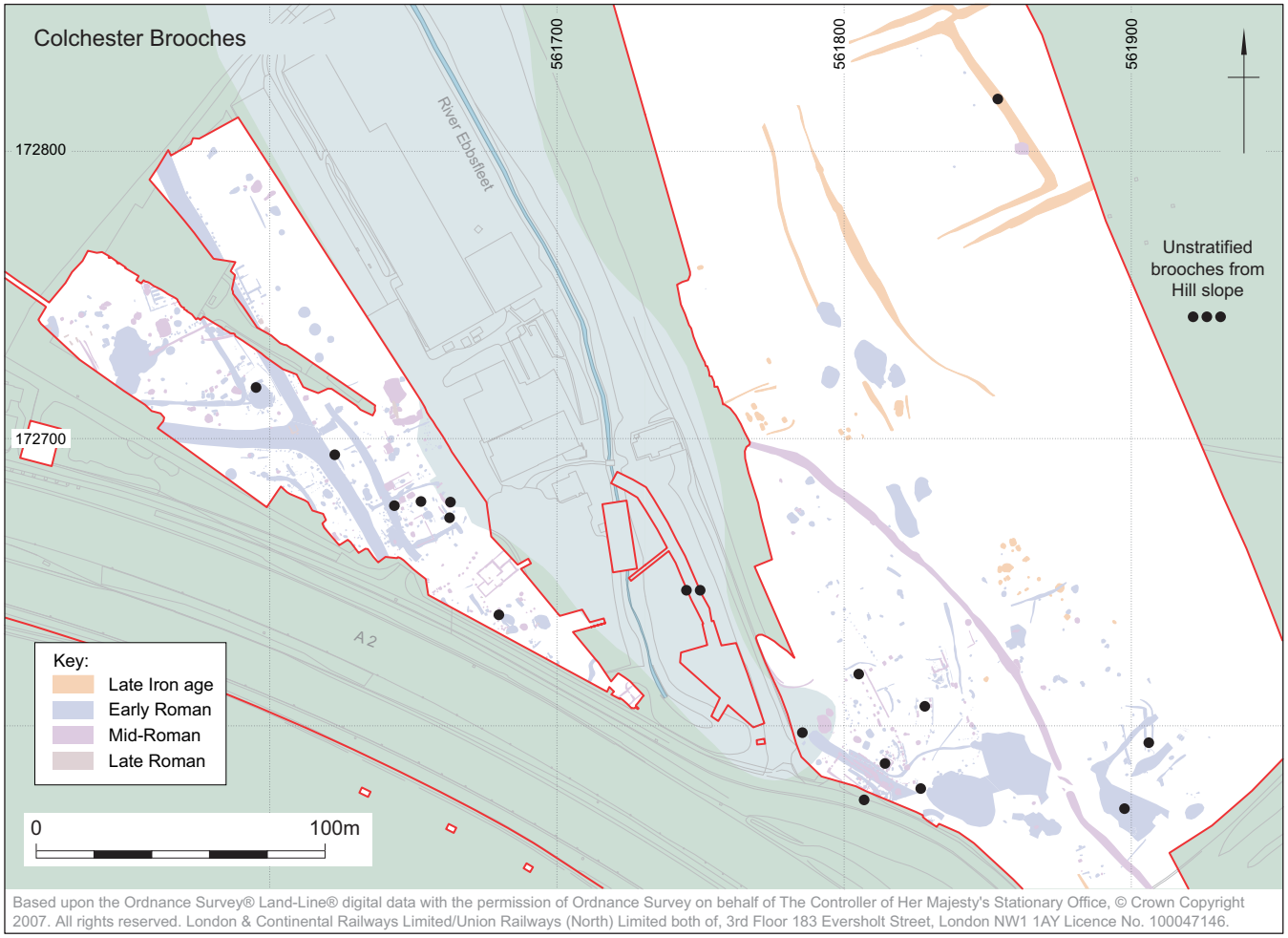


Figure 85 Springhead: distribution of Colchester brooches

remains, 19.5mm of pin remains. SF 168, Context 3996, Intervention 3223 (Ditch). SG 300030 (Ditched enclosure). Late Iron Age.

See also SFs 320 and 1819.

Fragments of Langton Down brooches, various variants: SFs 1530, 1789, 1807 (although this could also be the head of a rosette brooch like Cat No 32) and 18730.

The 15 Langton Down brooches found at Springhead can be sub-divided into four different variants depending on the shape of the head above the cylindrical spring cover. The development of the type is subsumed in Feugère's type 14 which includes Simple Gallic brooches (type 14a) whose wings eventually developed into the cylindrical cover found in the Langton Down and Nertomarus types (his types 14b1b and 14b2; Feugère 1985, 264–6).

Langton Down brooches are fairly widely distributed in Gaul, especially middle and eastern Gaul and western Switzerland, the Rhineland, and southern Britain (Feugère 1985, 265; Riha 1979, 98; 1994, 87; Bayley and Butcher 2004, 150). The type developed in the Augustan period and, on the basis of the Augst evidence (Riha 1979, 99; 1998, 88 table 103) Feugère (1985, 266) suggested that the type with rounded head and waisted bow (Riha type 4.4.1) is earlier than that with straight head and bow (Riha type 4.4.4), which starts in the late Augustan–Tiberian period. In Britain this suggested development from curved to straight is supported by the evidence from *Verulamium*, KHL (Stead in Stead and Rigby 1989, and less clearly so Colchester (Hawkes and Hull 1947, 318).

At Springhead, Langton Down brooches are more commonly found on the Sanctuary site (ARC SPH00), with only two from the Roadside settlement to the west of the Ebbsfleet (Fig 86).

Brooch with flat bow with twisted silver wire inlay
(Fig 87)

29. Incomplete. Spring in cylindrical cover, half missing. Straight flat-sectioned bow tapers slightly, decorated with one lateral longitudinal groove either side and a central groove with inlay of twisted wire. The wire consisted of two strands, one of which is probably silver, the other very corroded, powdery, light green residues of copper alloy. Catch plate missing apart from small ridge near middle of bow. Three spring coils. Brass. SF 393, Context 2342, Intervention 2342 (Layer). Early Roman.

A rather similar bow to that of Cat No 29 is found on a brooch with a simple four-coil spring with inner chord but without silver inlay from *Camulodunum* (Hawkes and Hull 1947, 318; pl 104, 85). While Hawkes' and Hull's

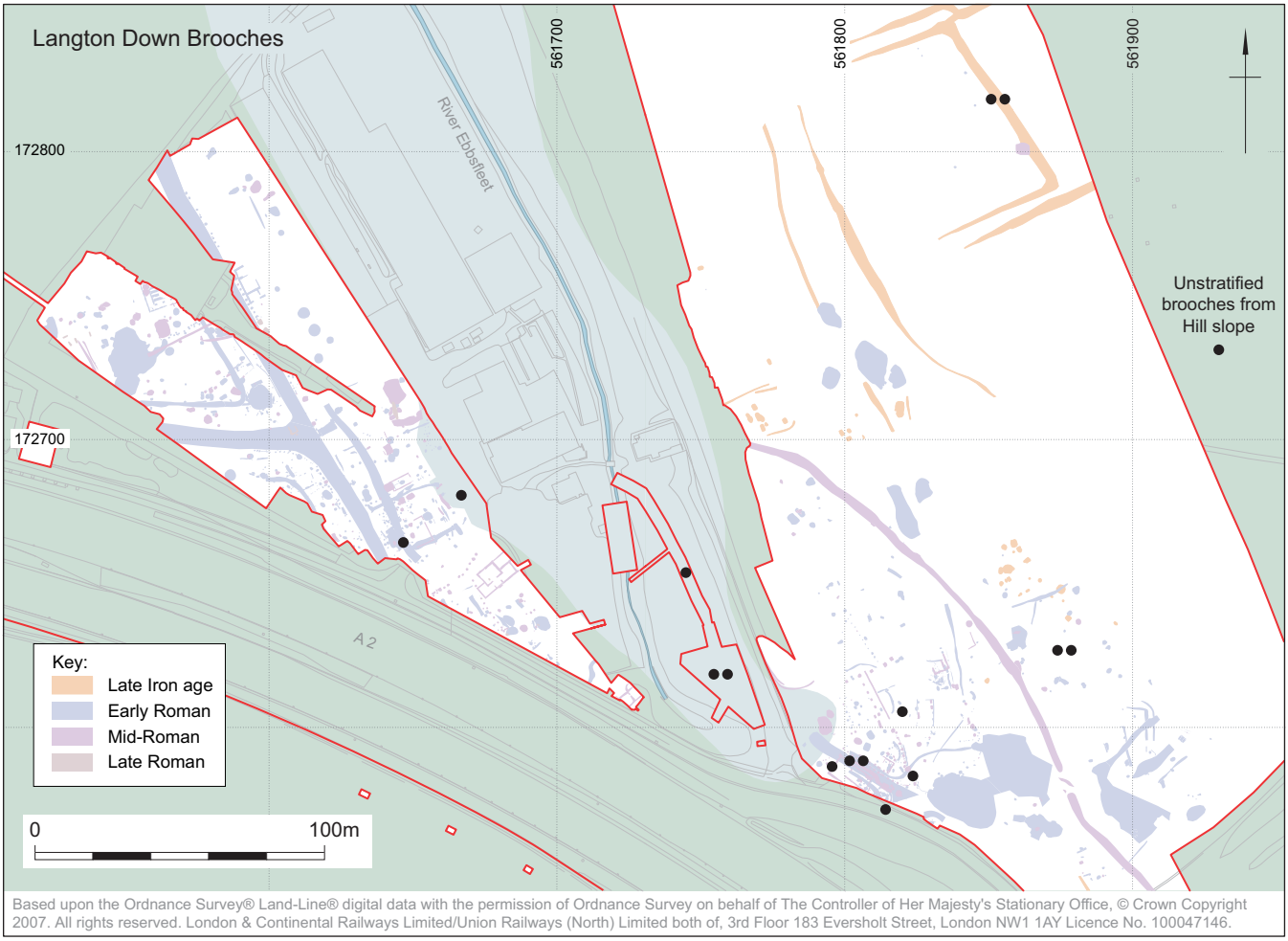


Figure 86 Springhead: distribution of Langton Down brooches

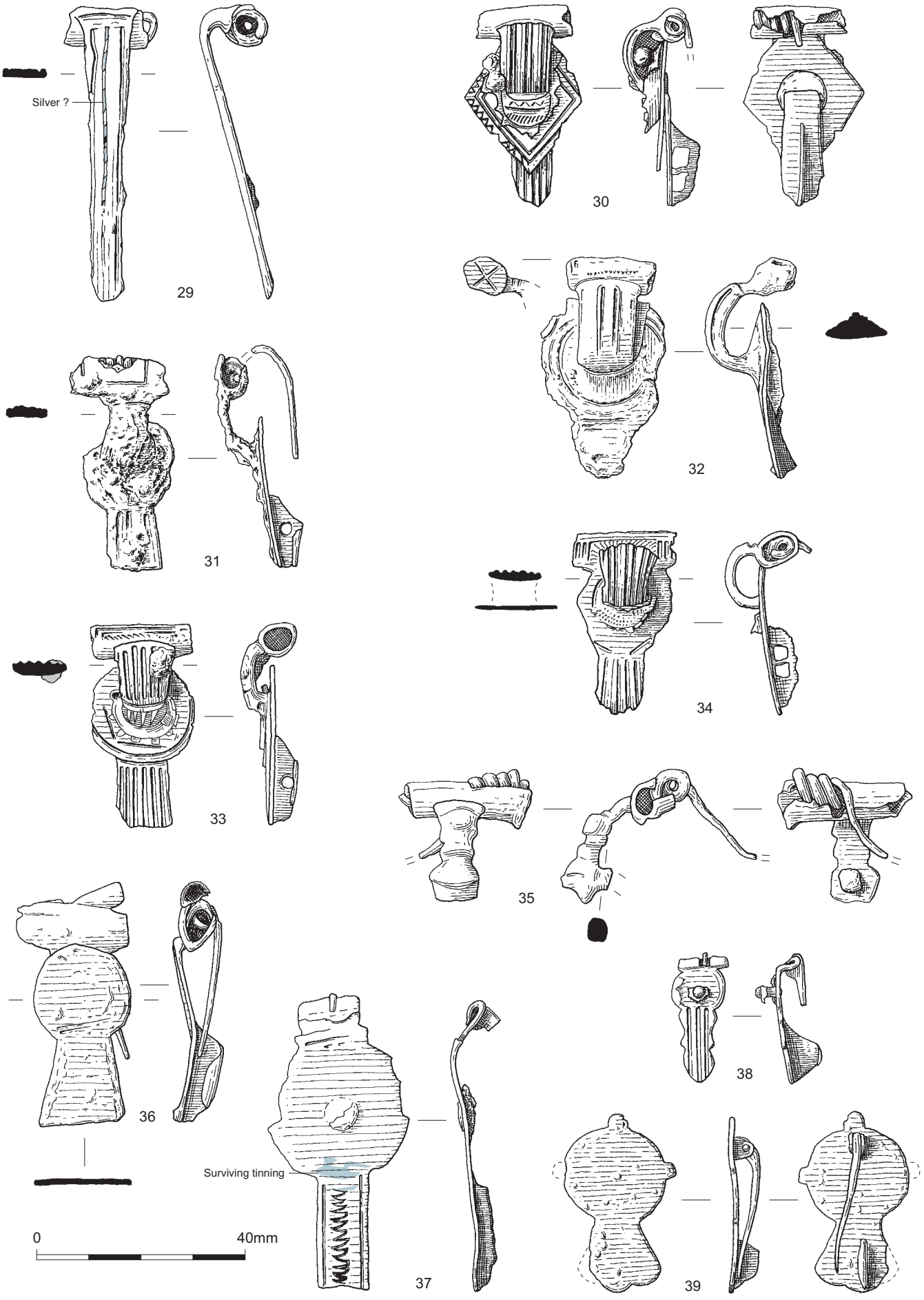


Figure 87 Springhead: copper alloy brooches 29–39

claim seems reasonable that the *Camulodunum* brooch represents a prototype for the Langton Down type, mainly because of the spring construction, the Springhead brooch is clearly a more developed example. A small number of Langton Down brooches from Augst with silver inlays (Riha types 4.4.5–6) are technically similar but both the shape of their bows, which tend to be straight or flared towards the foot, as well as the sharp angle at the head and the wider cylindrical covers suggest (Riha 1979, Taf 19, 522–4; 1994, Taf 14, 2131) that they are typologically slightly later than the Springhead brooch; however, this cannot be verified by the contexts they were found in which only date rather generally to the 1st two-thirds of the 1st century AD.

Brooches with a circular or rhomboid disc in the middle of the bow (rosette or thistle brooches)

Rosette brooch with separate disc T26A

30. *Feugère type 19d1*. Incomplete. Right side of spring remains, pin broken, lower right side of spring cover missing. Head decorated with longitudinal grooves. Central lozenge-shaped plate (higher zinc brass than body) with triple lines and punched triangle-and-dot border decoration has a small slot pointing towards the foot end (*cf* Stead and Rigby 1989, 333 fig 133, 3 or 337 fig 136, 3), originally used to facilitate fitting of plate onto the bow. This plate is held in place by another crown-like ring (the remains of the rosette/thistle plate) with triangular indentations on its upper edge outside the bow and a folded flange below the bow where it is held in place by an iron rod with small copper alloy terminals. A further lunate disc with small, radiating lines is set in the space between the bow and the crown-like ring. Foot worn but longitudinal grooves still visible. Sub-rectangular-shaped catchplate on reverse. Five spring coils. Brass. SF 1568, Context 3232, Intervention 3231 (Ditch), SG 300030 (Ditched enclosure). Early Roman.

Rosette brooches with disc cast in one with the bow T26B

31. *Feugère type 16a2*. Incomplete. Part of cylindrical cover missing, transverse groove visible along top. Longitudinal grooves visible beneath corrosion product on bow, part of central disc missing. On the back of the central disc two lines which continue the line of the foot. Sub-rectangular perforated catchplate. Part of pin retained separately. Seven spring coils. SF 9142, Context 6436, Intervention 6436 (Surface), SG 300083 (Deposits). Early Roman.
32. *Feugère type 16a2*. Incomplete. Spring in cylindrical, slightly box-like cover with closed sides, partly broken, sides have incised cross decoration. Longitudinal ribs decorate upper part of bow, large disc cast in one with the bow continues into damaged foot, concentric groove decoration just visible but preservation is poor. Fragments of small sub-rectangular catchplate. Striations visible on reverse of brooch, which continue the outline of the foot on the disc. Brass. SF 18693, Context 19026, Intervention 19026 (Other).
33. *Feugère type 19a2*. Incomplete. Spring cover decorated with double line border around angled grooves just above head. Longitudinal grooves on flat, profiled bow probably contain traces of tinning. Circular 'rosette' around junction of bow and foot. Foot flares out slightly, one corner slightly damaged. Spring missing. Catchplate with one round hole. SF 1541, Context 3391, Intervention 3391 (-).
34. *Feugère type 19d2*. Incomplete. Spring cover decorated with longitudinal and transverse incised lines. Flat bow, upper part circular with grooved arched crest at centre and a lozenge-shaped disc which is cast in one with the bow and the spring cover, flared foot with longitudinal grooved line decoration. Perforated catchplate, pin rest missing but probably right sided. On reverse two incised lines radiate from below head. Pin missing. Leaded brass. SF 169, Context 3996, Intervention 3223 (Ditch), SG 300030 (Ditched enclosure). Late Iron Age.

Thistle brooch with leontomorph bow and foot riveted to back of bow Riha type 4.5.7/Feugère type 19f2

35. Incomplete. Cylindrical spring cover. Reverse of bow is flat, upper part of front of bow with three transverse mouldings reminiscent of stylised lion. On the inside of the outer moulding is a short subrectangular stud/rivet. The foot, which would have been riveted to the bow, is missing. Seven spring coils (two left, five right). SF 50988, Context 200wb, Intervention 200wb. Mid-Roman.

Simple rosette brooch T27/Feugère type 20c/Riha type 4.7.1

36. Almost complete. Half of spring survives in cylindrical cover. Flat-sectioned bow of disc and flaring foot, bent, no decoration visible. Subrectangular catchplate, tip of pin missing. Five spring coils. SF 927, Context 5600, Intervention 5600 (Layer), SG 300009 (Deposit). Mid-Roman.

Hinged rosette brooches Feugère type 20d1

37. Incomplete. Hinged pin missing, pin was held by axis set in tube at top of bow formed by rolling forward the bow's head. White metal coating. Disc on upper part of bow has circular perforation at centre with remains of iron rivet in place. Lower part of bow has lines along the edges and band of zigzag decoration down centre. Catchplate on reverse is incomplete. Brass. SF 18724, Context 17709, Intervention 17709 (Layer), SG 300600 (Layers), Property 3.
38. Almost complete. Miniature brooch, of rosette or thistle type. Hinged pin held by axial rod set in outward-turned hinge, still free moving, tip of pin broken. Upper part of bow is oval-shaped plate with rivet protruding from centre; differential corrosion of plate might derive from rosette- or thistle-shaped foil. Lower part of bow is flat with moulded/scalloped edges and three wide longitudinal grooves. Sub-rectangular catchplate. Brass. SF 18881, Context 17803, Intervention 17802, 1, SG 300687 (Layers), Property 3. Early Roman.

See also SF 316.

Rosette brooch with double-lugged hinge T238/Feugère type 20e1/Riha type 7.10.2

39. Incomplete. Plate type, disc-shaped bow with flaring foot. Small perforation at centre for attaching decorated disc. Two small lugs extending from edge of disc, mark where third would have been on the left side. Hinged pin survives; small trapezoidal catchplate. (Leaded) brass. SF 15535, Context 16022, Intervention 16022 (Layer). A close parallel for this brooch with similar side lugs was found at Augst (Riha 1979, Taf 59, 1583).

See also SF 15063 which is possibly the flared foot of such a rosette brooch while this is less certain with the small foot fragment SF 1897.

The eleven brooches with a circular or rhomboid disc in the middle of the bow found at Springhead present an interesting sequence of the developed and later typological stages of this group of brooches. Those of Hull's rosette or thistle type T26 are here further distinguished by the shape of the disc which can be separate from the bow, as in Cat No 30, or cast in one with it, as in Cat Nos 31–4. At Springhead, the latter can be further distinguished by the decoration of the arched bow and the foot which in Cat Nos 31 and 32 exhibits the rather plainer treatment found in Feugère's type 16, while Cat Nos 30, 33, and 34 have the longitudinally grooved bows and feet of his type 19, already familiar from the Langton Down brooches. The lines (Cat No 31) and striations (Cat No 32) on the undersides of the discs of two of these brooches are nice examples of a typological rudimentary feature, in this instance reminiscent of the once separate disc which sat above the foot as in Cat No 30 or brooches of Feugère types 15, 16a1, 19a1, or 19d1.

It has been suggested that incised diagonal crosses on brooches and other objects, like that found on the side of the spring cover of Cat No 32, probably have a religious significance (Henig 1984, 149; Butcher 1993, 157). Butcher has mentioned about 50 brooches from Britain, of which 20 were from religious contexts. Brooch types with such marks include penannular brooches, south-western bow brooches, headstud brooches, and some crossbow brooches. An X-mark on a rosette similar but perhaps slightly earlier than Cat No 32 was found at Neuss, Germany (Simpson 2000, pl 1, 9; p 11; Simpson mentions a similar brooch from Hurstborne Tarrant, Hants, but does not mention whether it also had a diagonal cross. For the use of X-marks on pottery *cf* Seager Smith, Marter Brown and Biddulph, Chap 1, Fig 58).

While in Gaul and southern Germany the plainer brooches of Feugère type 16 are already found in the last decades of the 1st century BC (Feugère 1985, 269), the more ornate type 19 sets in a decade or two later, in the late Augustan period (Hawkes and Hull 1947, 314), but both types continue well up to and after the middle of the 1st century AD. A fragment of a Feugère-type 16 brooch from Fishbourne (Cunliffe 1971, 103 fig 38, 22) with a disc smaller than that on Cat No 32 but already attached to the spring cover, was found in a context dated earlier than AD 75. On account of its open spring cover, typologically slightly earlier than Cat No 32, is a brooch from Canterbury, Marlowe Car Park, for which Mackreth (1995, 972–3 fig 407, 83) suggests a date in the latter part of the 1st century BC. At *Verulamium*, KHL, where no Feugère-type 16 brooches were found, those of type 19 with the central disc cast in one with the bow are predominantly found in phase 2 and 3 graves (Tibero–Claudian and post-Conquest; but see also Haselgrove and Millett 1997, 291–2) with only one in a phase 1 grave (Stead and Rigby 1989, 93–4; type Fa and b), while the variants with separate discs, like Cat No 30 but all with circular discs (type Fd, and also the larger Fe), occur predominantly in the pre-Claudian phase 1 graves. At Springhead a pre-Conquest date is feasible for Cat Nos 30 and 34, both of which were found in the fills of late Iron Age ditched enclosure 300030 which had all but silted up by the mid-Roman period.

Cat No 35, with its leontomorph bow, belongs to Riha's type 4.5.7 which is mainly distributed in Gaul (but rare in the south, *cf* Feugère 1985, 291) and the Rhine provinces (Riha 1979, 105; 1994, 92–3). British finds are known, for instance from Colchester (Hawkes and Hull 1947, pl 93, 76, dated Claudian/Neronian and post-Boudican) and *Verulamium*, KHL Site graves 188, 218, and 306 (Stead and Rigby 1989, 94). A set of two such brooches was recently found associated with a third rosette brooch of Riha type 4.7.2 in grave 8273 of the small cremation cemetery south of Coldswood Road, Manston, Kent. The grave, which also contained a *terra nigra* cup Cam 56, two platters Cam 7/8/Thompson 1982, G1–6, and a whiteware butt beaker Cam 113, is likely not to date much after the Conquest (G Jones 2009, 155–6, fig 2.38). While Hawkes and Hull (1947, 315) still claimed that none of the British parallels need to be pre-Conquest, KHL Site grave 218 belongs to phase 2, giving a Tiberian to very early Neronian date (or late Augustan to Claudian, *cf* Haselgrove and Millett 1997, 292).

The later development of the rosette brooches simplifies the construction of the bow, and the disc becomes attached to the spring cover without the upper part of the bow arching above it; Cat No 36 is the only example of this stage. Originally, it would have had a cover of sheet metal on the bow and foot. The funerary contents of the fight against chthonic forces of the scenes depicted on some brooches with preserved metal sheets can, unfortunately, not be verified because of the condition of the Springhead brooch (*cf* Feugère 1985, 294–5, fig 36), but it is interesting to note in this context that the brooch was found in the colluvial deposits of the spring area. The type is mainly Claudian in date (*ibid*, 297; Hawkes and Hull 1947, 316; Mackreth 1995, 972–3, fig 407, 84), but in Augst, Switzerland, where 19 examples have been found so far, context dates range from late Augustan to Claudian, with continuation of use possibly extending to the beginning of the 2nd century (Riha 1994, 94). The type is well represented in an arc reaching from western Switzerland along the

Rhône to the Languedoc, with some in northern France and a fair number in south-eastern Britain (Feugère 1985, 296 fig 37).

The next stages in the development of the rosette brooch affect the spring cover which is exchanged for a tubular hinge, as seen on Cat Nos 37–8 and SF 316, and is eventually dropped completely in favour of a double lugged hinge at the back of the lozenge-shaped or, as in the case of Cat No 39, circular plate. Both types should belong to the middle and the 2nd half of the 1st century (Feugère 1985, 297; Riha 1994, 93–4; 158; Bayley and Butcher 2004, 154–5). The distribution of rosette and thistle brooches at Springhead shows a prevalence of the earlier variants in the area to the east of the Ebbsfleet (Fig 88).

Early hinged brooches

Aucissa brooches T51

Middle rib higher than side ribs Riha type 5.2.1

(Fig 89)

40. Incomplete. Head with outward-turned tube hinge has central hole and two smaller ones either side of it (visible in x-ray). D-shaped section bow, tapers to foot, longitudinal grooved decoration, possible beading at foot. Small part of catchplate remains. Part of hinge and pin missing. SF 1843, Context 6445, Intervention 1000 (Spring).

41. Almost complete. Head with outward-turned tube hinge is very corroded, but notch in the middle of either edge still visible. Profiled bow with broad grooved rib down length tapers towards angled triangular catchplate. Lower part of bow has four transverse ridges above collared foot knob. Tip of pin is broken. Brass. SF 15968, Context 16825, Intervention 16825 (Layer), SG 300576 (Layers), Property 4. Mid-Roman.

See also SFs 612 and probably 1860.

Middle rib as high as side ribs Riha type 5.2.2

42. Incomplete. Inward-turned tube hinge, steeply arched bow is terminated by transverse cross mouldings at top and bottom. Central longitudinal rib of same height as sides. Lower part of bow plain, tapers to foot knob. Turn of triangular catchplate and pin missing. Brass. SF 206, Context 2100, Intervention 2100 (Layer).

43. Incomplete. Outward-turned hinge, pin missing. Rectangular-sectioned bow, gentle curve (most likely due to intentional flattening of original higher arched bow), three longitudinal grooves, central one contains zigzag decoration, transverse groove at base. Small triangular catchplate on thin foot with protrusion which carried now missing foot knob. Brass. SF 1875, Context 6444, Intervention 1002 (Spring).

44. Incomplete. Outward-turned tube hinge, axial rod held by large moulded knobs of which the left one survives. Wide, strongly curved bow with two deep longitudinal

Figure 88 Springhead: distribution of Rosette and Thistle brooches

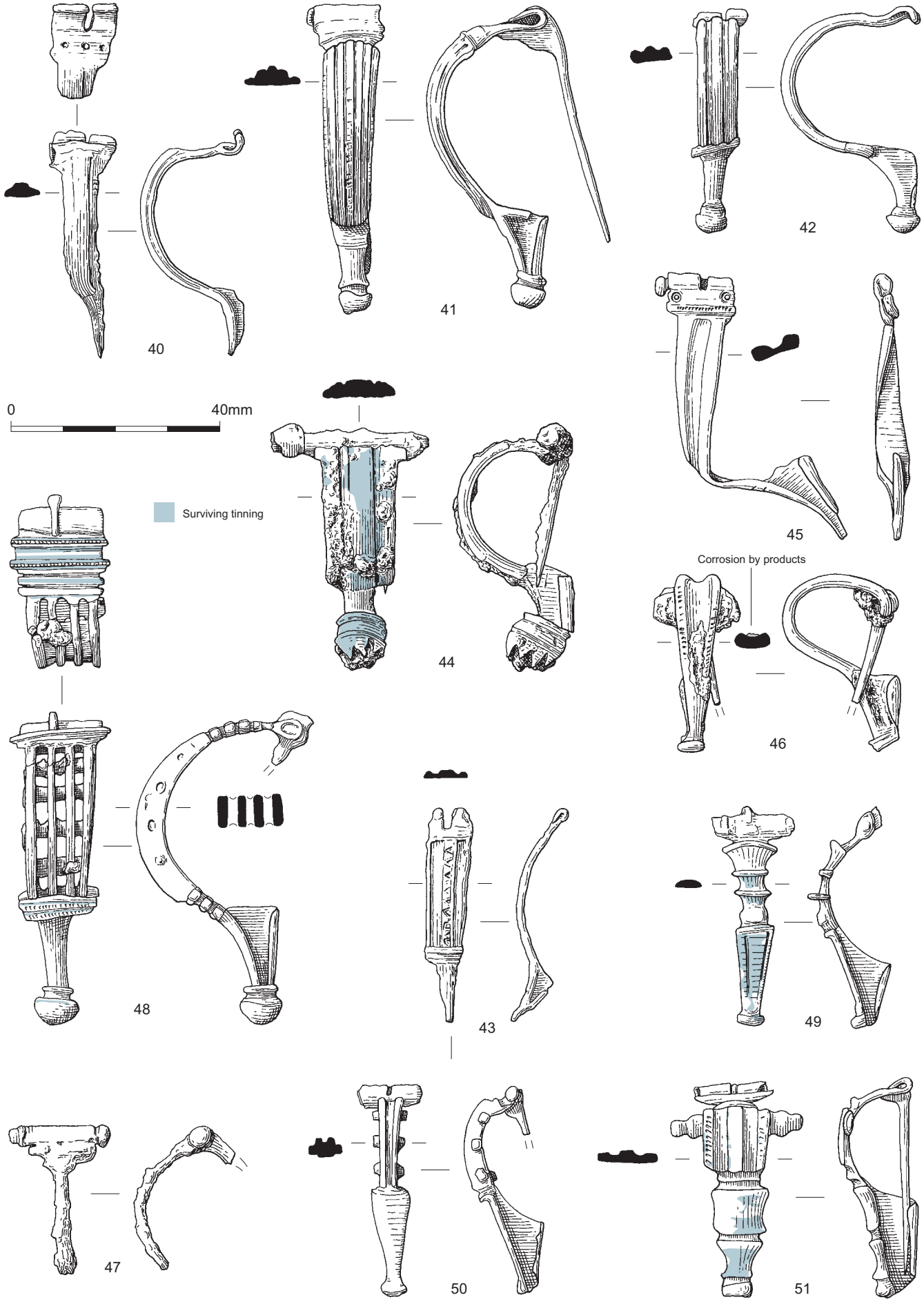


Figure 89 Springhead: copper alloy brooches 40–51

grooves. Bow tapers slightly to foot. Large (oversized) moulded knob attached to foot with lower side decorated with cut-out triangles, knob is split along one side. Leaded bronze. SF 1731, Context 6379, Intervention 1001 (Spring), SG 300015 (Deposits). Early Roman.

A Hod Hill derivative brooch from Richborough has a very similar pronounced foot knob when seen from the top, which is, however, cast in one with the rest of the brooch (Bayley and Butcher 2004, 80, fig 60, 156). Even more ostentatious is a brooch from Grenoble, France, with five large knobs and a studded bow (Feugère 1985, pl 136, 1707).

Bow with wide central groove Riha type 5.2.3

45. Incomplete. Head with inward-turned tube hinge, pin missing. Beaded line separates neck of bow from head plate with ring-dot punch either side. Flat-sectioned bow with two raised ridges down length, transverse grooves decorate bow towards foot. Badly bent. SF 1798, Context 6436, Intervention 6436 (Surface), SG 300083 (Deposits). Early Roman.
46. Incomplete. Beaded decoration on head with inward-turned tube hinge. Flat-sectioned bow with longitudinal central groove, beaded decoration on either side. Moulded footknob. Bow bent so that head almost touches catchplate. Part of pin missing. SF 9256, Context 400104, Channel fills.

Thin, strip-like bow Riha type 5.2.4

47. Very fragmentary. Probably closed tube hinge (certainly not turned outward); pin held by iron axial bar with side knobs. Transverse grooves decorate ends of head tube, part of flat head plate with side notches remains, perhaps with lettering on it, but it is too corroded to be certain. No catchplate survives, pin broken. Smaller fragment possibly lower part of bow. Brass. SF 820, Context 0, Intervention 0.

The sub-division of the catalogue for the Aucissa brooches adapts that devised by Riha for the assemblage at Augst (Riha 1979, 114–21; 1994, 101–7). Feugère based his sub-division of the type predominantly on the construction of the tubular hinge and called brooches with inward-turned hinge type 22b1 (Cat Nos 42, 45–6, SF 1860), those with outward-turned hinge – the classic Aucissa type – are his type 22b2, (Cat Nos 40–1, 43–4 [variant], SF 612). It has been suggested that the variants with wider, flatter bows are somewhat older than those with thinner, wire-like bows (eg, A Böhme 1972, 11), but this need not be the case according to Riha (1979, 114) considering the evidence from Augst. Based on his typology, Feugère suggested a range between 20/10 BC to the beginning of Tiberius' reign for type 22b1, and a similar or perhaps slightly later start for type 22b2, and an end of production by the end of the Claudian period (Feugère 1985, 323–4). In Britain, Aucissa brooches arrived in recognisable numbers only after the Conquest (Hawkes and Hull 1947, 322; Brailsford 1962, 8; Bayley and Butcher 2004, 151) and, on the basis of the Springhead evidence, there is nothing to refute that. Of the ten brooches found at Springhead (Fig 90) only Cat No 41 was found on the Roadside settlement site; of the others, five were found in the spring or channel fills (Cat Nos 40, 43, 44, SFs 612 and 1860).

Aucissa brooches are widely distributed in the Roman Empire and especially common on, but not confined to, military sites of Augustan to Claudian date (A Böhme 1972, 11; Böhme-Schönberger 1998, 354; Feugère 1985, 319–20), in Britain, eg, at Richborough (Bayley and Butcher 2004, 66–9 figs 50–1; 151, map p. 189, fig 166) or *Camulodumum* (Hawkes and Hull 1947, 321–3, pl 96–7, 125–38). No brooch with a definite maker's mark was found at Springhead; but Cat No 47 is too corroded to rule out the possibility of a stamp on its head plate. 'AVCISSA', from which the group takes its name, is only one among several others, albeit the most common, and, considering the small overall number of Aucissa brooches, disproportionately well represented in Britain (further discussion of the names and distribution map of AVCISSA stamped brooches in Feugère 1985 (321–2, fig 46). A more recent map and in-depth discussion of the possible later stage represented by brooches with the AVCISSA stamp is presented by Böhme-Schönberger 1998, 353–9, Abb 1).

Bagendon brooches T52

48. *T52A/Riha type 5.4*. Incomplete. Brooch broken into two pieces which join (head broken off in antiquity). Head with outward-turned tube hinge, short stub of hinged pin remains and is still free moving. Panel of four transverse moulded ribs at top of head, central two are beaded. The highly arched, P-shaped bow is divided into four ribs pierced by four transverse iron axial rods, all bearing three copper alloy beads in the gaps between the ribs. A further panel of three moulded ribs, also beaded, define break to foot which is plain and tapering to a separate large moulded footknob. Remains of white metal coating which originally covered the entire surface. Triangular catchplate. Brass. SF 18742, Context 17709, Intervention 17709 (Layer), SG 300600 (Layers), Property 3.

See also SF 252 which has an undivided bow with fragments of iron rods pierced through the bow like T52B (Riha type 5.3).

The Bagendon brooches are variants of the Aucissa type and, as such, fall broadly into the same Augustan–Claudian chronological span, with the variant with undivided bows starting and finishing slightly later, staying in use into the Neronian period (Bayley and Butcher 2004, 151; Riha 1994, 107–8); at Augst on the upper Rhine there is evidence for both types occasionally continuing to the end of the 1st century (*ibid*) while, on the lower Rhine, the variant with divided bow is no longer in use by the Claudio–Neronian period (Haalebos 1986, 43; van der Roest 1988, 161). Generally not as frequent as the Aucissa brooch proper,

it is interesting to note that, in Britain, the variant with divided bow T52A is mainly found on native sites like Bagendon or Maiden Castle but is lacking from military sites like *Camulodunum*, Richborough, or Hod Hill, thus suggesting that those found in this country are not linked to the invading army, while the later variants with undivided bows could have reached Britain both before and around the time of the Conquest (Simpson 2000, 38). Cat No 48, which was found in the channel fills in the waterfront area of property 4, can unfortunately not add anything to this question (Fig 90).

Hod Hill brooches T60–79

a) With multiple cross mouldings on bow, flat panel on foot and half-profile foot knob T74/Riha type 5.6

49. Incomplete, pin missing. Tinned. Three beaded cross ribs on upper bow, lower bow has triangular shape with incised lines down sides and flat cross section. Small footknob. Triangular catchplate. SF 560, Context 2831, Intervention 2831 (Layer), SG 300186 (Deposits). Early Roman.
50. Incomplete. Upper part of bow rectangular-sectioned, longitudinal (possibly beaded) ridges down edge with three pairs of transverse knobs at sides. Lower part of bow is flat, triangular, tapers to small collared knob at foot. Triangular catchplate. SF 1840, Context 6445, Intervention 1000 (Spring).

See also SF 645.

b) With lateral lugs at the top of the grooved bow T 63/Riha type 5.7.3

51. Almost complete. Hinged, axis bar missing so pin present but separate. Transverse mouldings on wings at top of upper part of bow, upper panel of bow also moulded with beaded decoration. Lower part of bow made up of two panels, edges concave, tapers to moulded foot. Subrectangular catchplate. Brass. SF 708, Context 2675, Intervention 2675 (Layer), SG 300163 (Deposit). Mid-Roman.

(Fig 91)

52. Incomplete. Hinged, iron axial rod still survives, right terminal knob missing. Upper half of bow decorated with double moulded knobs at top, niello (copper (I) sulphide) Y-shaped decoration repeated down central field, raised longitudinal mouldings all finely knurled. At junction between bow and foot three transverse rectangular cross mouldings, the central one with niello lines and knobbed terminals both sides; beaded transverse cross mouldings above and below central panel. Lower part of bow tapers to separate large, moulded, collared footknob, four circular perforations down either external edge probably held now lost riveted knobs (one appears to have rivet in place). Triangular catchplate with circular perforation. Pin bent backwards, tip missing. Brass. SF 15398, Context 10525, Intervention 10524 (Gully), SG 300389 (Gully), Property 11. Early Roman.

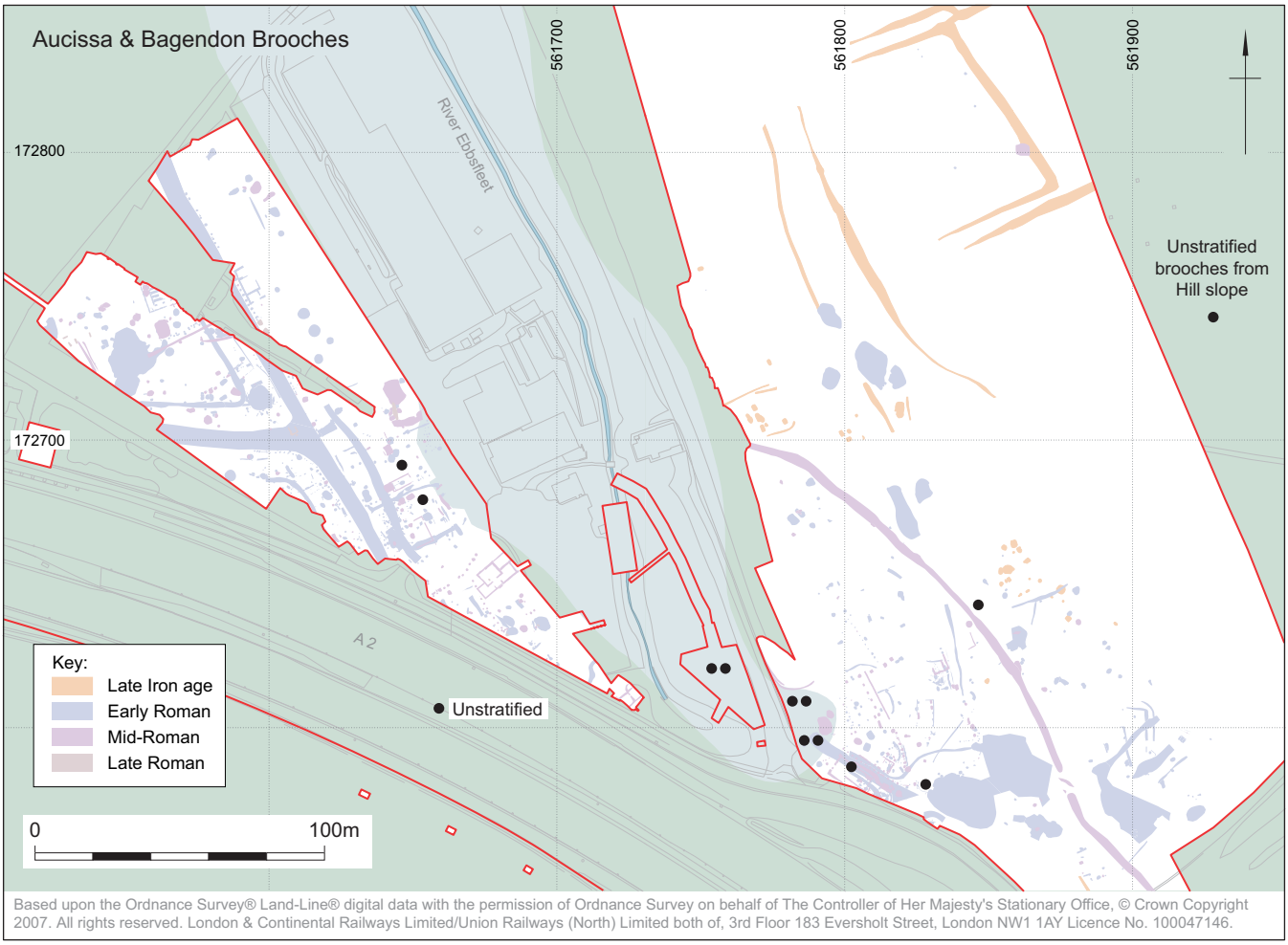


Figure 90 Springhead: distribution of Aucissa and Bagendon brooches

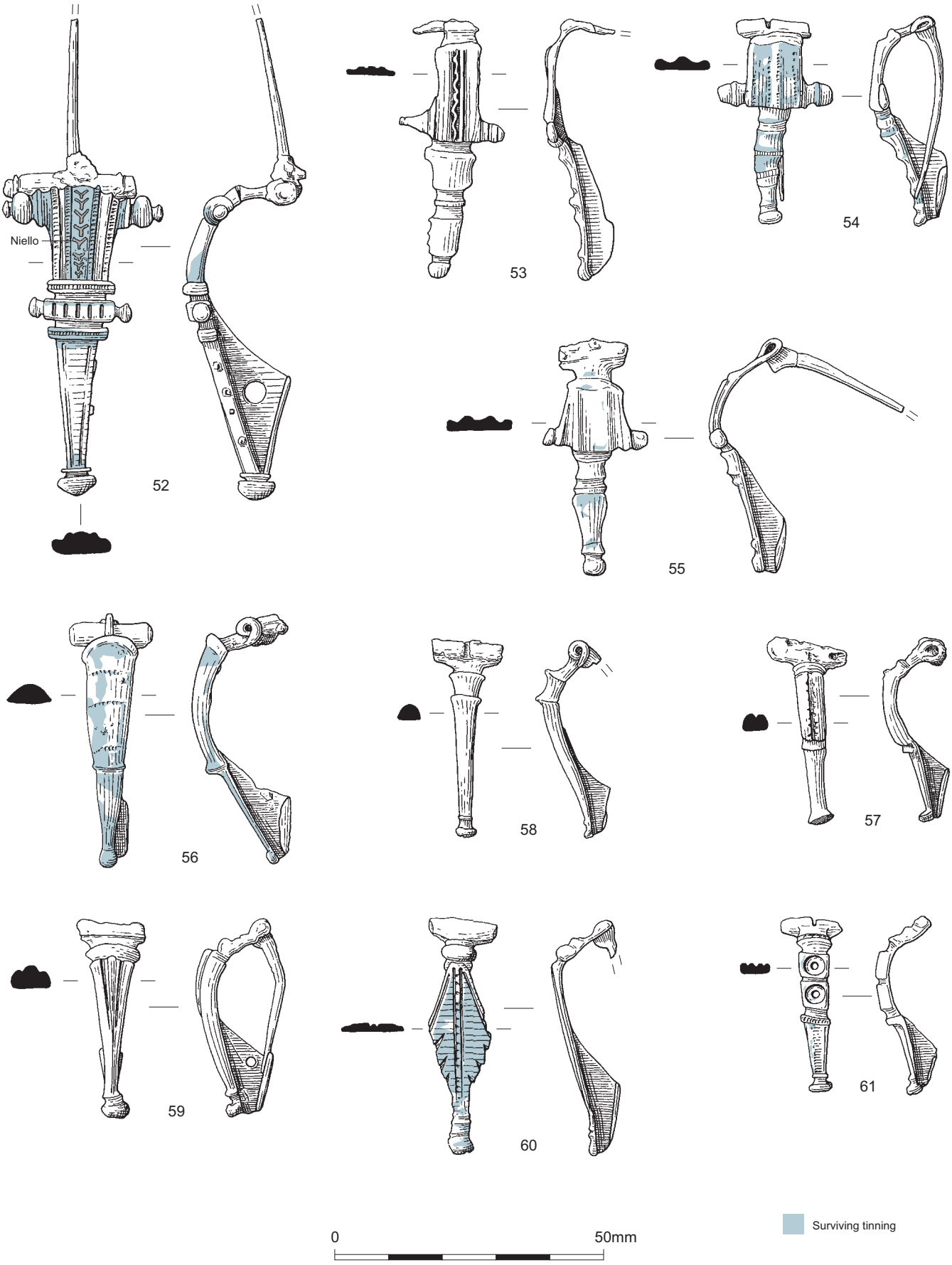


Figure 91 Springhead: copper alloy brooches 52–61

Similar Y-shaped niello decoration on the side panels of a comparable brooch from Hod Hill (Brailsford 1962, fig 9, C69).
See also SF 254.

c) With lateral lugs at the bottom of the grooved bow, more or less flaring towards the narrower, usually profiled foot T61/Riha type 5.7.4

53. Incomplete. Flat rectangular-sectioned bow. Upper half with wide grooves either side of beaded ridges with two lines of ?tin/niello inlay, transverse cross moulding at bottom. Lower half of bow tapers to foot, with series of transverse cross mouldings. Catchplate and pin missing. Severely corroded. Brass. SF 1866, Context 6444, Intervention 1002 (Spring).
54. Complete. Upper, wider half of bow separated into two concave panels, beaded decoration on ridges in between. At mid point of bow two mouldings protrude. Lower part of bow has series of transverse cross mouldings, two of which are beaded. Foot tapers slightly to moulded foot knob. Large patches of, once probably complete, white metal coating on bow. Subrectangular catchplate. Brass. SF 15333, Context 10405, Intervention 10405 (Layer), Property 11. Mid-Roman. (Pl 3)
55. Incomplete. Trapezoidal panel on upper half of bow with two ridges dividing it into one wider central and two smaller lateral fields; side wings at bottom of panel. Narrow central cross mouldings define break to lower, flat part of bow and foot, tapering to moulded foot knob. White metal coating on bow. Subrectangular catchplate. Pin is broken but retained separately, rectangular cross-section. Brass. SF 18278, Context 16294, Intervention 16294 (Layer), SG 300484 (Road), Watling Street.

See also SFs 784, 9358 and 18287.

d) With lateral lugs set in the middle of the bow T62B/Riha type 5.7.6

None illustrated, see SFs 594, 1768 and 1801. SF 594 is extremely corroded and may possibly have transverse mouldings like Riha type 5.7.7.

e) With transverse bar set in the middle of the bow with transverse moulding T62/Riha type 5.8

Not illustrated, see SF 212. Niello inlay, often found on this distinct type, is not visible on this specimen due to corrosion.

f) With D-shaped bow, which can be decorated, and flat foot similar to Riha type 5.12.4

56. Incomplete. Hinged. Upper part of bow has D-shaped section, lower part below cross moulding is flat, tapers slightly to moulded foot knob. Transverse cross moulding at top of head, upper part of bow decorated with five transverse dotted lines and incised short transverse lines lengthwise (very faint/worn), lower part undecorated. Sub-rectangular catchplate. Two fragments of possibly circular-sectioned pin remain. Leaded bronze. SF 549. Contex 0.

Plate 3
Hod Hill brooch (Cat No 54), brass L 38 mm
Photo: E Brook

57. Incomplete. Cross bar with iron corrosion around head possibly from remnants of axial rod. Transverse moulding at neck of bow, D-shape sectioned bow with central groove and flat beaded ribs either side, two further transverse mouldings define change to flat foot, tapers to half-profiled footknob. Triangular catchplate. Bronze/gunmetal. SF 715, Context 5414, Intervention 5414 (Layer), SG 300148 (Deposits). Early Roman.

See also SF 9147. SF 1294 may also belong to Riha type 5.12, but is too corroded to be certain about the variant.

g) With one or two transverse mouldings at head and bow tapering without break to foot with rudimentary knob Riha type 5.10/Bayley and Butcher 2004, Hod Hill d)

58. Incomplete. D-shape sectioned bow with two pronounced transverse mouldings at bend on upper part; bow tapers to narrow moulded foot. Triangular catchplate. Pin missing. Leaded brass. SF 15907, Context 16022, Intervention 16022 (Layer).
59. Complete. D-shape sectioned bow with two grooves besides a central rib, tapering towards foot which ends in half-profiled knob. Cross moulding at head. Perforated triangular catchplate. Brass. SF 315, Context 2221, Intervention 2221 (Artefact).

See also SFs 548 and 901.

h) With rhomboid bow T77/Riha type 5.10

60. Incomplete. Hinged pin, broken. Bow has sharp angle at top with double transverse moulding. Main part of bow is flat and of elongated rhomboid shape. Beaded rib decoration down centre of lozenge; grooved border on upper edges, diagonal notches decorate edges of lower part. Transverse double moulding at foot. Subrectangular catchplate. Brass. SF 1289, Context 3312, Intervention 3311 (Pit), SG 300214 (Pits). Early Roman.

Bayley and Butcher (2004, 249) list four further examples from south-eastern Britain. A similar treatment of the foot, but on a different variant, is found on another brooch from Richborough (*ibid*, 78 fig 58, 135).

i) Hod Hill derivative brooches with small round settings for inlays Riha type 5.16

61. *Riha type 5.16.2.* Incomplete. Hinged, pin missing. Beaded transverse cross moulding at head, upper part of bow rectangular in shape and section – top and bottom edges beaded, two recessed discs with perforation at centre possibly contained decorative inlay, now missing. Second beaded transverse cross moulding separates lower part of bow which is of

D-shaped section, punched transverse lines down centre, tapering to moulded rudimentary foot knob. Triangular catchplate. (Leaded) bronze. SF 1857, Context 6444, Intervention 1002 (Spring).

Well preserved inlays were found on a pair of brooches of the same type from Wederath-*Belginum*, Germany (Abegg 1989, 301 Abb. g and h; 306 Abb. 6).

(Fig 92)

62. Riha type 5.16.4. Fragment. Rectangular cross-sectioned bow with three punched dot-and-eye decorations poss held inlay or enamel, bow tapers to small moulded footknob (now twisted). Front of bow and hinge missing. Leaded brass. SF 15332, Context 10405, Intervention 10405 (Layer), Property 11. Mid-Roman.

j) Uncertain Hod Hill variants

63. Incomplete. Broken, but fragments join. Hinge formed by rolling forward head of bow, iron axial rod still in place, pin missing. Rectangular-sectioned bow with sharp angle at head, tapers to foot. Corrosion obscures most decoration, but there may be traces of lines along edge near foot end. Hook of catchplate missing. Copper alloy. SF 20265, Context 16039, Intervention 16039 (Layer), SG 300485 (Layers), Property 10. Mid-Roman.

SFs 657 and 15955 very probably also belong to the Hod Hill series.

The sequence adopted here for the Hod Hill and Hod Hill derivative brooches loosely follows that of Riha for her types 5.6–5.16, not all of which are represented at Springhead. The series is generally accepted to have developed out of the Aucissa brooches, although it has been suggested that the varieties with lateral lugs similar to Springhead groups b–e could have been developed out of the *Kragenfibeln* (Feugère 1985, 247; 333; Haalebos 1986, 46; 92 fig 42, 21).

The Continental series cover most of the 1st century AD, with a start in the Tiberian, possibly even the late Augustan, period (Riha 1994, 112–4 Tab 141, Variante 5.7.9) and some variants like groups f–h continuing into the 2nd century, a small number even reaching the 3rd (Feugère 1985, 335). While the low numbers of Hod Hill brooches at, for example, the Saalburg and Zugmantel forts in Germany (Böhme 1972, 12, Taf 2, 28–38) suggest they were already going out of use by Domitianic times, numbers only start to increase in the lower Rhine area in the years after the Batavian rebellion of AD 69–70 (Haalebos 1986, 47). In Britain, where they are mainly distributed south-east of the Fosse Way, their main period of use is in the years between the Conquest and about AD 70 (Bayley and Butcher 2004, 153; 191 fig 167). Two brooches from Baldock similar to those of group c from Springhead have been found in contexts ascribed a pre-Conquest date in the 1st and 2nd quarter of the 1st century AD respectively (Stead 1986, 124; 118 fig 47, 112 and 114); this has been called into question by Mackreth (1995, 975) based on the fact that at least the earlier brooch would be earlier than the varieties from which it descends. Considering Feugère's suggestion mentioned earlier, that it is not only the Aucissa brooches but also the *Kragenfibeln* which may be counted among the predecessors, this early date may not seem so spurious after all. However, brooch 112 from Baldock is the only object from pit 121 with a date in the early 1st century AD; the pottery is dated to AD 70–120 (Stead and Rigby 1986, 418) and, therefore, the early date of the brooch is not compelling. The typologically early details such as the separate foot knob (Aucissa) and the remains of riveted knobs on the side of the foot (Bagendon) of Cat No 52 suggest that this brooch is likely to have been produced in the middle of the 1st half of the 1st century AD. Similar details can be found on an early Hod Hill brooch from Chichester (Mackreth 1978, 281 fig 10.27, 40; 285), and the subsequent development, where the foot knob becomes a moulded part of the foot, is demonstrated by examples from Hod Hill (Brailsford 1962, 9; fig 8, C59; fig 9, C66 and C80). Unfortunately, the pottery date ranges of the groups identified at Springhead do not allow to distinguish chronological differences between the different variants; 21 brooches of this type were found on the Springhead Sanctuary site and only nine on the Roadside settlement (Fig 93).

Colchester derivative brooches

Two-piece Colchester brooches

a) Central rib (or groove) down whole length of bow

As the sub-varieties take into account the length of the brooch and the shape of the foot end, the following heads of brooches can be ascribed to group a) only: SFs 961, 981, 1561, 9255, 9432, 15786, and 20015.

ai) Large brooches (over 45 mm)

64. Incomplete. Two-thirds of spring intact with some of pin. Simple curved bow, D-shaped cross section, tapers towards foot, central crest on upper part but lateral groves continue as thin lines to foot end. Triangular catchplate with triangular hole. Four spring coils on the right remaining. Leaded gunmetal. SF 500, Context 2675, Intervention 2675 (Layer), SG 300163 (Deposit). Mid-Roman.

65. Incomplete. Transverse groove decoration on wings. Crest continues as ridge, longitudinal grooves on ridge and outer edges of bow. Large perforated triangular catchplate. Eight spring coils. SF 740, Context 2948, Intervention 2948 (Layer), SG 300156 (Deposits). Mid-Roman.

66. Incomplete. Wings have four transverse grooves each side. Pronounced crest on upper part of bow. Ridge down centre decorated with two parallel grooves. Part of pin remains but is separate. Catchplate perforated with circular and triangular holes. Eleven spring coils. (Leaded) bronze/gunmetal. SF 814, Context 5745, Intervention 5745 (Layer).

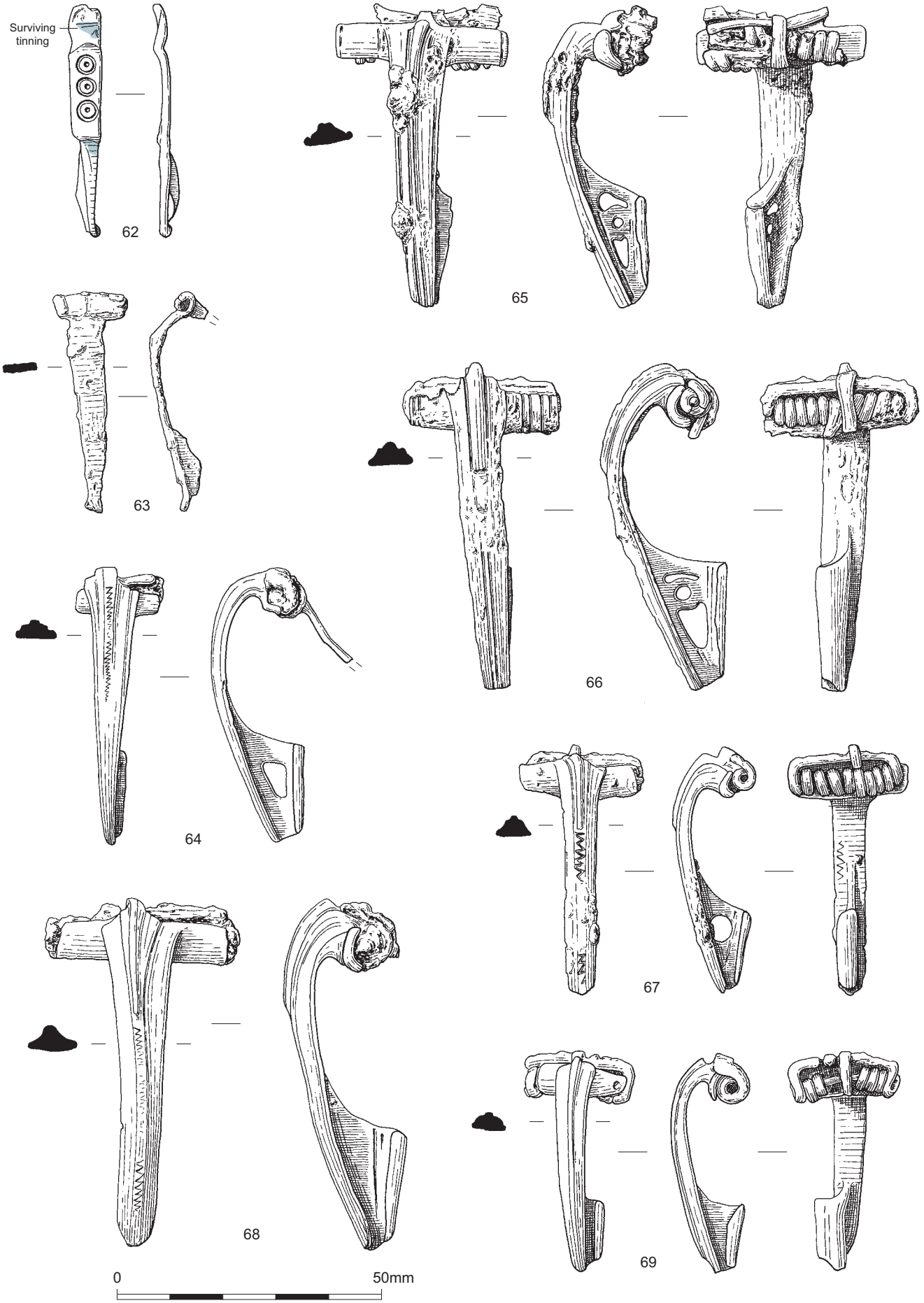


Figure 92 Springhead: copper alloy brooches 62–9

67. Incomplete. Pin missing. Possible groove decoration on wings. Plain crest continues as rib down centre of bow with zigzag decoration, tapers slightly to foot. Perforated triangular catchplate. Casting flash visible on reverse. Nine spring coils. SF 1279, Context 3324, Intervention 3324 (Layer).
68. Incomplete. Spring intact, pin missing. Plano-convex sectioned bow, central ridge down length. Large triangular catchplate. Ten spring coils. Leaded copper alloy. SF 15187, Context 10806, Intervention 10806 (Surface), SG 300438 (Layer), Property 11.

See also SFs 629, 962, 1518, 1839, 1845, 1864, 9361, 15217, 15344, 18374, 18887, 20162, and foot 15043.

aii) Small brooches (less than 45 mm long)

69. Incomplete. Pin missing. ?Tinned. Possible ringed decoration visible on tip of right wing. D-shaped sectioned bow, tapers to foot, pronounced ridge down centre. Sub-rectangular catchplate. Seven spring coils. SF 625, Context 5039, Intervention 5040 (Gully), SG 300192 (Ditch). Early Roman.

(Fig 94)

70. Incomplete. Spring present but very corroded, pin missing. Transverse groove decoration on wings. Pronounced crest at head with punched transverse line decoration. Pronounced ridge down centre of bow (almost triangular cross section), punched decoration on front, longitudinal grooves down either side. Bow tapers slightly to foot. Perforated sub-rectangular catchplate. Eleven spring coils. SF 1804, Context 6436, Intervention 6436 (Surface), SG 300083 (Deposits). Early Roman.
71. Incomplete. Spring intact, pin broken. Grooved decoration on tips of wings. Triangular-sectioned bow, grooved decoration down centre with beaded edges and zigzag central lines. Small sub-rectangular catchplate. Nine spring coils. SF 1846, Context 6445, Intervention 1000 (Spring).
72. Incomplete. Spring intact, pin broken. Beaded and grooved decoration on tips of wings. Bow with one beaded rib either side of central groove, central crest at top of bow slightly damaged in the middle. Small subrectangular catchplate with large perforation. Nine spring coils. SF 1847, Context 6445, Intervention 1000 (Spring).
73. Incomplete. Flat-sectioned bow with single longitudinal ridge, zigzag line at top of bow, beaded further down. Triangular perforated catchplate. Bent. 5 spring coils. SF 1862, Context 6444, Intervention 1002 (Spring).
74. Incomplete. Part of spring remains, crest at head. Pronounced ridge along bow, tapers slightly to foot. Sub-rectangular perforated catch plate, the upper part of the perforation drilled, the lower part thinner and extending towards middle of catchplate. Casting flash/working marks visible on reverse of bow. Three

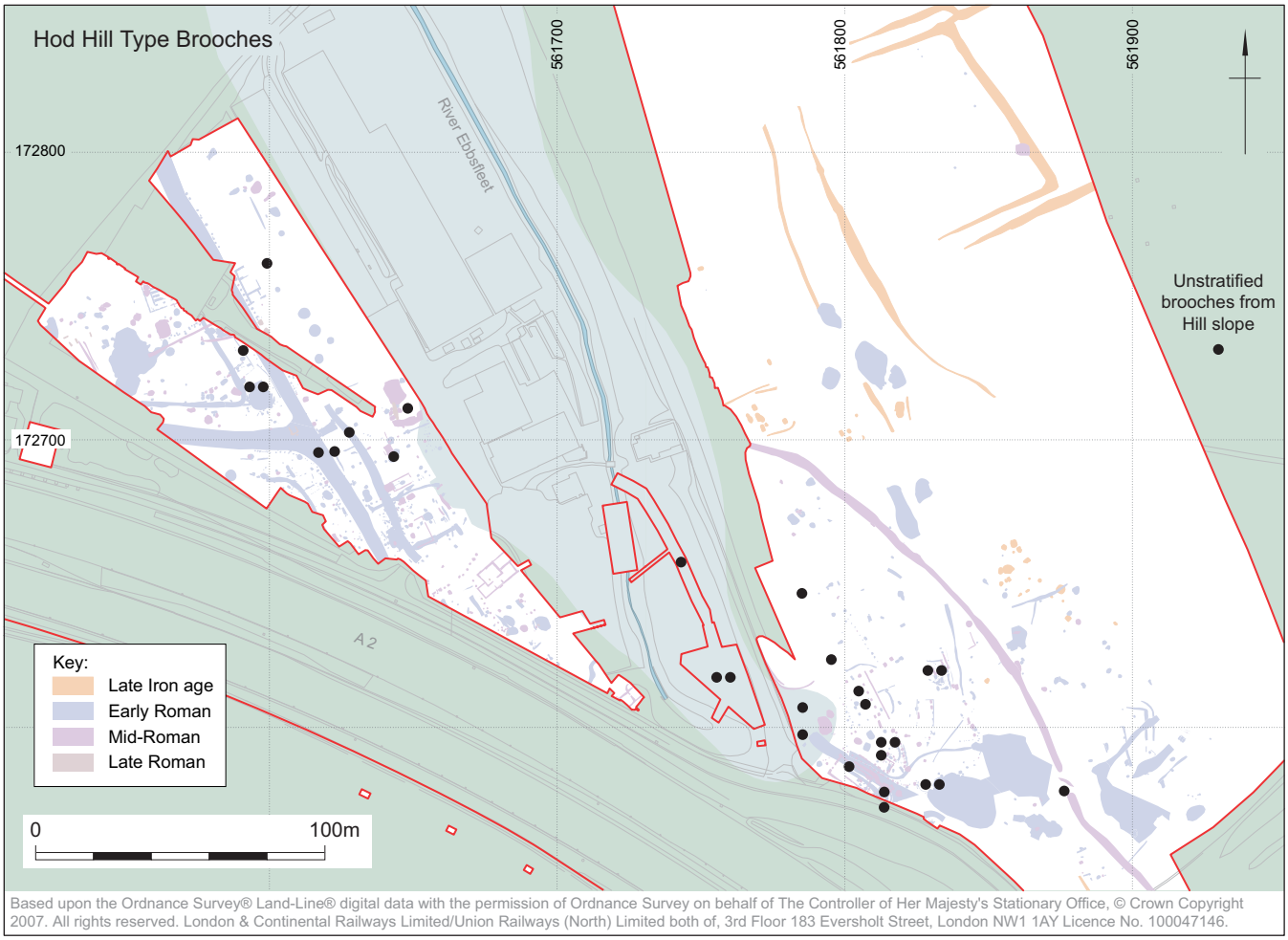


Figure 93 Springhead: distribution of Hod Hill brooches

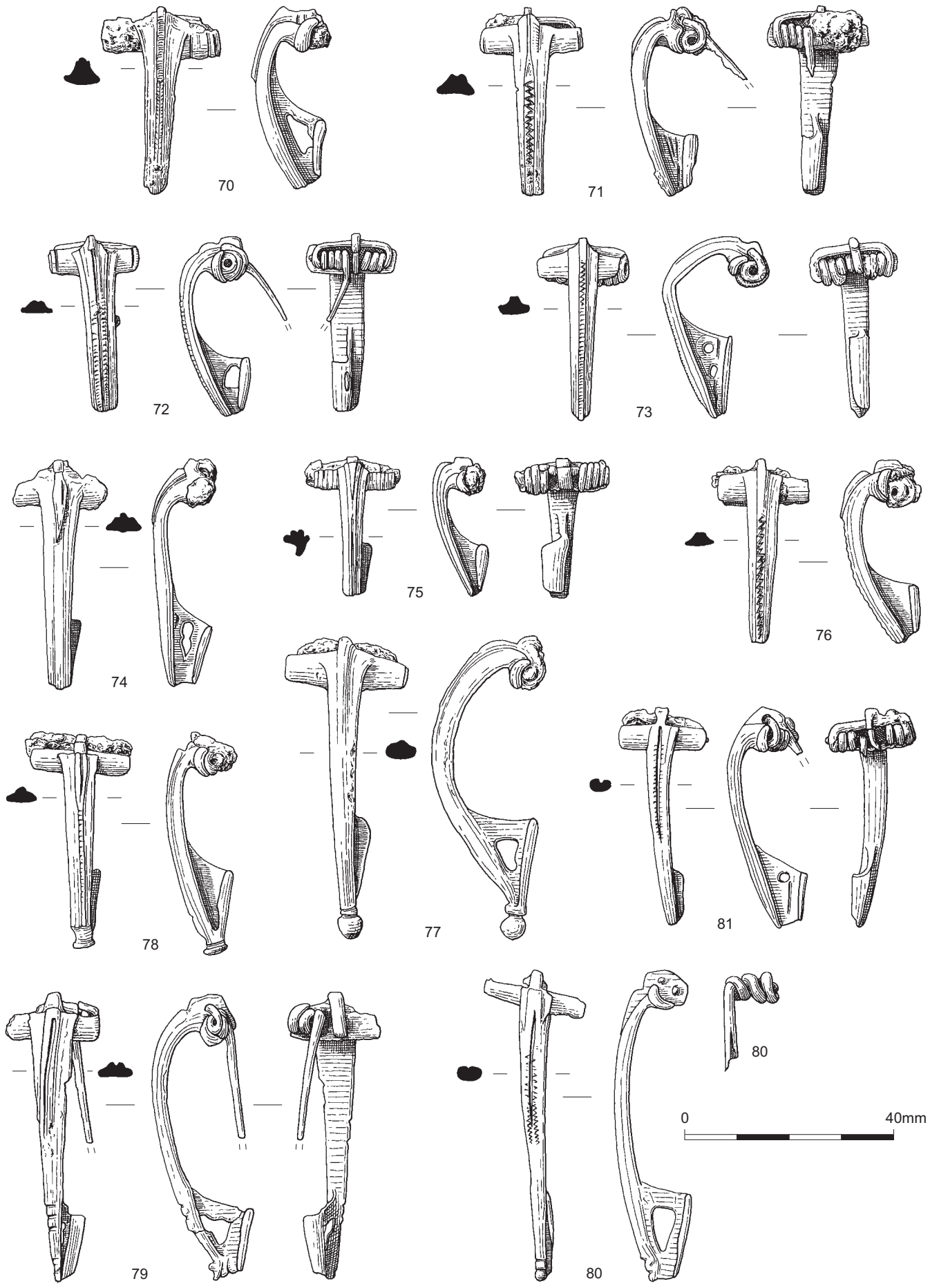


Figure 94 Springhead: copper alloy brooches 70–81

spring coils. SF 9145, Context 6447, Intervention 1001 (Spring), SG 300012 (Watercourse). Early Roman.

75. Incomplete. Wings decorated with five transverse grooves each side. Bow has grooved ridge down length, tapers slightly to foot. Triangular catchplate, upper edge concave. Pin missing. Eight spring coils. Leaded brass. SF 15343, Context 10808, Intervention 10808 (Layer), Property 11. Early Roman.
76. Incomplete. Pin missing. Crest continues as ridge with zigzag decoration down length of bow, numerous transverse striations on reverse of bow from filing during manufacture/production. Triangular catchplate. Eight spring coils. Leaded bronze. SF 18334, Context 17439, Intervention 17439 (Layer), SG 300599 (Layers), Property 3. Mid-Roman.

See also SFs 178, 436, 504, 551, 634, 661, 714, 728, 1233, 1251, 1727, 1861, 1876, 1877, 1882, 9257, 15218, 15227, 15399, 15680, 15894, and 15924.

aiii) With footknob

77. Incomplete. Bow has simple curve, tapers slightly. Raised ridge decoration along upper third of bow, D-shaped section with slight ridge on top. Foot ends with knob. Triangular catchplate with triangular perforation. Pin missing. Eight spring coils. Leaded bronze/gunmetal. SF 181, Context 3988, Intervention 3081 (Ditch), SG 300046 (Ditch). Mid-Roman.
78. Incomplete. D-shaped sectioned bow, tapers slightly to moulded footknob. Crest continues down length of bow as ridge. Triangular catchplate. Pin missing. Spring coil shows differential preservation to body of brooch. Ten spring coils. Leaded copper alloy. SF 20457, Context 16894, Intervention 16902 (Pit), SG 300579 (Pits), Property 4. Mid-Roman.

See also SFs 664, 1401, 9343, -506 and most likely SFs 9430, 15140 and 15264 of which only the feet and catchplates remain.

b) Crest or groove on the upper bow only

bi) Large brooches (longer than 45 mm)

79. Incomplete. D-shaped sectioned bow, tapers to foot. Beaded crest with groove at top of bow, four transverse grooves towards foot of bow. Triangular perforated catchplate. Left side of spring missing, pin broken. Three spring coils. SF 1410.
80. Incomplete. Two fragments – uncertain if from same brooch. 1: body of Colchester two-piece type, spring and pin missing. D-shape sectioned bow, tapers towards foot, longitudinal groove on upper part with zigzag decoration. Triangular perforated catchplate. 2: spring fragment: 3 coils with axial rod *in situ* and part of pin. Brooch: leaded brass. SF 18729, Context 17709, Intervention 17709 (Layer), SG 300600 (Layers), Property 3.

See also SFs 180, 721, 15226 and 18186.

bii) Small brooches (shorter than 45 mm) T93A

81. Incomplete. D-shaped sectioned bow, decorated with deep central groove to midpoint, beading either side. Lower part of bow decorated with small transverse grooves to foot. Subrectangular-shaped perforated catchplate. Pin missing. Seven spring coils. Leaded gunmetal. SF 177, Context 3988, Intervention 3081 (Ditch), SG 300046 (Ditch). Mid-Roman.

(Fig 95)

82. Incomplete. Spring and pin missing. Transverse groove decoration of two parallel lines on more complete wing. D-shaped sectioned bow, single groove on upper part, beaded decoration either side, tapers slightly to foot with raised tip. Triangular catchplate. SF 1272, Context 3289, Intervention 3289 (Artefact).
83. Incomplete. D-shaped sectioned bow, tapers to foot. Short groove at head, slight beading visible either side, transverse groove at foot. Triangular perforated catchplate. Most of spring and all of pin missing, one spring coil remaining. SF 15417, Context 16022, Intervention 16022 (Layer).
84. Incomplete. Small. Spring intact, pin missing. D-shaped sectioned bow, tapers to foot. Groove on upper half of bow. Sub-rectangular perforated catchplate (large perforation of irregular shape). Seven spring coils. SF 15848, Context 12465, Intervention 12446 (Other), SG 300349 (Pit), Property 2. Early Roman.

See also SFs 1315, 1856, 9146, 9150, 9178, 15234, 15691 and -581.

c) Plain bow T93B

85. Incomplete, in two parts. D-shape sectioned bow, tapers slightly to small moulded footknob. Short plain crest at top of bow. Part of spring and pin missing. Six spring coils. SF 20441, Context 17183, Intervention 17183 (Layer). Early Roman.

A very similar but shorter brooch was found at Richborough (Bayley and Butcher 2004, 88 fig 67, 192).

86. Almost complete. Transverse grooves decorate wing tips. Oval-sectioned bow, tapers slightly towards foot. Triangular catchplate. Tip of pin missing. Seven spring coils. SF 18765, Context 17855, Intervention 19597, SG 300613 (Layers), Property 3.

See also SF 1728.

Additional to the brooches mentioned above, the very corroded brooch heads SFs 1587, 1713, and 9205 could at least be identified as belonging to the two-piece Colchester rather than the one-piece type. The same is true of the 18 feet with catchplates of SFs 374, 607, 700, 915, 1292, 1462, 1552, 1835, 1858, 1881, 9206, 9321, 9460, 15143, 15342, 15889, and 18871.

The two-piece Colchester brooches are here classed according to the system devised for the Richborough assemblage by Bayley and Butcher (2004, 82–9, figs 62–9). They are a development of the one-piece type T90–91 via the dolphin brooches T94A (*ibid*, 157; Mackreth 1981, 137–8). The two-piece Colchester is a British form with a distribution mainly south-east of the Fosse Way, especially common in East Anglia and northern Kent (Bayley and Butcher 2004, 194 fig 170). At Colchester the type has been dated to *c* AD 50–65 (Hawkes and Hull 1947, 311; type IV), revised to

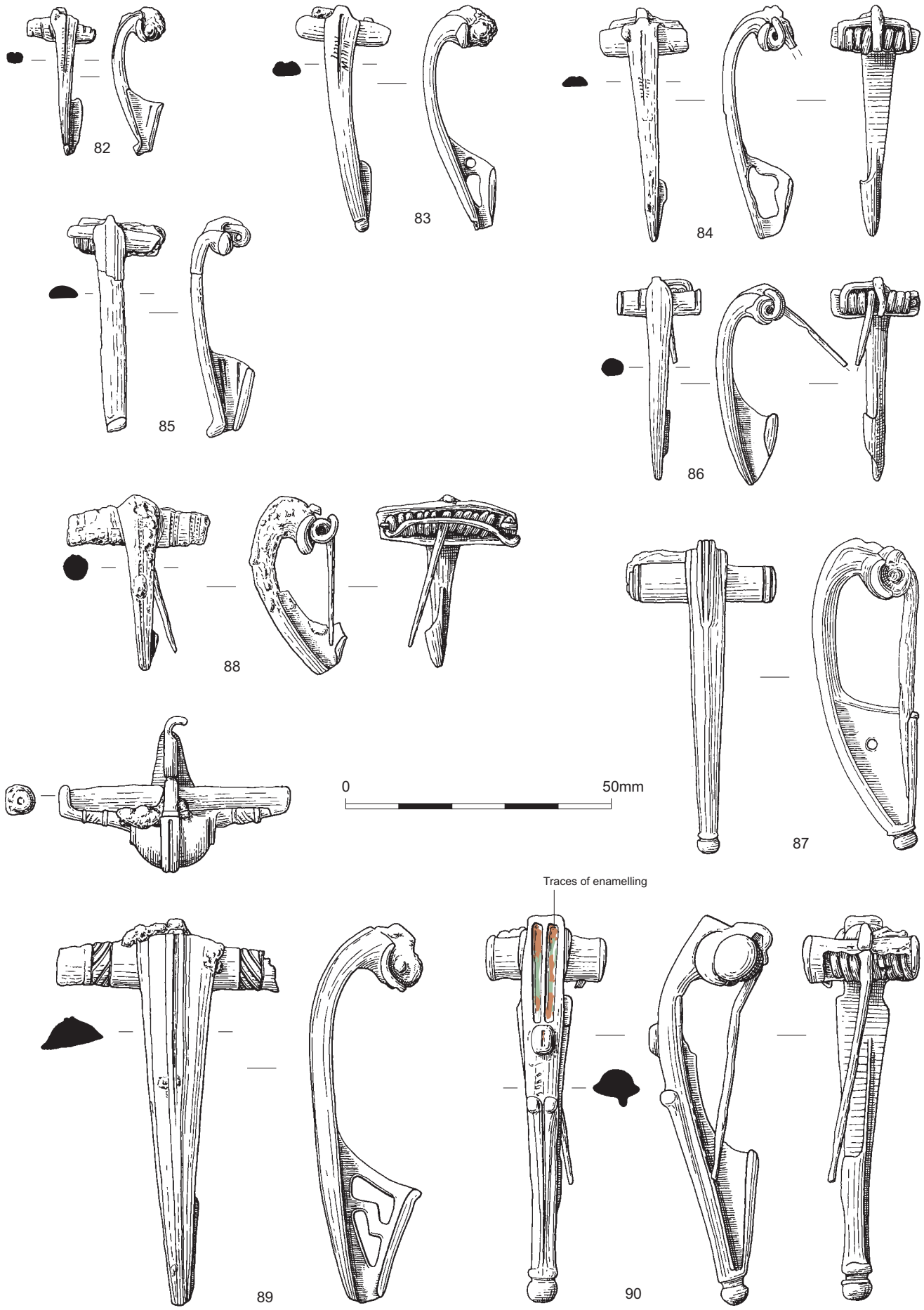


Figure 95 Springhead: copper alloy brooches 82–90

Table 48 Springhead metal finds: 'eye' motif and derivative used in catchplate perforations of two-piece Colchester brooches

T92–93 group	Ring in triangle ('eye' motif)	Triangle and round hole
ai)	Cat. No. 65–6 & SFs 1518, 1845, 1864 & foot SF 15043	SF 629
aii)		Cat. No. 73 & SFs 504, 1233, 1727, 15894
bi)		SF 15226
bii)		Cat. No. 84, SFs 1856, 15961
foot only		SFs 607, 1462, 15342, 15889

AD 50–70 by Crummy (1983, 12) for the Colchester B, which is equivalent to groups ai and aii, and AD 65–80 for the Colchester BB which is similar to groups b and c; none of the latter two groups were found at the Colchester Sheepen Site, which supports their later date. Among the brooches of group aii from Springhead there is one (SF 1251) which, unlike the others, has lines of rocker mark decoration either side of the central ridge. This has been called a major variant of the Harlow type by Mackreth (1995, 959–60). One specimen from *Verulamium* was found in the upper filling of a context dated 150–70 (Goodburn 1984, 22–3, fig 6, 25). While this variant is rare both at Springhead (one of 105 T92–93) and Richborough (one ai and two di) of 66 T92–93 (see Bayley and Butcher 2004, 83 fig 163; 88 fig 67, 193–4), it is proportionally more common at Canterbury Marlowe Car Park where three out of nine T92–93 have this form of decoration (Mackreth 1995, 959–60, fig 403, 14–16).

Another detail which was observed in six of the 18 brooches of group ai at Springhead is a catchplate whose perforation takes the form of a ring set into a triangular or sub-triangular opening, and it is here proposed that this may be intended to represent an eye with the ring representing a staring pupil. This detail seems to be confined to brooches of group ai, probably because these larger brooches provide enough space for the motif (Table 48). Individual examples are not unknown from other sites (eg, Colchester, Hawkes and Hull 1947, pl 91, 41; Richborough, Bayley and Butcher 2004, 83, fig 62, 160; Canterbury Marlowe Car Park, Mackreth 1995, 960 fig 403, 10; West Thurrock, inhumation burial 17059, Schuster 2009, fig 8, 19570), but no assemblage with more than one example is yet known to the writer. Combinations of a triangle near the tip and a round hole near the inside edge of the catchplate are derivations of this motif, mainly found in the smaller variants but one also on an ai brooch, SF 629, at Springhead. In terms of the chronological development of this detail it is interesting to note that the 'eye'-motif only occurs on ai brooches, whereas the triangle-and-hole motif occurs on examples of groups ai, aii, bi, and bii. Good parallels, still quite close to the original motif, were, for instance, found on brooches of group aii at Harlow (Gobel 1985, 73, fig 40, 52) and Colchester (Hawkes and Hull 1947, pl 91, 38), and of group bii at Richborough (Bayley and Butcher 2004, 87, fig 66, 187–8.191).

Group aiii may be slightly later, in line with the later range of AD 75–125, if not earlier, suggested by Mackreth (1995, 961) for brooches with foot knobs more like Richborough group dii. Hull suggested a date of Vespasian or earlier for a specimen from Lullingstone villa, which is especially similar to SF 664 (Hull in Meates 1987, 63–4, fig 24, 58). Although irrelevant for the date, it should be noted that the foot of a two-piece Colchester brooch aiii, SF 9430, was found in the fill of Saxon SFB 5809.

With 105 examples recovered during the HS1 excavations, the two-piece Colchesters are the most numerous type of brooch at Springhead, with more than two thirds found on the Sanctuary site or in the Ebbsfleet itself (Fig 96). Among the T92–93 brooches from the Sanctuary just under half (34 of 70) had perforated catchplates, while within the Roadside settlement and the Ebbsfleet this feature only occurred in just over a third of the brooches (14 of 35). Equally, the occurrence of fragmented brooches, either only heads or feet with catchplates, was markedly different in these two areas of Springhead: 14 feet and eight heads were found on the Sanctuary site; west of the Ebbsfleet the numbers are seven feet and two heads. Some of them show clear signs of deliberate breaking, eg, the foot SF 1462 with a lip from breaking on the inside edge, or the heads SFs 961, 981, or 9255, where the straightening of the bow happened before it finally snapped; although very corroded, the extremely twisted foot SF 607 is also the result of a deliberate break. It should be mentioned that some of the 21 feet mentioned here could well belong to a Polden Hill type brooch like SF 18743, but considering the large number of T92–93 brooches compared to only three (see below) with a Polden Hill spring arrangement, the resulting error will not be significant.

The results of XRF-analysis of 13 two-piece Colchester brooches have shown that none was made of brass, only two of leaded brass, two of (leaded) bronze, and the remainder of leaded bronze and/or leaded gunmetal. The change from brass as the preferred material for the Colchester brooches to leaded bronze for the two-piece type has been linked to a reduced availability of brass and an increased supply of lead in the second half of the 1st century AD (Bayley and Butcher 2004, 155–6 fig 123). The results of the Springhead assemblage fit well with this outlined development.

Dolphin brooches T94A

87. Incomplete. Both wings have double transverse grooves at tips. Head quite sharply angled, crest at top of head has two deep transverse ridges and extends onto bow with double longitudinal groove decoration. Bow oval-shaped cross-section; longitudinal grooves define edges, slight ridge down centre. Tapers to small

moulded foot knob with slight collar above. Large triangular catchplate, small circular perforation at centre. Part of chord and single spring coil missing from right side. Eleven spring coils. SF 15039, Context 10013, Intervention 10013 (Ditch), SG 300364 (Ditch), Property 12.

88. Complete. Spring is separate but complete, chord held by a downward hook at the top of the bow. Wings decorated with transverse grooves and beading. Oval-sectioned bow, tapers to foot, longitudinal beaded ridge decoration. Triangular catchplate with web continuing half way up the bow. Thirteen spring coils. SF 15329, Context 10405, Intervention 10405 (Layer), Property 11. Mid-Roman.

See also SF 15927 which is very corroded but probably belongs here.

The sprung dolphin brooch T94A is regarded as an intermediary stage between the one- and the two-piece Colchester types. The three from Springhead all share the construction with a backward hook holding the spring in place; apart from that they are quite different from each other. The type is generally dated to the first few decades after the conquest (Hawkes and Hull 1947, 311; Mackreth 1981, 137–8; 1985, 15; Bayley and Butcher 2004, 157). Cat No 87 is unusual in that it has a foot knob similar to that found in the two-piece Colchester group aiii. A sprung dolphin brooch from Soham, Cambridgeshire, has a similar knob, but the inside edge of the catchplate has a less step angle (Mackreth 1985, 16, fig 7, 95). On account of the unusual foot Mackreth suggested that this brooch may be slightly later than the general run of the type. The same may be true of SF 15927 and especially Cat No 88, both with catchplates which continue with a small web along the insides of the bow, a feature which is more commonly seen among the Polden Hill and T-shaped series (eg, Cat No 90). Good parallels for Cat No 88 have been found at Woodcock Hall, Saham Toney, Norfolk (Brown 1986, 24–5, figs 14–5, 60.65.77), but the webbed catchplate also occurs on a plain T94A from Hod Hill (Brailsford 1962, fig 6, C13). Dolphin brooches with rearward facing hooks are especially common in East Anglia (Brown 1986, 21–8, nos 60–86; Bayley and Butcher 2004, 157).

Polden Hill brooches T95

89. Incomplete, spring and pin missing. Wings each decorated with central band of diagonal ribs. Spring held in the Polden Hill manner, one closed end remains to hold now missing axial rod. Long, tapering, now slightly flattened bow with two central ribs joining in the middle to continue to foot as one. Triangular catchplate with two irregularly shaped holes. Quite similar to hinged dolphin brooch from Richborough (Bayley and Butcher 2004, 90, fig 70, 206) apart from

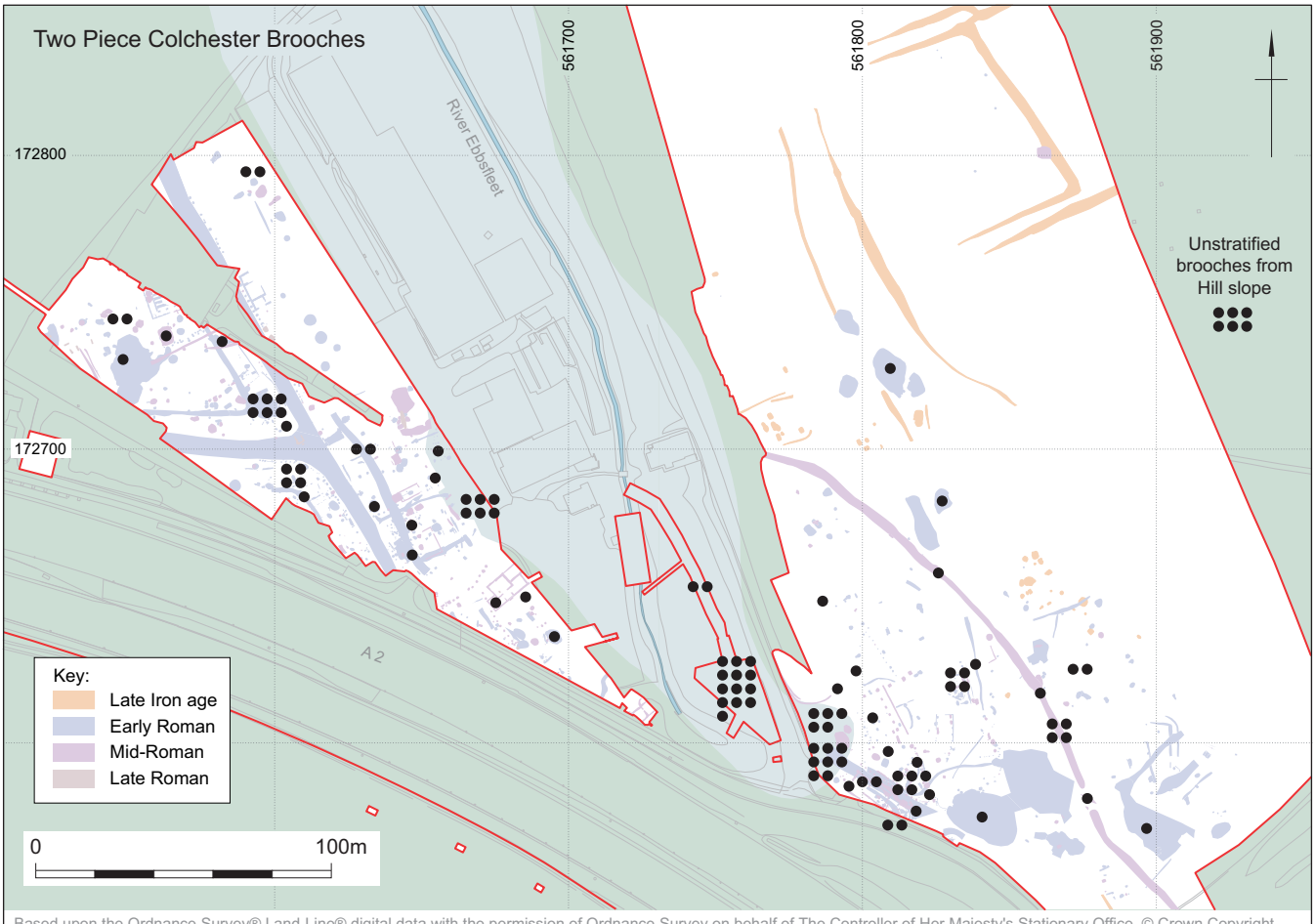


Figure 96 Springhead: distribution of two-piece Colchester brooches

the different spring mechanism. SF 563, Context 2875, Intervention 2874 (Pit). Early Saxon.

See also SFs 1257 and 18743.

The Polden Hill-manner of spring attachment is not very common at Springhead, a fact which need not surprise as it is generally considered a western phenomenon (Cool 1998, 29): only four definite occurrences and one possible are noted among the brooches of types T95 and T110. Those belonging to the Polden Hill series proper are of the early type T95. At Colchester, similar brooches have been dated pre-Flavian (Hawkes and Hull 1947, 311, pl 91, 42–3; Crummy 1983, 13, fig 8, 62–3). Unfortunately, there is nothing to confirm this dating at Springhead where two were found in Saxon contexts and one in the fills of the waterfront on the western side of the Ebbsfleet.

T-shaped brooches

90. T110. Almost complete. Large, heavy brooch with its spring fixed by an axial bar set in the flanges of the plain cross bar in the Polden Hill manner. Chord held by small crest, tip of pin missing. Quite sharp, pronounced angle at head. Disc-shaped flanges on side of very upper part of neck of bow. Upper part of bow rectangular-sectioned, decorated with two enamelled (now orange/yellow) panels of three rectangles; small circular raised boss at base of panels also enamelled. Mid-point of bow has D-shaped section, double dotted punched lines link to lower part of bow; tapers to moulded foot knob. Two small moulded protrusions lead to double longitudinal ribs to foot. Solid triangular catchplate. Eight spring coils. Leaded copper alloy. SF 18383, Context 17709, Intervention 17709 (Layer), SG 300600 (Layers), Property 3.

See also SF 611 which is probably the bow and foot of a similar or slightly shorter brooch (eg, Bayley and Butcher 2004, 166 fig 138, T111).

Cat No 90 is a developed T-shaped brooch; it has the Polden Hill-treatment of spring attachment, but its bow relates it to the hinged T-shaped brooches. Similar brooches have a mainly south-westerly distribution in Britain, with one from Croft Ambrey, Herefordshire, dated to AD 65–160, and others suggesting a date either side of the middle of the 2nd century (Bayley and Butcher 2004, 167). A comparable brooch from Nor'nour has a more elaborate crest but its panels lack the sub-divisions seen in the Springhead example (Hull 1967, 31 fig 11, 11).

A complete example of a T-shaped brooch T111 (SF 1859, not illustrated as it only came to the author's attention when all illustrations were finished), distinguished from those like Cat No 90 by its hinge whose axial bar is held by a narrow tube, was found in the channel fills of the Ebbsfleet. It has an unperforated head stud and remains of blue and other unidentifiable enamel in the two rectangular panels on its bow. It is unusual among the T111 in that it has a triangular knob pointing towards the foot where others of the same type have two leaf-shaped mouldings arranged in a V-shape pointing towards the head. A T111 brooch was found at Caerleon with pottery dating 130–60; the date range of the type probably covers the late 1st and early 2nd centuries (Bayley and Butcher 2004, 166–7, fig 138). The type has a south-western distribution (eg, Nor'nour: Hull 1967, 31–3 figs 11, 12–3; 12, 14–21; Butcher *et al* 2004, 20–2, fig 8, 301; Wanborough: Butcher 2001, 59, fig 24, 106).

Fantailed brooches

(Fig 97)

91. Incomplete. Hinged bow brooch with crossbar. Bow has flat cross section. Upper part has triangular ridge with beaded decoration either side. Lower part flares out, with three ring-and-dot decorations. Sub-rectangular catchplate with concave inner edge. Pin missing. Leaded bronze. SF 1426, Context 0.
92. Incomplete. Spring attachment as that of the Colchester-derivative brooches T92–93. Right side of spring survives, pin missing. Crest continues to middle of bow, grooved decoration on edge of silvered/tinned fantailed foot. Sub-rectangular catchplate, continues into low ridge on back of bow. Four spring coils. Leaded bronze. SF 1865, Context 6444, Intervention 1002 (Spring).

See also SF 15040.

Cat No 91 is one of a rare type which draws on typological and technological details found among some Colchester derivative (eg, from Stonea; Mackreth 1996, 297, fig 93, 9) and Aesica brooches (Hattatt 2000, 310, fig 169, 793.796), especially the Hook Norton type which has a similar pattern on the foot (*cf* Bayley and Butcher 2004, 151, fig 115), and ultimately goes back to the rosette brooches. A small number of close parallels for Cat No 91 have been found in the East Midlands and East Anglia; an outlier is recorded from Wiltshire (Hattatt 2000, 302, fig 161, 920). In the Stonea report, Mackreth (1996, 301) mentions similar brooches from *Verulamium* and Leicester but discusses them in conjunction with others which do not necessarily have a fantail foot, eg, the brooch from Stonea (see above). The dates range from the later 1st to the later 2nd century.

Cat No 92 and SF 15040 belong to a relatively tight group of brooches that can be regarded as one of the prototypes of the Celtic fantailed brooches which usually have an enamelled foot and date to the late 1st and 2nd centuries. This prototype, named the 'Maxey type' by Hattatt (2000, 314, fig 173), is mainly found in East Anglia but he also lists one from Kent. One was found at Gorhambury, Hertfordshire (Butcher 1990, 116, fig 121, 16), and further examples from Kent include one from a later 1st century context at Lullingstone villa (Meates 1987, 64, fig 24, 56) and a foot from Richborough (Bayley and Butcher 2004, 99, fig 79, 239). A later 1st century date was also suggested by Crummy (1983, 164–5, fig 111, 2) for the brooch from Maxey, Cambridgeshire, on account of the spring

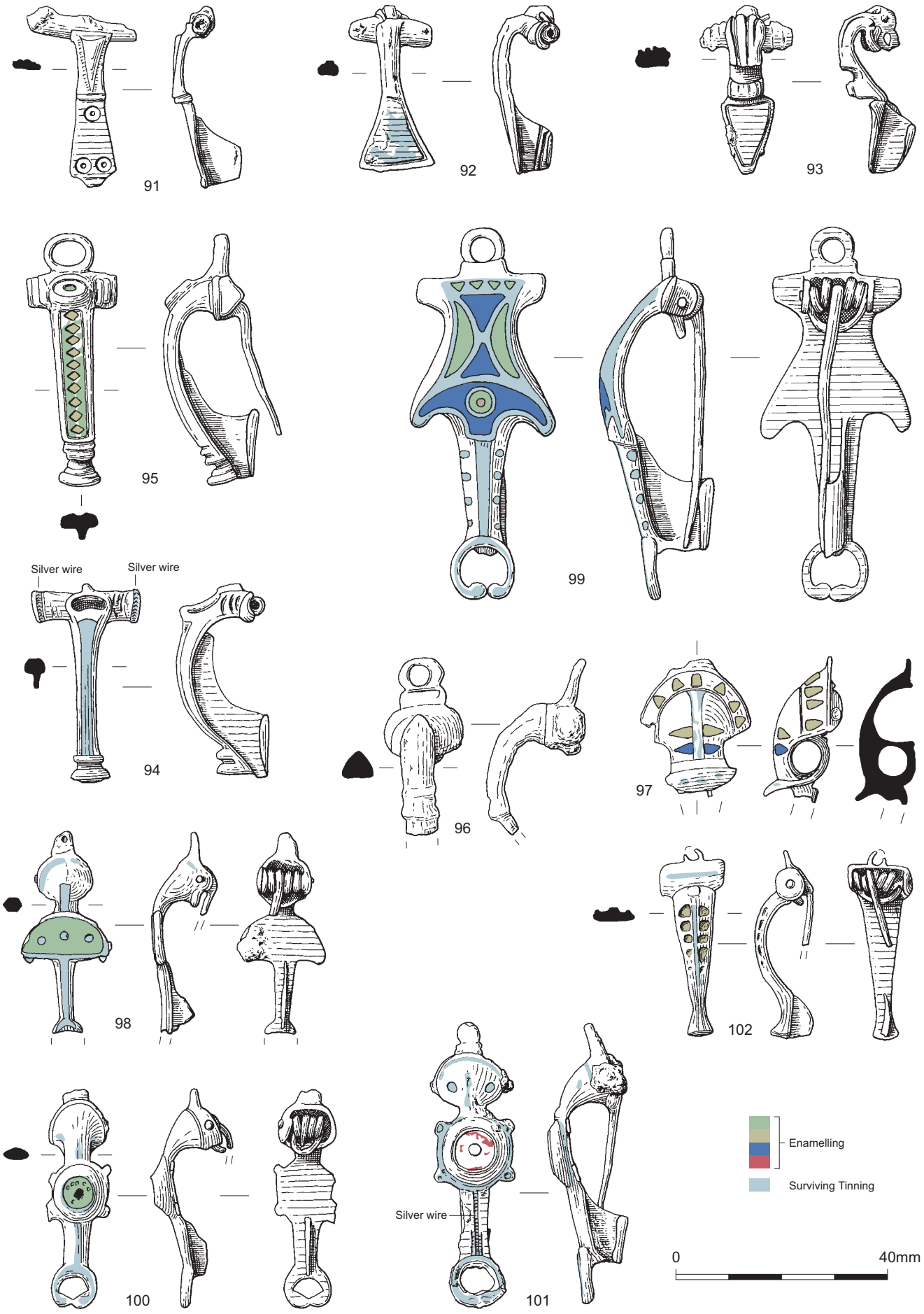


Figure 97 Springhead: copper alloy brooches 91–102

construction similar to that of T92–93, while the fully fledged bow-and-fantail brooches have a hinged pin and usually a fixed headloop.

Reversed fantail brooch

93. Incomplete. Double perforated lug on reverse of head for sprung pin (missing). Bow bent, resulting in head now sharply angled. Upper part of bow of D-shaped section, decorated by three longitudinal grooves. Lower part of bow in the shape of an inverted triangle with grooved borders. Sub-rectangular catchplate. Leaded copper alloy. SF 15926, Context 16149, Intervention 16148 (Ditch), SG 300473 (Pits), Property 10. Early Roman.

This brooch shares many of the characteristics of the Maxey type, but the foot is turned 180° so that the end is pointed. While a number of reverse fantail brooches from East Anglia are listed by Hattatt (2000, 313, fig 172), their foot is usually more strongly profiled, and none have bows with longitudinal grooves like Cat No 93. Apart from one example from Saham Toney, Norfolk (Brown 1986, 28, fig 16, 87) with a spring construction like Cat No 93, all others have a reverse hook construction which suggests that the type developed in the latter half of the 1st century. The Springhead brooch was found in a ditch in property 10 with a pottery date range covering the later 1st and 2nd centuries.

Headstud brooches

94. *T148C var*. Incomplete. Hinged, pin missing. Wings decorated with twisted silver alloy wire inlay at tips and transverse grooves. Cavity in front of neck would originally have held ?enamelled stud, now missing. Bow also decorated with band of white metal. Moulded foot knob would have held held decorative stud, now missing. Triangular catchplate with web extending along length of reverse of bow to back of neck cavity. (Leaded) brass with silver alloy. SF 846, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman.
95. *T149B*. Complete. Hinged, plain fixed headloop. Short wings have transverse grooved decoration. Rectangular-sectioned bow, decoration of headstud and lattice including ten enamelled lozenge shapes (the first green–yellow, the others and the sides all corroded green). Two transverse mouldings above moulded foot knob. Sub-triangular catchplate. Leaded copper alloy. SF 704, Context 2675, Intervention 2675 (Layer), SG 300163 (Deposit). Mid-Roman.

See also SFs 15925 and 1959 (not seen by JS). SF 1887 may be a stud belonging to such a brooch.

The headstud brooches from Springhead belong to three different variants of the Lamberton Moor series. With its twisted silver wire on the long wings and the white metal inlay on the bow Cat No 94 is a more elaborate variation of the usually enamelled T148C, while SF 15925 is a sprung specimen of T148B with a bow decorated with rectangular cells of blue and green enamel. A third T148 from Springhead is illustrated by Böhme (1972, 49, Abb 6, 12). Both spring and rectangular cells have been suggested as indicating earlier forms of this type, eg as found on a brooch from Stonea, Cambridgeshire, dated to *c* AD 65–85 (Mackreth 1996, 308, fig 96, 44; 315; spring as indication of early sub-type refuted by Bayley and Butcher 2004, 167), and one hinged specimen with fixed headloop from Cottenham, dated before AD 100 (Mackreth 1985, 19–21, fig 9, 121). The end of the use of rectangular cells before AD 100 is supported by the evidence from Castleford, West Yorkshire (Cool 1998, 30–1). Both Springhead T148 brooches are lacking a headloop which would have been separate, while in Cat No 95 this forms part of the brooch. The separate, now missing studs of Cat No 94 suggest that this brooch belongs to the earlier run of the series, while the headstuds cast as part of the bow indicate a more developed stage (Crummy 1983, 13).

Cat No 95 belongs to group 5a at Castleford which at that site was found in a context dating from the Flavian–Antonine period (Cool 1998, 30). Another early brooch of this variant of T149B was found at Chelmsford in a ditch context dated to before AD 100 (Butcher 1992, 72, fig 38, 24). Unfortunately, the wide pottery date ranges of the contexts at Springhead add nothing to this discussion, but SF 15925, stratigraphically related to the second phase of the smithy in property 10, would suggest a similar date.

T148 and 149 are found throughout Britain although there are some variations depending on the sub-type; thus T148B has a more southerly distribution and is scarce in the north (Crummy 1983, 13), while T148C is more evenly distributed (Bayley and Butcher 2004, 198, fig 174).

Trumpet-headed brooches

96. Incomplete, upper part of bow and head only. Probably has spring but due to corrosion cannot count coils, held on axial bar between two lugs behind flat oval head. Loop at end of rectangular lug cast in one with head. D-shaped section of bow, with double transverse moulding above break, too corroded to identify whether originally with acanthus or plain moulding. SF 810, Context 5750, Intervention 5750 (Layer).

See also SFs 617, 647 and probably 18187.

Cat No 96, SFs 617 and 647 are all missing the bow or at least the foot but are best classed according to the system suggested by Bayley and Butcher (2004, 93, fig 73, 220; 160–4), in which they belong to group C with a head based on a flat plate, a fixed headloop, and a spring held on a bar between two lugs. The foot and bow of SF 18187 is very similar to that of the Richborough brooch and thus likely to belong here, too, although the moulding on the bow also links it to a trumpet-related brooch from Alcester (Mackreth 1994, 175, fig 79, 61). Being the devolved copies of the standard trumpet brooches of the northern military area (group A), group C brooches date to the 2nd century and are distributed in the south and west of Britain (Bayley and Butcher 2004, 162; 197, fig 173).

Trumpet-head related brooches

97. Incomplete. Head only. Reverse of head is hollow, perforated lugs on side of head indicate where axial rod held now missing spring in place. Trace of headloop projection at top of head. Top edge of trumpet decorated with yellow–greenish enamelled convex-sided triangles, below this are transverse triangular panels with blue and yellow enamel, on reverse of this part of brooch is a loop. Below this a semi-circular crest protrudes outwards, decorated with darker dots, probably of white metal. Remains of white metal also on ridge and in front of crest. Remainder missing. SF 18811, Context 16640, Intervention 16640 (Layer), SG 300491 (Layers), Roadside shrine.

Cat No 97 is a colourful, enamelled variant of the Alcester type (T162) which is more commonly decorated with applied strips and coils of silver wire also found on the disc-on-bow variant discussed below (Bayley and Butcher 2004, 169; Hattatt 2000, 331, fig 190, 979–80.1539–40). Such decoration may originally have been present on the strips and dots of white metal remains still visible on the brooch. Alcester brooches are widely distributed in Britain in the 2nd century, although more common in the south (Bayley and Butcher 2004, 169; Cool 1998, 32).

98. Incomplete. Lug at top of head appears to be unperforated, spring between two lugs held by iron rod, pin broken. Semi-circularly shaped enamelled plate at mid point of narrow hexagonal bow; enamelled field now appears green, with three reserved metal spots covered with remains of white metal. Bands of white metal coating also along outer edge of head, centre of bow and foot and base of centre of bow. Lunula-shaped foot terminal also with white metal cover. Catchplate fragmented. Very corroded. Four spring coils. Brass. SF 1730, Context 6379, Intervention 1001 (Spring), SG 300015 (Deposits). Early Roman.

This type is essentially half way between the disc-on-bow type T166, discussed below, and the type with a pelta-shaped ornament on the bow, T167, but seemingly less common. Where the foot terminal is preserved, it always ends in a penannular shape like that found on the disc-on-bow brooches from Springhead (*cf* Cat Nos 100–1). Olivier (1996, 256–7, fig 11.10, 110) mentions 12 which are mainly distributed in the eastern half of Britain between the Thames and Humber estuaries, with outliers at Ilchester and Blandford. No firm dating has been established yet, and Springhead adds nothing new, but on account of affinities to the two types mentioned above, a similar date range in the 2nd century is suggested. A brooch with one lug behind a flat head found at Augst may be an imitation of such a brooch (Riha 1979, Taf 65, 1689).

99. Complete. Fixed head loop, groove decorates junction to head of brooch. Sprung pin with rear chord held between two perforated lugs on reverse of head by iron axial rod. Upper part of bow has concave sides which broaden to 'wings'/inverted crescent shape. Elaborate *champlevé* enamel in fields of now semi-translucent blue and green: at the top four inverted green triangles, followed by a concave-sided panel divided into four triangular fields by saltire-shaped ribs; the larger upper and lower fields filled with blue enamel, the narrower, lateral fields with concave outer sides, filled green. Below this follows a pelta-shaped field with blue enamelled background and a central circular ring-and-dot ornament: the ring of green enamel, the dot of the base metal covered with white metal. Foot has D-shaped cross section, median strip and dots either side with white metal coating. Bow tapers to ringed foot – cast in one – but white metal coating gives impression of penannular ring with rounded terminals. Subrectangular catchplate with short web along entire length of foot. Five spring coils. Leaded brass. SF 20115, Context 19398, Intervention 19398 (Layer), SG 300635 (Layers), Property 3. Early Roman. (Pl 4).

Plate 4 Bow brooch with blue and green enamel and white metal bands and dots which have lost their original decoration, probably of beaded silver wire (Cat No 99), leaded brass L 70 mm. Photo: E Wakefield

See also SF 589.

This very colourful brooch (Cat No 99; Pl 4) unites elements known from other types in an, as yet, unique combination: its lower part, the foot and the pelta-shaped part of the bow, relate it to the trumpet-headed brooches with straight foot and disc or half disc-on-bow (*cf* Cat Nos 98, 100–1). However, the head has a very different shape found in some fantail and fantail-derivative brooches which are usually hinged (eg, Cool 1998, 44, fig 10, 51–2.55: Bayley and Butcher 2004, 170, fig 143, T163). The spring attachment with its two side lugs between which the rear-corded spring is attached is again reminiscent of the trumpet-headed types. The brooch was found in a context sealing the roadside ditch to the west of the bakery complex in property 3, which has a pottery date range spanning the period from the mid-1st to mid-2nd centuries. While the typological consideration would already suggest a date in the 2nd century, the context date confines this to its earlier half.

Brooch SF 589 is most likely another trumpet-head related brooch, missing most of its bow and head but with a small knob in the middle of the bow, which is comparable to a Wroxeter-type brooch (T151) from Eye, Suffolk (Hattatt 2000, 331 fig 190,1538); however, that brooch also has a panel of chequered enamel on the bow, lacking in the Springhead specimen. A general 2nd century date may be suggested on that basis (Bayley and Butcher 2004, 169).

Trumpet head related disc-on-bow brooches T166C

100. Incomplete. Spring held on bar between two lugs. Fixed headloop missing. Circular flat-backed waist moulding, four small lugs attached to its edge, centre of circle enamelled. Bow tapers to foot with penannular terminal; foot originally coated in white metal (tin/lead alloy). Hook on catchplate missing. Four spring coils. Leaded bronze. SF 1549, Context 3392, Intervention 3392 (Ditch), SG 300046 (Ditch). Early Roman.

101. Complete. Unperforated lug at top of head (imitates small headloop on Trumpet and Headstud types). Sprung pin, iron corrosion from axis adheres to reverse of head. White metal-coated dots on either side of trumpet head; differential corrosion possibly remains of silver sheet soldered onto head. Circular disc at top of bow, four small lobes protrude from its edge, centre of disc enamelled (now reddish colour), trace of silver thread around disc. Remains of applied beaded silver wire on lower part of bow which tapers slightly towards foot with annular terminal. White metal coating on top of terminal. Subrectangular catchplate. (Leaded) brass. SF 18741, Context 17709, Intervention 17709 (Layer), SG 300600 (Layers), Property 3.

See also SF 9359.

Richardson first classified this type in 1960, already listing more than 30 examples from all of Britain, including the outer Hebrides. Their date range is mainly Antonine (Bayley and Butcher 2004, 170; Butcher 2001, 59–60 fig 24,115–6). Hull distinguishes four variants based on the treatment of the foot. All three brooches from Springhead belong to his Type 166C with annular or penannular terminal. A better preserved example of this variant, with the applied silver wires still in place, was found at Walbrook, London (Richardson 1960, 203 fig 2, 31). A further brooch of this type was found on the bakery, site A, at Springhead, but its foot is missing and thus it remains uncertain whether it belonged to the same variant (Penn 1957, 81 fig 14, 5; 98).

Knee brooches

Small knee brooches with cylindrical head T173A

102. Incomplete. Part of fixed headlloop attached to top of cylindrical head of spring cover. D-shape sectioned bow, tapers to foot which flares out again towards the end. Profile similar to knee type with sharp curve back from base of bow to foot, but angle at top of bow not so pronounced. Eight subrectangular panels, four either side of top of bow, originally held enamel decoration (now traces of yellow/green colour). Corroded remains of white metal band across top of spring cover and longitudinally along centre of bow and foot. Sub-rectangular catchplate, incomplete. Pin broken. Six spring coils. Brass. SF 18185, Context 17425, Intervention 17425 (-).

(Fig 98)

103. Almost complete. Semi-cylindrical spring cover, rectangular-sectioned headloop attached. Top of bow is a lozenge-shaped panel filled with (now) pale yellow/green colour enamel and a dark (?black) central bead set in the centre and polished. Two transverse knobs protrude either side of the panel. D-shaped bow tapers to foot. White metal band across top of spring cover, around lozenge and a band along centre of bow and foot. Small sub-rectangular catchplate, pin bent and tip missing. Four spring coils. Leaded brass. SF 1729, Context 6379, Intervention 1001 (Spring), SG 300015 (Deposits). Early Roman.

While rare on the German *limes*, in Britain T173A is found widespread south of a line between the Humber and the lower Severn Valley (Mackreth 1999, 222), both in military and civilian sites, although their generally small size indicates a more civilian use (Bayley and Butcher 2004, 180, fig 154). The composition of the two Springhead brooches conforms to the majority of the type which is made of brass (*ibid*, 180–1, fig 155–6). These brooches are often enamelled and/or applied with silver bands like the two examples from Springhead but plain brooches are also known as, for example, at Colchester (Crummy 1983, 14, fig 10, 69) or Fordham in Cambridgeshire (Mackreth 1985, 26, fig 11, 154). An example with a rectangular panel with concave sides was found in drain group 4 of the baths at Caerleon, dated Antonine–3rd century (Brewer 1986a, 171, fig 55, 12). This fits well within the main date range of *c* 125–225 suggested for the type by Mackreth (1999, 222).

With bow of rectangular section expanding to square foot with transverse catchplate T176B

104. Variant. Incomplete. Spring in semi-cylindrical cover, pin broken. Rectangular-sectioned bow, pronounced arch at head, tapers to middle, flares out to rectangular transverse catchplate. Five spring coils. (Leaded) brass? SF 9374, Context 6682, Intervention 6682 (Artefact). Early Roman.

In Hull's typology, this brooch is of his type 176B, but the distinct semi-circular arch of the bow links it to Böhme's type 21d for which she lists a number of parallels, mainly from Britain and the Upper Germanic *limes* (Böhme 1972, 21; 59 Fundliste 11: Taf 9, 462). The British examples include brooches from ditch fills at Richborough dated to 250–80 (Bayley and Butcher 2004, 101 fig 80, 241) and Springhead itself. The broader type is very common in the camps and forts of

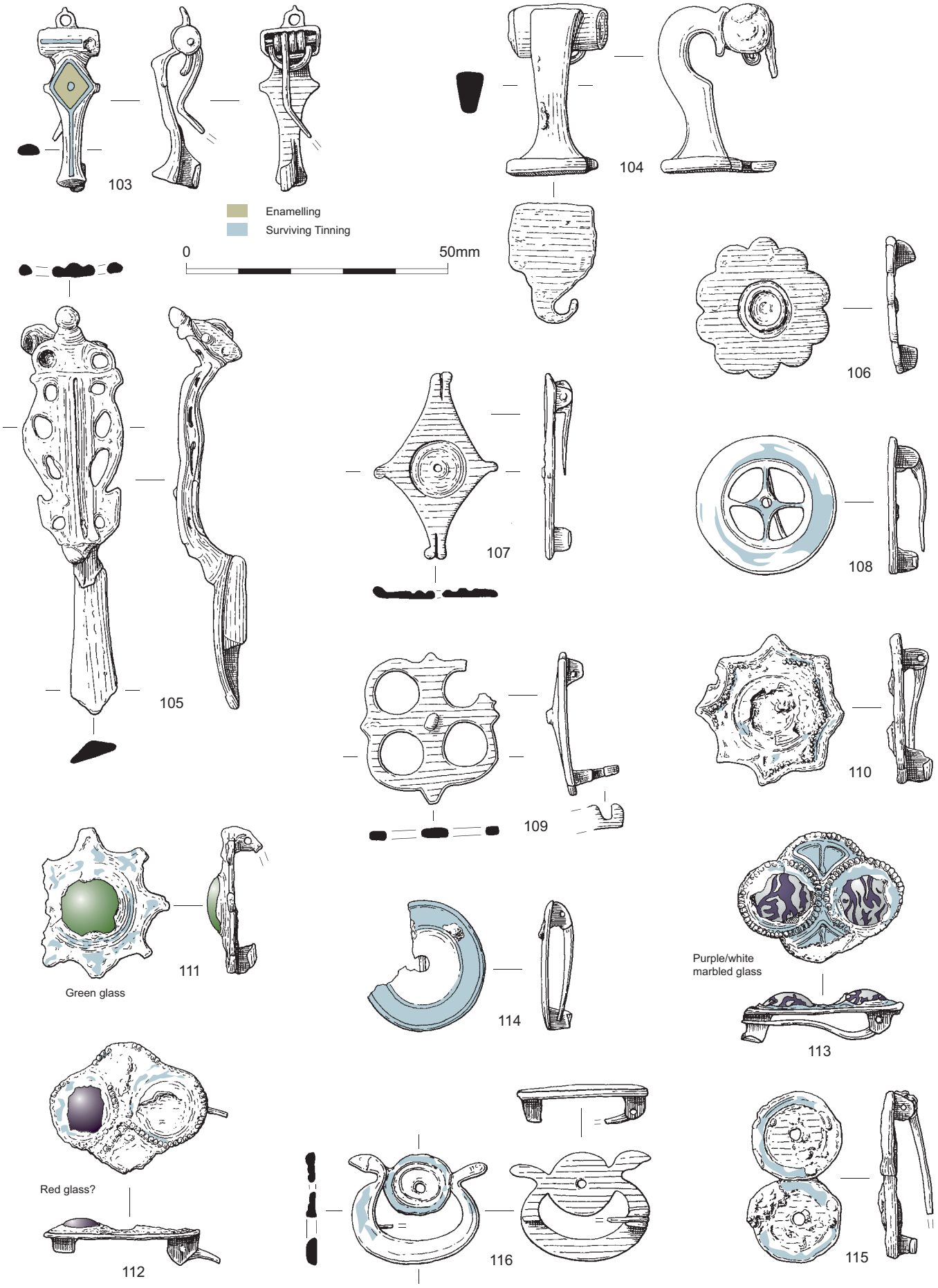


Figure 98 Springhead: copper alloy brooches 103–16

the *limes* from the Antoninian period onwards and seems to go out of use around AD 200 (Böhme 1972, 21; Bayley and Butcher 2004, 179). In Britain the loose distribution reaches as far north as Newstead (*ibid*, 200, fig 175).

P-profiled sprung brooches

105. Incomplete. The headplate has two lateral holes and a central small knob set off from the plate by a transverse moulding. Behind the head there is a lug with two holes to hold a double spring (or spring and chord?); part of iron spring bar survives in the lower, one coil of spring visible and in the upper hole part of ?chord or bar for second spring. Degenerated openwork decoration, reminiscent of trumpet-scrolls, on either side of bow (now flattened), central bar contains longitudinal ribbed decoration. Bow-foot junction marked by triangular-sectioned segment. Catchplate bent, extends only along two-thirds of foot length; foot flares towards triangular end. One spring coil. Leaded gunmetal. SF 828, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman.

This brooch shares certain characteristics with P-profiled brooches like Böhme Type 27c (1972, Taf 16, 691–5), eg, the foot and catchplate, and the headplate of type 27 is generally triangular with a central knob but lacking the lateral holes found in Cat No 105. The best comparison, however, is a very similar but sheath-footed brooch with a double spring, found in Well F.19 in an earlier excavation at Springhead (Hull 1970, 143–4, fig 2b). The well was constructed in the early decades of the 2nd century and remained in use possibly into the early 3rd (Harker 1970, 142). The details of the bow of Cat No 105 can also be found on a brooch from Stonea (Mackreth 1996, 312, fig 100, 88), and from the same site there is a silver brooch with slightly plainer bow with tendrils either side of top and end of the bow and a head with a wavy top edge and lateral tendirils where Cat No 105 has the holes (*ibid*, 298, fig 94, 17). The design of the bow of these and the Springhead brooches may be a Romano-British detail, although a brooch allegedly found at Augst has a similar bow design (Riha 1979, Taf 49, 1425), but there the decoration (thought to be 'Germanic') with drop-shaped openwork sits on the crest of the bow, not on its sides. While brooches with double springs are found in various types in the European Barbaricum as far east as southern Russia (Mackreth 1996, 304), the closer similarities among the brooches mentioned above suggest a date for Cat No 105 at the end of the 2nd, or more likely the early 3rd century.

Plate brooches

Flat petal-shaped disc with circular central motif Riha type 7.7/Feugère type 24f

106. Incomplete. Pin missing. 'Petal'-shaped with ring decoration at centre. Possible perforation in middle. Two lugs for hinged pin on reverse, small catchplate. (Leaded) brass. SF 873, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman.

Cat No 106 is a rare variation of an otherwise not uncommon type with a small bone disc applied; one such disc is likely to have been attached to the centre of this brooch. The closest parallel is found at Augst (Riha 1979, Taf 59, 1565), and this better preserved example has a pattern of dotted twirls around the central disc. At Augst, the type is dated Claudio–Neronian to early 2nd century (Riha 1994, 157), and Feugère (1985, 344) suggests an end of production around AD 60/70. The distribution centres on western Switzerland and central France (*ibid*, 343, fig 52), with a small number in Britain where the brooches are mainly found in the south and east, although one is reported from Castleford (Cool 1998, 50, fig 13, 98; further parallels from Norfolk in Hattatt 2000, 342, fig 201, 513–4; Brown 1986, 36, fig 23, 163).

Flat cruciform brooches with circular central motif T225/Feugère 24b1/Riha 7.4.1

107. Almost complete. Lozenge shape, slightly concave sides, upper and lower terminals decorated with two lobes and central groove, one of central terminals survives, undecorated. Circular depression in middle of plate, beaded ridge within, rivet hole (now empty) at centre. Two perforated lugs on reverse of head hold pin, tip missing; rectangular catchplate. Brass. SF 9218, Context 6629, Intervention 6621 (Ditch). Late Iron Age.

See also SF 247.

In contrast to the preceding type, T225 is fairly well attested in Britain, again mainly south of a line between the Wash and the Severn Estuary (Feugère 1985, 339, fig 49; Bayley and Butcher 2004, 154). At Augst the type is attested in Tibero–Claudian and Claudian contexts (Riha 1994, 154), while British finds are mostly post-Conquest (eg, Hod Hill, Brailsford 1962, fig 11, F3; Colchester, Hawkes and Hull 1947, pl 98, 165), although Mackreth (1996, 319) suggests a small number may have arrived earlier. It is generally assumed to have gone out of use by the late 1st century. While some examples (like that from Colchester) may have had an enamelled centre, those from Springhead are likely to have held a small knobbed rivet.

Brooch in the form of a wheel T266B/Feugère 24c/Riha 7.6

108. Almost complete (tip of pin and central riveted stud missing). Face tinned/silvered. Solid outer ring with central open section divided by four spokes, perforation at centre possibly for holding decorative stud of bone or coral, now missing. Two perforated lugs on reverse hold pin. Subrectangular-shaped catchplate. (Leaded) brass. SF 1767, Context 6356, Intervention 6356 (Layer), SG 300099 (Deposits). Early Roman.

Dating and distribution are similar to those of the preceding types, although this type is generally rarer. To the distribution map in Feugère (1985, 341, fig 50) can be added further British finds from Hod Hill (Brailsford 1962, fig 11, F4), Colchester (Crummy 1983, 16, fig 14, 86), Wanborough (Butcher 2001, 66, fig 26, 136), Hadrian's Wall, and Oxfordshire (Hattatt 2000, 343, fig 202, 547.1004–5). An interesting observation is that, among the British examples, most lack the small lugs sometimes found around the outer edges of the wheels.

Flat brooch with four round openings T245

109. Incomplete. Openwork frame, flat, with four large holes, the edge follows this shape. Four pointed lugs protrude from the corners where the scallops meet. Small pellet at centre. Top right corner of brooch is missing. One perforated lug on reverse of head (only base of 2nd one survives) would have held hinged pin (now missing), opposite this at foot of brooch is rectangular-shaped, rectangular-sectioned transverse catchplate. Leaded copper alloy. SF 18382, Context 17709, Intervention 17709 (Layer), SG 300600 (Layers), Property 3.

Hull has listed these 'flat brooches with four round openings' as his type 245 (*cf* Bayley and Butcher 2004, 239). There are a number from central southern England, including Silchester, Thunderbarrow Hill, Langton Matravers, and Winchester, with one from Nor'nour and the Springhead example marking the western and eastern fringes of the distribution. The most northerly so far seems to be one from Alchester in Oxfordshire (Lloyd-Morgan 2001, 224, fig 6.3, 7). Finds from dated contexts, like that from Winchester, suggest a date in the 2nd century, tending towards the second half of the century (Hull 1964, 89, fig 24, 6; 1967, 58, fig 23, 224), while the brooch from Alchester, found in an early–mid-4th century context is almost certainly residual.

Early plate brooches set with glass or stone T224/Riha 7.8

a) Shaped like an eight-pointed star

110. Almost complete. Eight-pointed star shape with concave/scalloped edges. Front applied with tinned repoussé metal foil. A band of small raised dots follows shape of edge. Circular setting in centre, now empty. Complete hinged pin on reverse, pin slightly bent, subrectangular catchplate. Casting flash and other working marks visible on reverse. (Leaded) brass. SF 919, Context 6084, Intervention 6177/653, SG 300083 (Deposits).

111. Incomplete. Same as above. Green glass central setting. Eight-pointed star shape with concave/scalloped edges. A band of small raised dots follows shape of edge, followed by a circular rib around central setting. Hinge and catchplate on reverse of opposing points, part of pin remains but broken. Leaded gunmetal. SF 1844, Context 6445, Intervention 1000 (Spring).

b) Shaped like a lozenge with lobed corners

112. Incomplete. Lozenge-shaped ground plate with lobed corners, applied with repoussé foil. Red glass setting survives above catchplate, void where that above the hinge would have been. Perforated lugs on reverse hold part of pin, sub-rectangular catchplate. Very corroded. Leaded bronze. SF 1883, Context 6445, Intervention 1000 (Spring).

113. Almost complete – only part of surface decoration missing. Lozenge-shaped ground plate with lobed corners, applied with repoussé foil. Two bosses of opaque white and maroon marbled glass (K Hayward and T Goskar, pers comm) set above pin hinge and catchplate; surrounding this is a tinned repoussé decorated foil that has been applied after the glass settings. On reverse two perforated lugs and iron axial rod hold hinged pin in place, at foot a sub-rectangular catchplate. Lug for spring and catchplate connected by raised rib cast in one with plate. Leaded brass. SF 15634, Context 12000, Intervention 12000 (Layer), SG 300326 (Layers), Property 2. Late Roman.

Compared with the more common variant a, variant b seems to be much rarer with only two other specimens known from Avenches and Augst, both Switzerland (Riha 1979, 201, fig 32a; 1994, Taf 41, 2808); the glass roundels of the brooch from Avenches are shaped as human faces. A possible example from Britain was found in period 2 construction levels at Fishbourne (AD 75 or earlier; Cunliffe 1971, 106, fig 40, 40); at least the ground plate may have had a similar shape but the brooch is too corroded to be certain. A fourth brooch from Colchester has a fantailed foot and catchplate attached to one of the long sides, making it look much like the plate type of the rosette brooches, T238 (*cf* Cat No 39). A parallel for the marbled glass of Cat No 113 may be the glass setting of a star-shaped brooch from Augst, said to be made of white–blue glass (Riha 1979, 185; Taf. 59,1572). British examples of the star-shaped variant are known from Colchester (Crummy 1983, 16, fig 14, 77), Baldock (Stead 1986, 121, fig 49, 146), and Richborough (Bayley and Butcher 2004, 121, fig 94, 340 and further listed p 154). On the Continent, the earliest specimens have been found in Tiberian contexts, but the type is generally dated Claudian/mid-1st century (*ibid*, 154; Riha 1994, 158). This fits well with the evidence from Springhead, where Cat Nos 111 and 112 were found in a spring context with a samian date of AD 40–60.

Disc brooches with central ornament Riha 7.2.1/Feugère 24a

114. Incomplete. Tinned, slightly raised border; central recessed area with central rivet hole which probably held ornamental stud. Approximately one third of disc missing. Two perforated lugs on reverse hold complete pin; small rectangular catchplate. Leaded brass. SF 9144, Context 6447, Intervention 1001 (Spring), SG 300012 (Watercourse). Early Roman.

115. Incomplete. Composite plate of two joined discs, both with recessed centre and rivet holes. Grooved decoration around circumference. On reverse two lugs for hinge pin and remains of catchplate. Pin broken. (Leaded) gunmetal. SF 1709, Context 6380, Intervention 1003 (Spring).

See also SF 1532.

Members of this type can easily be confused with those represented by SF 1532 (see below), especially when badly preserved. Good parallels for Cat No 114 are known from Augst (1994, Taf 39, 2751–7), and the specimen from that site may hint at sub-division within Riha 7.2.1 where examples with a slightly raised rim like Cat No 114 never seem to have small lugs on the rim, which are an expressly mentioned characteristic of Hull's T261 and Feugère's otherwise similar type 24a (Feugère 1985, 335; in his list, he also mentions examples without lugs, such as from Colchester, *cf* Hawkes and Hull 1947, pl 98, 174.179). Cat No 115 with its two adjoining discs is a variant of the type; exact parallels were found at Wanborough (Butcher 2001, 63, fig 25, 129), and one at Augst has traces of red enamel in the central area (Riha 1994, Taf 39, 2767). A possibly similar brooch, found in the disturbed levels above the Harlow temple, is described as having small central bosses rather than holes for studs (France and Gobel 1985, 74 fig 41, 75). The dating is again mainly mid-1st century, which is well supported by Cat No 115 with a context coin date of AD 69, while Cat No 114 has a pottery date range of mid-1st to mid-2nd century.

Brooch SF 1532 is very corroded and likely to have had a repoussé sheet metal soldered to the disc, which would relate it to Böhme's type 44a, dated to the mid-2nd century and continuing into the 3rd (Böhme 1972, 41–2; Taf 28, 1070–116). The Springhead brooch has a rib joining the double lugged hinge to the catchplate. This detail is also found on a brooch from the Saalburg fort (Böhme 1972, Taf 28, 1102) and the Germanic settlement Feddersen Wierde on the German North Sea coast (Schuster 2006, Taf 8, 61), and similar to a brooch from Richborough (Bayley and Butcher 2004, 130, fig 98, 374) which is, however, sprung like the majority of these brooches and those mentioned here. The type is found predominantly in the forts and *vici* of the Germanic-Raetian *limes* (Böhme 1972, 41–2).

Disc with looped attachment T242 var

116. Incomplete. Disc with recessed and perforated centre for inlay surrounded by omega-shaped twirl with everted terminals representing snakes' heads. Tinned surface. Two perforated lugs on reverse hold broken hinged pin. Rectangular catchplate. (Leaded) brass. SF 1878, Context 6445, Intervention 1000 (Spring).

Riha puts a similar brooch from Augst, found in a context dated AD 70–220, in her rather broad type 7.21 of 'brooches with medallions' whose round discs can be surrounded by plant or animal ornaments in half profile. She suggests that the terminals may be snakes' heads, a detail slightly better preserved in the Springhead example. Other brooches of the type have terminals in the shape of dolphins, acorns, or human faces (*cf* Riha 1979, Taf 66, 1700–06; 1994, Taf 45, 2888–97; Bayley and Butcher 2004, 121, fig 94, 346–7; Hattatt 2000, 343, fig 202, 1024). The type had its floruit in the second half of the 1st century AD (Riha 1994, 169; Taf 45, 2887), a dating which would suit the pottery and other finds found in the spring context with Cat No 116, while the coins date as late as AD 388.

Toilet set brooch T199

(Fig 99)

117. Incomplete. 'Umbonate' plate type with one straight side where remnants of toilet set are attached. Pin hinged between two lugs. Four projecting lugs around edge, one missing, all probably enamelled. Raised central boss with six-petalled motif around it, alternately enamelled yellow and blue. Six larger petals cover part of brooch which is curved; straight side of brooch has two parallel lines of petal motif which are also alternately coloured yellow and blue. One hinge attached to straight side survives; attached to this (but bent backwards) is leaf-shaped nail cleaner with ring-and-dot decoration at top of blade; single groove down length of blade, two grooved lines decorate junction and terminal. Terminal contains decoration of petal shape above sub-rectangular shape, both enamelled (now greenish colour). Scoop SF 20017 probably from this brooch. Leaded brass. SF 20014, Context 17759, Intervention 17759 (Layer), Property 3. Mid-Roman.

These British brooches share a similar design with umbonate brooches T268, based on the 'sunburst' pattern of Roman origin. They are found mainly in the south of England and are dated around AD 100 (Butcher 2001, 61; Bayley and Butcher 2004, 172–3). The mixed nature of the context of Cat No 117 at Springhead adds nothing to the dating.

'Buckler', Tutulus, or disc brooches with conical centre surmounted by a knob or a button T269

118. *Feugère Type 25b*. Almost complete. Main disc hollow on reverse, raised central stud. Outer flange with raised 'lip' on edge and beaded ridge decoration within, possibly enamel decoration around edge but now gone (surface very uneven, compared to beaded decoration), six small lugs symmetrically placed around circumference. Hinge of two perforated lugs on reverse at top, part of pin remains – rectangular-sectioned at top, tapers to circular-sectioned point. Small sub-rectangular-shaped lug on opposing edge for catchplate. Leaded brass/gunmetal. SF 362, Context 2222, Intervention 2222 (Artefact).

119. *Feugère Type 25b*. Incomplete. Raised conical tutulus with small central knob in the shape of small cup with central cone and knob. Outer flange with six projecting roundels, four still retain green enamel, one with tiny central black glass bead pressed into base enamel without polishing (trace of holes in other lugs suggests

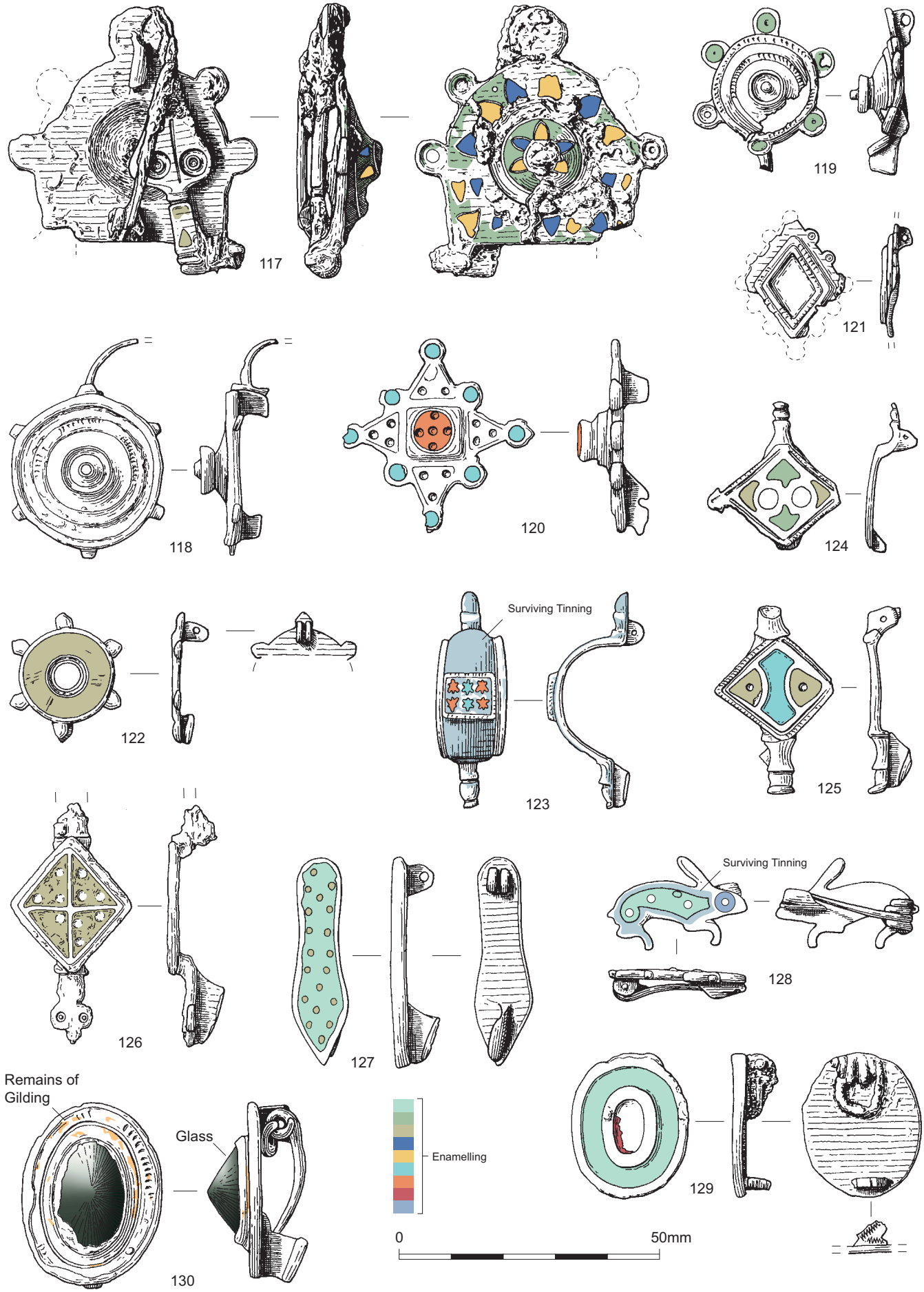


Figure 99 Springhead: copper alloy brooches 117–30

Plate 5 Tutulus brooch with star-shaped base (Cat No 120), (leaded) brass and enamel Diam 36 mm. Photo: E Wakefield

they may also have had central bead decoration). Hinge and catchplate attached to back of opposing roundels, one containing catchplate is bent at 90 degrees. Trace of flat-sectioned pin remains. Part of central cone is missing. SF 778, Context 5690, Intervention 5781 (Pit), SG 300050 (Pit). Mid-Roman

120. *T269 var.* Incomplete. Star-shaped base with roundels at tips and in corners, which are filled with turquoise enamel. The triangular fields of the base each have three small circular depressions which are remains of small glass beads pressed into the corroded olive-brown enamel. Central tutulus crowned by circular central boss which is filled with orange enamel with five small depressions from small glass beads. None of the enamelled fields were polished. Hinge at back of head, catchplate fixed on lug, pin missing. (Leaded) brass. SF 9149, Context 6447, Intervention 1001 (Spring), SG 300012 (Watercourse). Early Roman. (Pl 5).

The first two brooches are best classed in Feugère's typology as type 25b which has a small cup on top of the tutulus, while those with only a knob are type 25a. Type 25b has a wider distribution than 25a, which covers mid- and southern Britain as well as central and eastern France, western Switzerland, and outliers in northern Germany, the Czech Republic, Italy, Serbia, Poland, and Syria (maps in Feugère 1985, 352–3, figs 53–4, additions for type 25b in Schuster 2006, 42). Feugère did not sub-divide type 25b further, but Cat Nos 118–9 present two of the main varieties with six or eight plain small lugs (Cat No 118) or larger discoid lugs which can be filled with enamel like Cat No 119; an exact parallel for the latter is known from the Saalburg fort (Böhme 1972, Taf 25, 967), while a very similar brooch from Richborough has an enamelled central cup but the lugs are set on a scalloped edge and have a pattern of concentric rings without enamel (Bayley and Butcher 2004, 130, fig 98, 377). The start date of Feugère 25b has been linked repeatedly to the Flavian grave 1, Grange Road, Winchester (Biddle 1967, 229–30, fig 4.14), but this brooch is more likely to be a transitory stage between Feugère types 25a and b (Schuster 2006, 42); however, there are parallels for type 25a with Flavian dates, eg, from Augst (Riha 1979, 186, Taf 60, 1587; 1994, 159–60, Tab 204). At Sulz, Rieckhoff-Pauli (1977, 17–19, Abb 6, 114–16; Abb 7, 122) was able to distinguish between the earlier (Claudio–Flavian to Domitian–Hadrianic) non-enamelled variations with smooth or tinned surfaces and knurled bands and later versions where enamel is already used. British examples of Feugère 25b continue in use throughout the 2nd century and possibly into the early 3rd (Bayley and Butcher 2004, 178); a very plain example like Cat No 118 from a 4th century context at Caerleon is most likely residual (Brewer 1986a, 171, fig 55, 23).

Cat No 120 has been listed here as a variation of the type on account of its conically raised centre surmounted by an enamelled cup (Pl 5). The enamelled fields of the brooch do not appear to be polished and thus the now missing glass beads would have extended above the level of the base enamel. This technique has been identified as preceding the use of sections of glass rods set into the base enamel to produce a ring-and-dot pattern which is polished over. Unpolished beads appear as early as the beginning of the 2nd century, while the polished ring-and-dot inlays point towards the middle of the century (Riha 1979, 32; Feugère 1985, 364; but compare discussion of lozengiform brooch Feugère 26d1 in Schuster 2006, 41). A brooch from Woodyates, Dorset, shares the outline of the base plate but lacks the tutulus in the centre which is instead marked by a stud with conical head (Hattatt 2000, 356, fig 215, 589). So far, the closest parallel for Cat No 120 is a brooch from Suffolk (*ibid*, 354, fig 213, 1610) whose triangular rays have a narrower base. A similar brooch from Augst has a pyramid-shaped centre with a square plate showing an enamelled cross pattern. It is classed in Riha's type 7.20 which is dated to the later 2nd century on account of the more complicated enamelled patterns (Riha 1979, Taf 65, 1697).

Lozengiform brooch with frilled edges T240 var

121. Incomplete. Lozenge-shaped body with three stepped stages, central one of recessed field probably for enamel (now empty), second step has grooved ledge. Two complete ring-and-dot decorated projections survive on one edge, part of larger one visible on corner. Perforated lug remains on reverse for hinge, pin missing. Leaded brass. SF 18190, Context 17425, Intervention 17425 (-).

Considering the projections on its side, this brooch is really an intermediary stage between brooches like a T227 from Richborough (Bayley and Butcher 2004, 127, fig 97, 364) or one from Nor'nour (Hull 1968, 49, fig 19, 146) and a T240 from the same site (*ibid*, 55, fig 21, 181), all of which would fall into Feugère's type 26d1. The type is found in (mainly southern) Britain, Gaul, along the Rhine, in Belgium, and at least 12 are known in *Germania magna* (Feugère 1985, 362; Schuster 2006, 41). For dating see the remarks on enamel for the preceding three brooches.

Enamelled disc with open centre T258

122. Incomplete. Circular, with large perforation in centre, recessed area enamelled (now greenish yellow colour), six small lugs protrude from rim. Two perforated lugs on reverse of head for hinged pin (missing),

subrectangular-shaped catchplate at foot, bent, both are at the rear of protruding lugs described above. Leaded brass. SF 15633, Context 12000, Intervention 12000 (Layer), SG 300326 (Layers), Property 2. Late Roman.

Although a seemingly simple type, not many parallels can be quoted for Cat No 122. The closest comparison is an undated brooch from Colchester (Hattatt 2000, 345, fig 204, 530), and others are included in Riha's type 7.12 which can be round or oval. The corroded enamel of Cat No 122 may have had different colours placed next to each other without separation, linking it to Riha 7.13. On the basis of this, a date around the middle of the 2nd century is proposed for this brooch.

Equal-ended brooch with arched, enamelled central plate T229

123. Incomplete. Sharply curved rectangular-shaped bow, central panels tinned, beaded decoration along edges. Raised rectangular panel at centre bordered by beaded lines, decorated with six star or oak leaf shapes, four with orange enamel, the central two still contain residues of enamel, now turquoise. Moulded head and foot, two perforated lugs for hinge on reverse of head, subrectangular catchplate on foot. Pin missing. Leaded bronze/gunmetal. SF 342, Context 2235, Intervention 1002 (Spring). (Pl 6).

Similar brooches are listed by Feugère as type 26c1a and found in southern Britain, France, along the Rhine and occasionally further east (Feugère 1985, 364–5; Riha 1979, 192). The pattern of small oak leaves is also found in various arrangements, for instance at Augst (*ibid*, Taf 62, 1627–8.1634–5.1639) and on related types, such as a T230 at Richborough (Bayley and Butcher 2004, 127, fig 97, 358). The date range is summarised by Bayley and Butcher (2004, 171; *cf* Feugère 1985, 364) and covers the late 1st and the beginning of the 2nd centuries.

Lozenge, square or rhomboid-shaped brooches with ornamental projections at the angles T227

124. Incomplete. Perforated lug on reverse of moulded head, pin missing. Lozenge (on its side)-shaped central plate, bordered by grooves and beading, two adjacent round holes in centre with four areas for decoration around them, two still have traces of enamel (now pale yellow colour), upper and lower areas with greenish corrosion products of enamel. One lug protrudes on left side with cross decoration, right lug missing. Foot and catchplate missing. Leaded gunmetal. SF 1863, Context 6444, Intervention 1002 (Spring).

125. Incomplete. Lozenge-shaped panel set on its side, beaded decoration around edge, symmetrical enamelled decoration within, outer subtriangular fields opaque olive green with some orange specks and circular holes which contained glass beads, now missing; enamel in central field corroded to turquoise colour. Two perforated lugs on reverse of moulded head, top of pin visible. Moulded foot with transverse ribs, sub-rectangular catchplate on reverse. Leaded gunmetal? SF 319, Context 2221, Intervention 2221 (Artefact).

Plate 6 Equal-ended brooch with arched, enamelled central Plate (Cat No 123), leaded bronze/gunmetal and enamel L 40 mm. Photo: E Brook

Similar to above, but with zoomorphic lugs T228

126. Incomplete. Central lozenge enamelled now corroded light green, divided into four quadrants set with three white dots each. Projection at bottom of lozenge connects to oblong foot decorated with double ring-and-dot zoomorphic motif, subrectangular-shaped catchplate on reverse. One perforated lug of hinge on reverse of projecting head survives, pin missing. Leaded copper alloy. SF 9357, Context 6682, Intervention 6682 (Artefact). Early Roman.

Symmetrical plate brooches can have a variety of different plate shapes, such as triangles, squares, ovals or, like the brooches listed under T227 and T228, lozenges (eg, Böhme 1972, Taf 24 and 25). A production date in the 1st half of the 2nd century can be assumed for all three brooches (Bayley and Butcher 2004, 176–7; Feugère 1985, 364). Considering the tendency towards larger enamelled fields in the course of the development of enamelled plate brooches, the sequence of 124–6 may also be chronological, although no context dates are available from Springhead to verify this. A division of the enamelled fields similar to Cat No 124 was found on a brooch with shorter lugs on Nor'nour (Hull 1968, 49, fig 19, 143). One vaguely similar to Cat No 126 comes from London (Hattatt 2000, 352, fig 211, 1101), while a brooch of similar shape but more complex multi-coloured enamel was found in a phase 2 context of the Harlow temple, dated around AD 200 (France and Gobel 1985, 74, fig 41, 80). Similar brooch shapes are found widely distributed in southern Britain, northern Gaul, western Switzerland, and along the Rhine (*cf* Böhme 1972, 38; Feugère 1985, 358; Hattatt 2000, 352–3, fig 211–2).

Skeuomorph plate brooch in the shape of a shoe sole T275/Feugère 28b2

127. Incomplete. Hinged, two perforated lugs on reverse of heel, pin missing. Pale opaque green enamelled background filled with opaque yellow glass beads, polished to height of background surface. Subrectangular catchplate on reverse of toe end. Leaded brass. SF 20032, Context 17932, Intervention 17648 (Pit), SG 300660 (Pits), Property 3. (Pl 7).

Plate 7 Skeuomorph Plate brooch in the shape of a shoe sole (Cat No 127), leaded brass with enamel L 40 mm. Photo: E Brook

Shoe sole shaped plate brooches are widely distributed in central and northern France, western Switzerland and the Upper Rhine valley as well as central southern Britain and Nor'nour (Feugère 1985, 376, fig 57). Those with a loop or a small disc at the heel (Feugère 28b1) are more common than the variant without, represented by Cat No 127 (Feugère 1985, 374). At Augst, the unenamelled variant Feugère 28b3 could be as early as Neronian–early Flavian (*ibid*, 200), while the date range of the enamelled species covers the 2nd and early 3rd centuries (Riha 1979, 203; 1994, 172); British finds fall well within this period (Mackreth 1996, 322). The eight shoe sole brooches from Nor'nour – all with heel loops or discs (Hull 1968, 59, fig 216–23) – have been interpreted as being votive gifts of unknown attribution (Butcher in Mackreth 1989, 192; see also the reassessment of Nor'nour as a shrine by Butcher *et al* 2000–1), and in Britain most have been found in civilian settlements. In a recent article Crummy has suggested that this brooch type is one of a number of types, including cockerel, fly, and purse brooches, which may have been associated with the cult of Mercury (Crummy 2007, 226–7).

Zoomorphic plate brooch in the shape of a hare T211/ Feugère 29a14a

128. Complete. Zoomorphic plate brooch in the form of hare moving to right. Body enamelled, now opaque green with three dots of the reserved base metal along mid-line, eye almost translucent blue around central dot. Traces of white metal in a band around main enamel field and possibly also on the rear leg. On reverse bent catchplate behind head, double-lug hinge holding short spring and pin at tail end. Two spring coils. Leaded brass. SF 502, Context 2732, Intervention 2732 (Surface), SG 300159 (Deposit). Mid-Roman. (Pl 8).

Hare brooches have been sub-divided by Feugère (1985, 383) into three varieties depending on the treatment of the body, type 29a14a with large enamelled panels being the most numerous (*ibid*, 406–7). Based on the variety of technological details noted among the zoomorphic plate brooches, he suggested a distinction of types attributable to at least three different workshops, type 29a14a belonging to 'Atelier B' which produced stylised outlines filled with large enamelled panels (*ibid*, 388). No location for the workshop was proposed, and it is not decided whether all of these brooches come from one workshop in Gaul or whether some may in fact have been produced in Britain where the use of a short spring between two lugs, as found on Cat No 128, is more common (Bayley and Butcher 2004, 174). Parallels for Cat No 128 – with small dots in the enamelled field – have been found at Thistleton, Lincolnshire, Bury St Edmunds, Suffolk, in Norfolk (Hattatt 2000, 362, fig 221, 162.614–5), and Lincoln (Brailsford 1964, 23, fig 11, 43); further analysis is needed to show whether the dots are glass beads set in the base enamel or reserved metal as is the case with the Springhead hare. Considering the development of enamel decoration discussed above, brooches with large enamelled panels like Feugère 29a14a are assumed to start in the Antonine period and continue into the 3rd century (Feugère 1985, 394); one from Augst was found in a context dated mid-3rd century and later (Riha 1979, Taf 67, 1737). Cat No 128 was found outside beam-slot building 300157 in a cobbled surface with a pottery date ranging AD 50–200. The location would not stand against a votive deposition, perhaps in relation to a wish for love or fertility, although other attributes associated with the hare in antiquity included cleverness but also cowardice (Dummer 1987; Smith 2006, 50; Crummy 2007, 228). A hare is also depicted on the nicolo gem of silver finger-ring SF -542 from property 8.

At least two other zoomorphic brooches were found during earlier excavations at Springhead: a brooch in the shape of a sitting duck was found in building B.10 (Penn 1968a, 184–5, pl 2B), and one in the shape of a stag similar to Feugère 29a12c was found in 1957 (Penn 1957, 81, fig 14, 4).

Oval flat brooches with broad outer band of enamel T260

129. Incomplete. Front separated into two recessed areas by broad band of reserved metal, central enamel possibly of reddish colour, pale yellow–greenish corrosion of enamel remains in outer band, with patches of lighter red on both long sides. Perforated lug on reverse holds axial bar and part of spring, the chord appears to be extended to form a loop, pin broken. Incomplete transverse catchplate with punched zigzag decoration on its underside. Leaded copper alloy. SF 20016, Context 17759, Intervention 17759 (Layer), Property 3. Mid-Roman.

Plate 8 Plate brooch in the shape of a hare (Cat No 128), leaded brass with translucent blue and green enamel and remains of white metal L 28 mm. Photo: E Wakefield

The outer band of enamel on Cat No 129 may have contained two colours like a similar brooch from Nettleton, Wiltshire (Wedlake 1982, 129, fig 54, 64), while the centre may have been enamelled or inlaid with a repoussé sheet or contained a separately made copper alloy mount with an intaglio (Mackreth 1996, 321).

T260 is a British type, and parallels are known mainly from southern and eastern Britain, only a few from forts on Hadrian's Wall (*cf* list in Bayley and Butcher 2004, 261, additions in Mackreth 1996, 321). While the remainder of the series has the catchplate aligned along the central axis, Cat No 129 is unique in having a transverse one. This type of catchplate is rare in British brooches but commonly found in other types like knee brooches T 176 (Cat No 104). However, there are British types with such catchplates, for instance the 1st century plate brooches T245 (eg, Cat No 109), and two enamelled knee brooches were recently found with inscriptions showing they were made in the Castleford area (Bayley 2005). The chord of the Springhead brooch, extended to form a loop, is equally unusual but may perhaps have served to suspend a necklace or something else from it. The date range for the type is mid-2nd to 3rd century (Mackreth 1996, 321; Bayley and Butcher 2004, 178), one from a context dated AD 400 and later from Richborough is certainly residual (*ibid*, 134, fig 100, 386). The context pottery date for the Springhead brooch fits well within the suggested range, while the latest coin dates to AD 367.

Oval gilt brooches with stone, glass or intaglio in centre T271

130. Complete. Oval disc with conical central glass setting surrounded by two zones of gilded punched dot decoration, separated by raised rib. Reverse tinned. Spring attached to perforated lug on reverse of head. Sub-rectangular catchplate. Four spring coils. Brass. SF 876, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman.

(Fig 100)

131. Incomplete. Fire-gilded copper alloy? sheet applied to front of oval-shaped plate. Base tinned on reverse. Three raised bands of decoration around central oval setting: middle band of zigzag lines, outer two imitate twisted chord. Central ?intaglio/stone/glass damaged and partly missing. Spring partly intact, attached to perforated lug on reverse with axial bar, pin missing. Semi-circular catchplate. Four spring coils. Brass. SF 1466, Context 0.

See also SF 15536.

T271 is the later development of the preceding type, and it is also known in a round variant (T270). Differences in the metal used for the base plate of the two types have been suggested to indicate different workshops (Bayley and Butcher 2004, 179). The oval variant is particularly common in southern and eastern Britain, with some from Hadrian's Wall, Yorkshire, and the East Midlands (*ibid*, 178–9; Mackreth 1996, 321; Hattatt 2000, 364–5, fig 223–4). A small number have also been found along the *limes* and in *Germania magna* (Böhme 1972, 68–9, Fundliste 42). The earlier tendency to date T270 and T271 to the 4th century has been refuted by Mackreth (1995, 977–9; 1996, 321), who suggested a floruit in the mid-2nd and 3rd centuries. However, Bayley and Butcher (2004, 179) point out that there are some technological details more common in the 4th century, like gilding or stamped SSS-decoration. The three brooches from Springhead do not add anything new to the debate; a fourth brooch was found south of Watling Street in a late 3rd/4th century layer of temple I during the earlier excavations (Hull 1959, 19 fig 9, 1).

Plate 9 Plate brooch with a late 3rd century coin as plate (Cat No 132), copper alloy L 24 mm. Photo: E Wakefield

Unclassified plate brooches

132. Plate brooch made from a coin. Lugs for spring and catchplate appear in x-radiograph to be cast as part of a strip to which coin is attached (soldered?). Very corroded. Numismatic description by N Cooke: 'show side is reverse of antoninianus of the 'Mars Victor' type, depicting Mars helmeted, walking, holding a spear in his right hand and a trophy slung over his shoulder in his left hand.' SF 20394, Context 16889, Intervention 16902 (Pit), SG 300579 (Pits), Property 4. Mid-Roman. (Pl 9).

If the interpretation of the not very conclusive x-radiograph is correct, this object belongs to a group of coin brooches and pendants found from the time of Nero and continuing in various shapes and borders into the Carolingian period (*cf* Berghaus 1994, 106–13, Abb 68–71). The reverse of the coin forming the plate of Cat No 132 is common from Probus to Diocletian, and without the obverse the date cannot be narrowed down more closely than late 3rd century; as it does look slightly 'irregular' it may be one of the copies struck between *c* 275 and 296 (N Cooke, pers comm). The pottery date range of the context is AD 50–300, which in this instance would support the numismatic date of Cat No 132. The context belongs to the upper fills of pit 16902 which was initially dug in the early 2nd century.

133. Incomplete. Symmetrical plate type. Generally lozenge-shaped, but central opposing sides formed as open circles with beaded decoration on inner edge; each has roundels with ring-and-dot decoration above and below; only half of circle on right survives. Roundel at head missing, that at the foot intact with traces of enamel remaining. Central panel contains blue enamel (fragmentary towards centre), originally polished. Hinge of two perforated lugs on reverse of head, large triangular catchplate, bent. Leaded brass. SF 9258, Context 400104, Channel fills.

A brooch found in a mid-2nd century or later context in the *vicus* of Castleford is comparable but not similar to this brooch. It has two lozenge-shaped units joined by lateral semi-circular bands with three lugs each (Cool 1998, 52, fig 14, 111). In fact, Cool links the Castleford

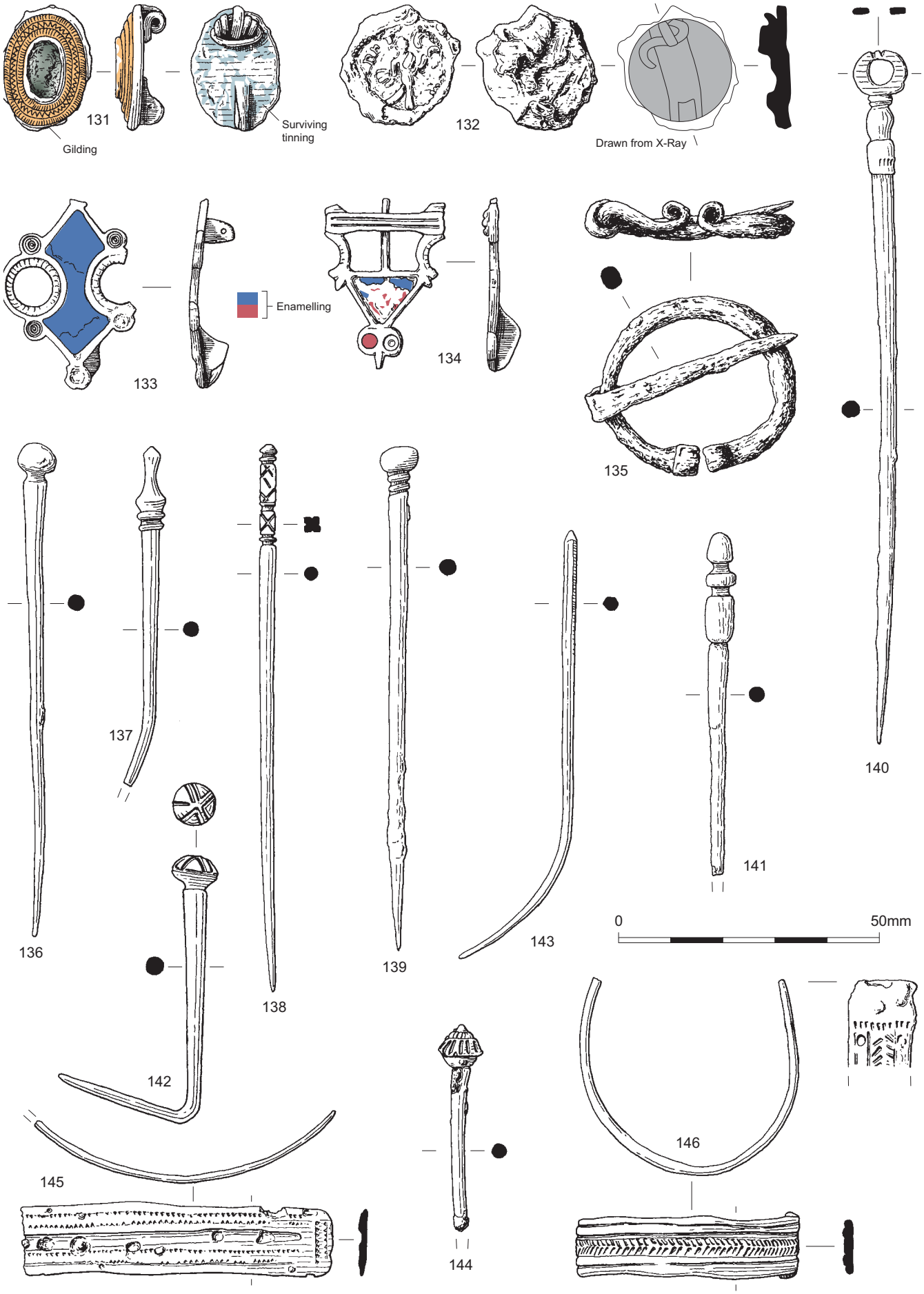


Figure 100 Springhead: copper alloy brooches (131–5), pins (136–44), armillae (145–6)

brooch to Riha's wheel-shaped enamelled brooches (Riha 1979, Taf 65, 1695) which are rare both in Britain and the Rhineland (Cool and Philo 1998, 33). Even though the enamel in the Springhead brooch is not too well preserved its rather simple use of enamel with just one unicoloured – although polished – blue field would suggest a slightly earlier date, perhaps in the first half of the 2nd century, than the more complicated brooches referred to above.

134. Incomplete. Possibly half of a ?symmetrical plate brooch. Double lobe at one end, two recessed areas, one contains red enamel, the other a greenish residue, on reverse of lobe is triangular lug (possibly remnants of a catchplate). Lobe attached to triangular panel with traces of blue enamel remaining. Openwork section outlined by concave bars and narrow central bar connects above mentioned part to central narrow rectangular panel/strip decorated with 3 beaded ridges. It is possible that the above pattern was repeated in reverse for symmetrical side of object/brooch. SF 15727, Context 12374, Intervention 12374 (Layer), SG 300326 (Layers), Property 2.

No immediate parallel has been found for Cat No 134, although it is likely that it was part of one of the more complex enamelled plate brooches of the later 2nd/early 3rd century, like examples from Lanslevillard, France (Feugère 1985, pl 152, 1908), Zugmantel, Germany (Böhme 1972, Taf 24, 927.942), or Augst, Switzerland (Riha 1994, Taf 44, 2884).

Penannular brooches

135. Complete. Round-sectioned ring (leaded bronze/gunmetal), ends flattened and coiled back at right-angles to the ring. Surface corrosion obscures any decoration. Pin (bronze/gunmetal) oval-sectioned, tapers to point, flattened where rolled around ring. Bronze/gunmetal. SF 737, Context 5637, Intervention 5637 (Layer), SG 300104 (Deposits). Early Roman.

See also SFs 552, 630, and 1704. SF 9340 may be an annular brooch or simply a very bent buckle.

Only four penannular brooches have been recorded at Springhead; they are confined to the area to the east and south-east of the Ebbsfleet (Fig 101). A fifth brooch was found during the earlier excavations (Penn 1957, 81, fig 14, 6). All have a more or less circular-sectioned ring with the ends flattened and coiled back onto the ring at right-angles, thus belonging to Hull Type P3 or Fowler Type C. All were found in early Roman contexts dated to the decades around AD 100. The type is commonly dated to the 1st century AD in Britain where it is mainly found in southern and south-eastern England (Fowler 1960, 164–6; Crummy 1983, 18; Bayley and Butcher 2004, 136, fig 102, esp 400–5). On the Continent, however, such simple brooches are also found in later contexts, such as those from Vireux-Molhain, France, grave 8 (Lemant 1985, fig 12) or Tongeren, Belgium, graves 111 (gilded bronze) and 283 (Vanvinckenroye 1984, 190), which date to the middle of the 4th century. Generally, the later Fowler Type C brooches more commonly have a flattened ring, often with decoration on the ring (*cf* Fowler in Crummy 1983, 19; Schuster 2006, 51).

Fragments of brooches – springs, pins, and feet

Twenty-four fragments of brooches were found, including five heads with parts of the spring surviving, nine springs with varying length of the pin, and two pins of which one belongs to a hinged brooch. All these are too corroded to allow identification to type. Of the eight feet included here, seven are likely to belong to either one- or two-piece Colchester brooches, while another foot (SF 1797) has a triangular catchplate with a round hole near the inside edge and a flat foot which flares out the end.

Metal Pins

by Elina Brook with Jörn Schuster

The typology used for the description and discussion of the pins found at Springhead follows that devised by Cool (1990). Eighty objects have been recorded as metal pins certainly or probably belonging to the Roman period. All are copper alloy, apart from five iron pins from the Roadside settlement (ARC SHN02) of which only one is certainly a pin (SF 15126). Only 58 metal pins could be identified to type, the remainder are unidentifiable shaft fragments that could equally have been part of needles or brooches. SF 15912 could have been part of a belt. The worked bone pins are described below by Allen (Chapter 13).

Group 1

136. Incomplete. Hemispherical upper part of head, conical lower part, possible groove decoration (square pattern?) on top. Circular-sectioned shaft with possible groove just below head, tapers slightly towards broken tip. Slightly bent. Crummy Type 3. SF 354, Context 2222, Intervention 2222 (Artefact).

See also SFs 249, 844, 979, 1842, 15956, 18004.

One pin, SF 1842, could be attributed to this group, possibly of sub-group C. A further six are included here as they display stylistic traits best paralleled in this group (Cat No 136 and SFs 249, 844, 979, 15956, and 18004). Three have double conical heads like Cool 1990, fig 1.2; SFs 249 and 18004 have possible decoration on top but are corroded. Cat No 136 has a spherical upper part and a conical lower part (?G1) and possible decoration which may be four grooved lines in a square pattern on top of the head. SFs 844 and 979 are possibly of sub-group D (if conical lower part is of G1). SF 15956 has a slightly spherical head but is severely corroded so a closer identification is not possible. This group is a broad category appearing across Britain throughout the Roman period but especially during the 2nd–4th centuries (Cool 1990, 151).

Miscellaneous

SF 15524 is possibly a pin or a nail. It has a globular head that may have been wound around the shaft – or this may be due to corrosion making it appear to be the case. If it is a pin it would be part of Group 1.

Group 3

137. Incomplete. Almost conical head (wider than shaft) with double cordon below and finial knob above, circular-sectioned shaft, tapers slightly, bent and broken. SF 20417, Context 19593, Intervention 19592 (Pit). Early Roman.

See also SFs 785, 1509, 15029, 15123, 15159, 15928, 18020, 18254.

Nine pins can broadly be attributed to this type. SFs 785, 1509, 15123, and 15159 are very similar to one another: they relate to Group 3 in that they have a curved unit below a cordon on their head (although not a bulging one), and to sub-group A as the heads are narrower than their shafts; however, the decoration has most likely been cast rather than cut into the top of the shaft as Cool (1990, 154) suggests for this sub-group. So far no direct comparisons have been found elsewhere. SFs 15029, 15928, and 18254 are similar but have variations on the number of cordons below the finial knob. Cat No 137 and SF 18020 possibly belong to sub-group B as the features on the heads are wider than their shafts.

The group is thought to be early Roman (1st/2nd century) and is found across Britain. The dating is supported by the pottery context dates from Springhead, which cluster around the later 1st and early 2nd centuries. The original lengths of SF 785 of 106 mm, 112 mm for SF 15159, and approx 110 mm for SF 18020 also indicate that they are possibly of this date (Cool 1990, 173).

Group 5

138. Complete. Three bands of cordon decoration separated by one cylindrical barrel and one shorter square-sectioned block, both have repeated incised cross decoration. Circular-sectioned shaft tapers towards tip. SF 1563, Context 3547, Intervention 3546 (Pit), SG 300245 (Pits). Early Roman.

Cat No 138 is the only example of this group, found to the east of the Ebbsfleet. It is complete (length 104 mm) and possibly belongs to sub-group C as it has cross-hatched decoration around its head. It also has elements of sub-group D with multiple horizontal grooves/cordons dividing the two cross hatched panels. Group 5 is thought to have been most common during the 2nd century and is quite widespread in its

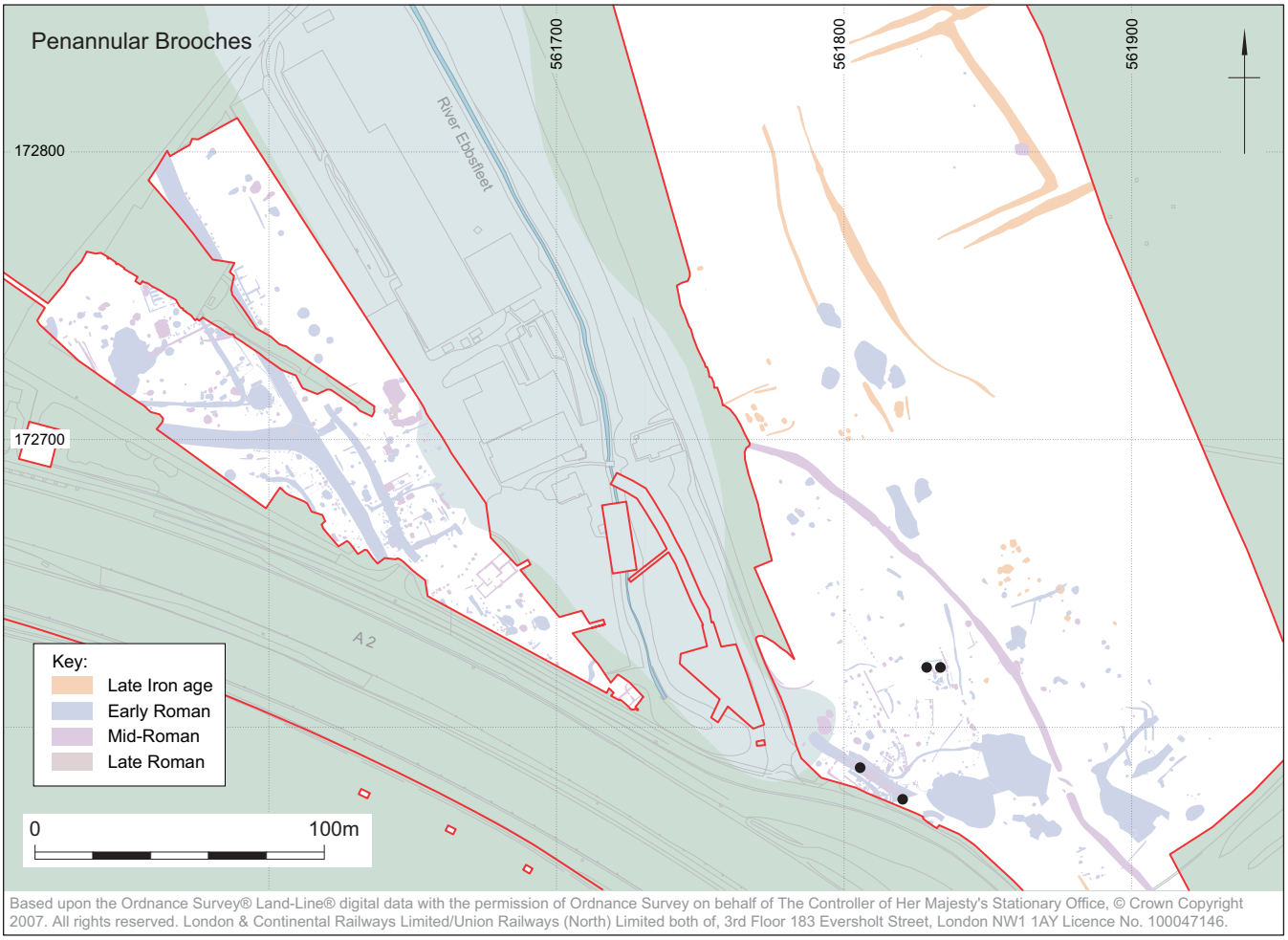


Figure 101 Springhead: distribution of Penannular brooches

distribution in Britain (Cool 1990, 157). The diagonal crosses on the blocks also relate it to Group 11 sub-group B which is found in the Midlands (*ibid*, 164).

Group 6

139. Complete. Oval-sectioned flattened spherical head. Three grooves directly below head form double cordon. Circular-sectioned shaft slightly facetted towards top, tapers slightly towards tip. SF 903, Context 6163, Intervention 6163 (Layer), SG 300087 (Deposits). Early Roman.

See also SF 499.

The two pins attributed to this group, equivalent to Crummy type 5 (Crummy 1983, 30), are both from the Sanctuary site. SF 499 has a smaller head which Cool suggested to be a later variant of the type (Cool 1990, 157). Comparisons were found at Gadebridge (*c* Neal 1974, 144, fig 64, 224) and *Verulamium* (Stead and Rigby 1989, 21, fig 13, 73), dating mid–late 2nd century/before AD 218. Cat No 139 has a larger head and is complete, with an average length of 96 mm (*cf* Neal 1974, 144, fig 64, 224). This type is mainly found in eastern Britain.

Group 9

140. Complete. Head with double notched, perforated disc finial above rectangular-shaped moulding, this sits above curved barrel with possibly decorated ?cylinder below. Shaft of circular section, very slightly faceted and bent. SF 888, Context 5921, Intervention 5921 (Layer), SG 300104 (Deposits). Mid-Roman.

See also SF 18306.

The two pins of this group are almost identical, although the disc finial at the top of the head of SF 18306 is broken. Both pins fit in with the south-easterly distribution within Britain. The scant dating evidence known so far suggests that the type was in use by AD 125 (Cool 1990, 160).

Group 10

One incomplete example (SF 1252) was found at the Sanctuary site. It belongs to sub-group A with a groove around the circumference on the lower part of its conical head, in use by AD 125 and more commonly found in the east of Britain (Cool 1990, 160).

Group 11

141. Incomplete. Multiple block head, lower block largest, of circular section, possibly with diagonal groove or cross-hatch decoration; central block is the smallest, of circular section with double horizontal groove decoration; domed finial. Shaft tapers slightly, broken. Leaded copper alloy. SF 18032, Context 17210, Intervention 17210 (Layer), SG 300654 (Layers), Property 3. Mid-Roman.

This pin with its multiple block head and cross-hatched and horizontal grooves belongs to Group 11A which is mainly distributed on the north Kent coast, where these pins were in use in the 1st half of the 2nd century (Cool 1990, 164).

Group 12

142. Almost complete, only very tip is missing, original length slightly longer than 75 mm. Upper part of head spherical, lower part conical, circular cross section. Horizontal groove around widest part of head, on top four pairs of grooved lines radiate forming cross shape. Circular-sectioned shaft, bent at right-angle. SF 1560, Context 3570, Intervention 3570 (Layer).

See also SFs 435, 497, 15120, 15201, 15317, 18312, 18364.

Eight pins can be attributed or related to this group whose main characteristic is the grooved cross pattern formed by pairs of lines on top of the head. Four are directly comparable to those within Cool's typology (Cat No 142 and SFs 497, 15201, and 15317), whilst a further four have similar features (SFs 435, 15120, 18312, and 18364). Of the four that certainly belong to this group Cat No 142 and SF 15317 both have a horizontal groove that runs around the widest part of the head. However, they are not identical as the head of SF 15317 is slightly wider, and it is longer than the almost complete Cat No 142. SFs 497 and 15201 have the cross pattern but no additional horizontal groove. All four have a more spherical-shaped upper part of the head.

Of the four pins related to this group a further two also have a spherical upper part of the head: SF 435 is fairly corroded but the cross pattern on top is visible, the difference is that there is a possible groove on the underside of the head as opposed to around the widest part. SF 18312 again has a more spherical head, but the decoration on top consists of five grooved lines radiating from the centre (as opposed to the cross pattern) with multiple horizontal grooves on the lower part of the head – this is similar in form to a Group 8 example (Cool 1990, 159, fig 6, 4) but lacks the lower upturned hemisphere (for a good parallel from Colchester see Crummy 1983, 31, fig 31, 500). The decision to relate it to Group 12 was based on the grooved decoration on its head.

The final two pins related to this group are SFs 15120 and 18364. Both have a double conical-shaped head, but the decoration varies. SF 15120 has a cross pattern on top, but this is made of single lines as opposed to pairs of lines; pairs of grooved lines do occur but are located around the edge of the upper part of the head creating an almost zigzag effect, there is also a single horizontal groove on the lower part of the head (as with SF 435 above). This pin is complete, measuring 104 mm, suggesting it dates to the 1st/2nd century (Cool 1990, 173–4). SF 18364 has the cross pattern attributable to Group 12 but with additional shorter grooves in between extending to the edges of the upper part of the head, creating an almost notched effect, as well as the horizontal groove below.

Table 49 Springhead metal finds: frequency of pin groups (after Cool 1990)

Pin group	ARC SHN02		ARC SPH00		Total
1	2	6.1%	5	20.0%	7
3	7	21.2%	2	8.0%	9
5		0.0%	1	4.0%	1
6		0.0%	2	8.0%	2
9	1	3.0%	1	4.0%	2
10A		0.0%	1	4.0%	1
11	1	3.0%		0.0%	1
12	5	15.2%	3	12.0%	8
24	14	42.4%	8	32.0%	22
25	3	9.1%	2	8.0%	5
Total	32	100%	25	100%	58

The only dating available for the group is from a Walbrook deposit in London, again suggesting that it was in use by AD 125. With four pins from early Roman layers and only one from a middle Roman context, this general date range is also supported by the evidence from Springhead. The distribution is within north Kent and London (Cool 1990, 164).

Group 24

143. Almost complete. Simple pin with domed, slightly pointed finial. Cross-section oval at head, more circular along shaft, tapers towards tip. Slightly facetted. Broken at tip, bent. SF 633, Context 0.

See also SFs 294, 421, 506, 641, 1586, 9140, 9174, 15065, 15101, 15194, 15126, 15752, 15840, 15914, 18026, 18703, 18916, 18945, 20001, 20071, 20519.

This is by far the most common group at Springhead with a combined total of 22 pins. It is a general category for a very simple form of pin and the Springhead examples have either a conical or slightly domed head. The only identifiable iron pin, SF 15126, belongs here, too. Only five are complete (SFs 294, 15194, 15126, 18026, and 18916), and three of these are over 120 mm long which may suggest they are of 1st/2nd century date (Cool 1990, 173–4). Four objects from this group have noticeably flatter domed heads (SFs 18703, 18916, 20001, and 20071). SFs 1586 and 15840 have flat heads and are possibly not hairpins but perhaps simple probes. The remainder are all quite similar, with more conical-shaped heads, some of which are very slightly facetted.

Cool (1990, 170) suggests that this form may have been used throughout the Roman period but when compared with groups 3A and 5 (of simple form but with decoration cut into the head) it is possible to say that they may have been more common during the 2nd century. This seems to be supported at Springhead where three pins were found in early Roman layers, ten in mid-Roman, and only one in a late Roman layer. Crummy notes the similarity to bone hairpins of a similar plain form (Crummy type 1) for which she suggests a manufacturing date of AD 50–200 (Crummy 1983, 28).

Group 25

144. Incomplete. Biconical head, oval cross-section. On upper part of head a band of grooved lines radiate from below groove around circumference, further groove around circumference on lower part of head. Circular-sectioned shaft, tapers slightly, broken. SF 1706, Context 6380, Intervention 1003 (Artefact).

See also SFs 9347, 15116, 15424, 15987.

This group is a general category for those pins that have grooved decoration on their heads but which cannot be directly placed into any of the groups within the Cool typology. There are five from Springhead. Cat No 144 and SF 15424 are very similar to each other as they both have a double conical head with a band of grooved lines on the upper part that radiate from the centre below two horizontal grooved lines which in turn create an almost finial knob on top of the head. On the underside of the head is a further horizontal grooved line. The conical shape of the head is reminiscent of groups 10 and 12 which were both in use by AD 125, but the nature of decoration is different, and comparisons for this decoration have not been found so far.

SF 9347 also has a double conical head (as with groups 10 and 12) with multiple diagonal groove decoration on the underside of the head and a beaded edge; a further difference is that the shaft is also decorated with a double cordon at its top and bulges towards the centre. The combination of cordon and double conical head is reminiscent of a Saxon type from middle Saxon *Hamwic* (type Ca2ii; *cf* Hinton and Parsons 1996, 27, fig 10, 23/2) which also has a slightly swelling shaft, but that example only has a single cordon and is undecorated. As this pin is a metal-detector find from the spring area, it cannot be securely dated.

SF 15116 and 15987 both have more spherical-shaped heads. The first has vertical groove decoration with a single horizontal groove towards the base of the head, similar to Cool Group 13 (Cool 1990, 162, fig 8, 6 and 7), but the form is different and less elaborate. Similar pins have been found at Colchester (Crummy 1983, 31, fig 31, 499) and possibly Wanborough (Hooley 2001, 101 fig 40, 148), although neither matches very closely. The pottery context dates for the pin is late 1st-/mid-2nd century. SF 15987 is almost the same but lacks the horizontal groove at the base of the head. The Colchester example previously referenced is a close parallel although it has additional grooves at the top of the shaft. Wrythen-decorated spherical heads have been found in Saxon deposits at *Hamwic* (Hinton and Parsons 1996, 16, fig 7, type Ab1ii and Ab2ii), but these more commonly have swelling shafts and cordons at the top of the shaft. Such features are not present on the Springhead pin which was found in a pit in property 4

with a pottery date range of 50–300. Table 49 shows the frequency of those pins that could be assigned to groups within Cool's typology. It does not take into account the fragments or the uncertain SF 15524.

Slightly more pins are found on the western than on the eastern side of the spring (Fig 102). In the Sanctuary they cluster near the temple 400035 but, interestingly, only two have been found in the spring itself, a marked difference compared to the many brooches recovered from there. In the Roadside settlement pins are mainly found in properties 3, 4, and 11.

Bracelets

Only 18 bracelets or fragments of such have been identified among the metal finds, but it may well be that some unidentified fragments of bracelets can be found among the fragments of wire (eg, SF 15300).

Another possible bracelet fragment, a sinuous wire with eight loops (SF 15994a), was found together with a thin copper alloy strip in early Roman post-hole 17012 in property 5. Similar patterns are known from early to middle Iron Age pectoral jewellery in Lower Saxony, Germany, for example a hoard from Issendorf (Häßler 1995, 128, Abb 4) and a cremation grave at Erichshagen-Wölpe near Nienburg/Weser (Häßler 2002, 223, Abb 116). Although the fragmentary preservation precludes any certainty in identifying its use, a more likely explanation for the Springhead find may be provided by an extendable armlet dredged from the Waal between Rossem and Tiel in the Netherlands, for which a 1st century AD date has been suggested (Sas and Thoen 2002, 175 no 94; R Jackson, pers comm). If this dating is correct, it is not unreasonable to assume a line of tradition to similar bracelets of the late 4th–early 3rd century BC like some of those found in the large spring deposit at Duchcov, Chech Republic (Berger 1882, Tab 4, 55–6) or in graves of similar date at, for instance, Epernay or Bussy-le-Chateau, both Marne, France (Charpy 1991, 245; 247).

With 12 examples (plus two possible fragments), SF 15746 and one from an earlier excavation (Boyle in Boyle and Early 1999, 27 fig 17, 4), the most common form of bracelet is represented by group a. A recent reconsideration of these flat, penannular metal bands by Crummy (2005a) concludes that they are most likely a form of military award, an *armilla*. They were usually worn as a pair suspended from a band around the neck and awarded only to soldiers who were Roman citizens (Crummy 2005a, 100). As the present author only became aware of this study (F Pemberton, pers comm) after the catalogue and figure order were finalised, the *armillae* are here grouped with the bracelets, but in the

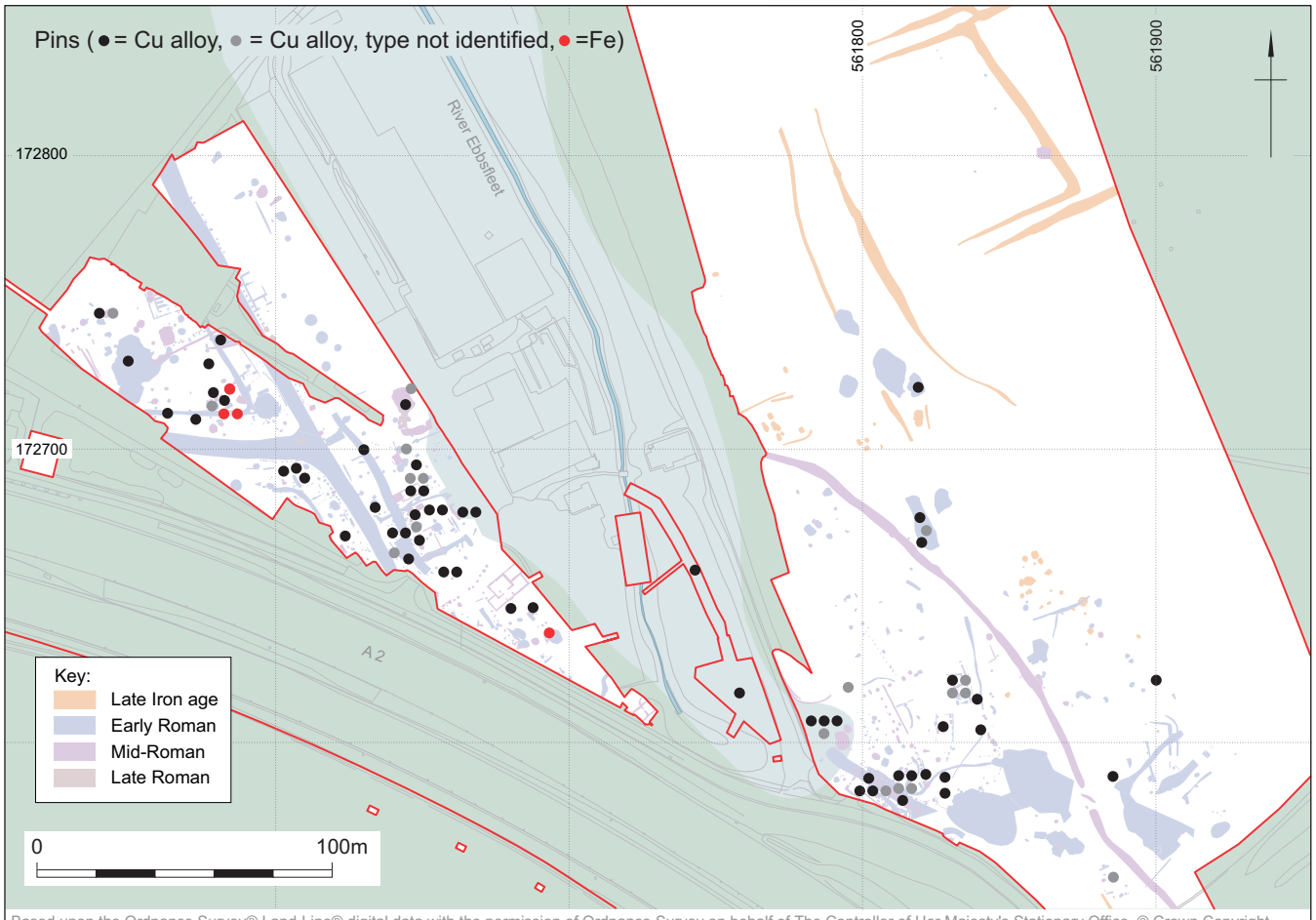


Figure 102 Springhead: distribution of pins

tables of finds categories they are grouped under military equipment.

In her discussion Crummy (2005a, 95–6, fig 3) distinguished four groups (A–D) of *armillae*, depending on the number of wreaths or textured bands. Group A has two bands, usually set towards the middle. This is the most common group, also borne out at Springhead, where there are seven examples (Cat No 145 and SFs 9199, 15192, 18725, 18868, 20161, -540). Group B has one central band (Cat No 146 and SFs 15403, 15530) and group C three, set symmetrically (SF 18726), while group D with three bands set asymmetrically was not found at Springhead. *Armillae* of the form under discussion here are mainly confined to the east of England, with only a small number found as far west as Gloucestershire and Somerset; only one was found previously in Kent, at Richborough, and no closely similar *armillae* have so far been found on the Continent (*ibid*, 94, fig 2; 98). The design is related to that found on Aucissa and Hod Hill brooches as well as military fittings worn by the invading army (*ibid*, 96). Based on this evidence, Crummy concludes that the *armillae* are awards specific to the early years of the Roman Conquest of Britain (*ibid*, 98). Of the 12 examples from Springhead, eight were found to the west of the Ebbsfleet, two with pottery date ranges of AD 50–150 and two with coin *termini post quos* of AD 117 and 134 respectively, while five others have coin dates in the later 4th century suggesting a high degree of residuality.

a) Flat, wide penannular strips with longitudinal grooves and moulding – *armillae*

145. *Crummy group A*. Fragment. Slightly curved band with flat, rectangular cross-section. Wide central groove runs along length of hoop, four further incised lines with dotted decoration run parallel (two either side), originally ridge with transverse S-lines. One end broken, the other has rounded edges with transverse groove and dotted decoration. Very worn. SF 326, Context 2221, Intervention 2221 (Artefact).
146. *Crummy group B*. Incomplete. Rectangular-sectioned. Punched cross-hatched decoration down centre, two grooved lines either side, some transverse grooves close to one end. Broken both ends. SF 9260, Context 400104, Channel fills.

See also SFs 327, 9199, 15192, 15403, 15530, 18725, 18726, 18868, 20161, -540 (possibly also 15746).

b) Bracelets with transverse groove decoration and D- or oval-shaped cross-section

(Fig 103)

147. Fragment. Penannular; D-shaped cross section. One end is the decorated terminal with four sets of double-beaded ridges and a blunt end. Internal edge has groove along it, possibly from the manufacturing process. SF 15681, Context 16641, Intervention 16655 (Ditch), SG 300545 (Ditch), Roadside ditch 3. Early Roman.

See also SFs 793, 473, 15822, 15730, 15915.

A bracelet from Shepton Mallet is similar to Cat No 147 in that it has two registers of cordoned decoration but there the single ridges are not beaded (Smith in Leach with Evans 2001, 203, fig 55, 29). The type is generally rare and most numerous in the 3rd and 4th centuries.

c) With snakeshead terminals

148. Incomplete. Penannular; D-shaped cross section, flattens to rectangular-sectioned terminal. Five transverse grooved lines and triple ring-and-dot motif decorate terminal, broken at other end. SF 9261, Context 400104, Channel fills.

This bracelet belongs to Swift's late Roman 'snakeshead bracelets with type 1 terminals' which are found in southern Britain and a restricted area in the Netherlands and Belgium south of the Rhine (Swift 2000, 153, 169, fig 215, 177).

The fragment of a silver wire bracelet with a snakeshead terminal (SF 15133) was found during metal-detecting on the Roadside Settlement site. The design of the head recalls late Roman copper alloy bracelets with similar terminals known from Cottenham and Stonea in Cambridgeshire (Ireland in Taylor 1985, 12, fig 5, 53–5). However, better parallels exist in a group which may be of Romano-British origin including the pair of silver bracelets from the Castlethorpe hoard dated to the middle of the 2nd century (Cool 1979, 166, fig 1B; 168), but both these bracelets have a wider, flatter band. The possibility that the Springhead piece may have been part of a 2nd century finger-ring should not be discounted (eg, Ditton: Cool 1979, 167, fig 2C; *Verulamium*: Stead and Rigby 1989, 21, fig 13, 44; Guiraud 1989, 195, type 7), although the curvature of the hoop would fit better with a bracelet.

d) Narrow, with crenellated outer edge

149. Incomplete. Half of hoop remains. Narrow rectangular cross section, crenellated outer edge. Thinner one end, very worn. SF 9141, Context 6379, Intervention 1001 (Spring), SG 300015 (Deposits). Early Roman.

'Cogwheel' bracelets of the late 3rd–early 5th century are more or less confined to Britain, south of a line between the Wash and the Severn estuary, with only one outlier in grave 78 at Oudenburg in West Flanders (Swift 2000, 127, 136, fig 163, 160; Crummy 1983, 41, fig 43, 1659). Interestingly, that grave also contained a snakeshead bracelet of the same type as Cat No 148 and one with multiple motifs (Swift b12). Based on this rare combination which, apart from the snakeshead bracelet, is replicated at Portchester, Swift takes this as a 'rare example of personal ornaments enabling a precise movement from one area to another to be traced', in this case from Britain to the Continent (*ibid*, 178–9). Whether this journey led past the Ebbsfleet at Springhead remains open to speculation.

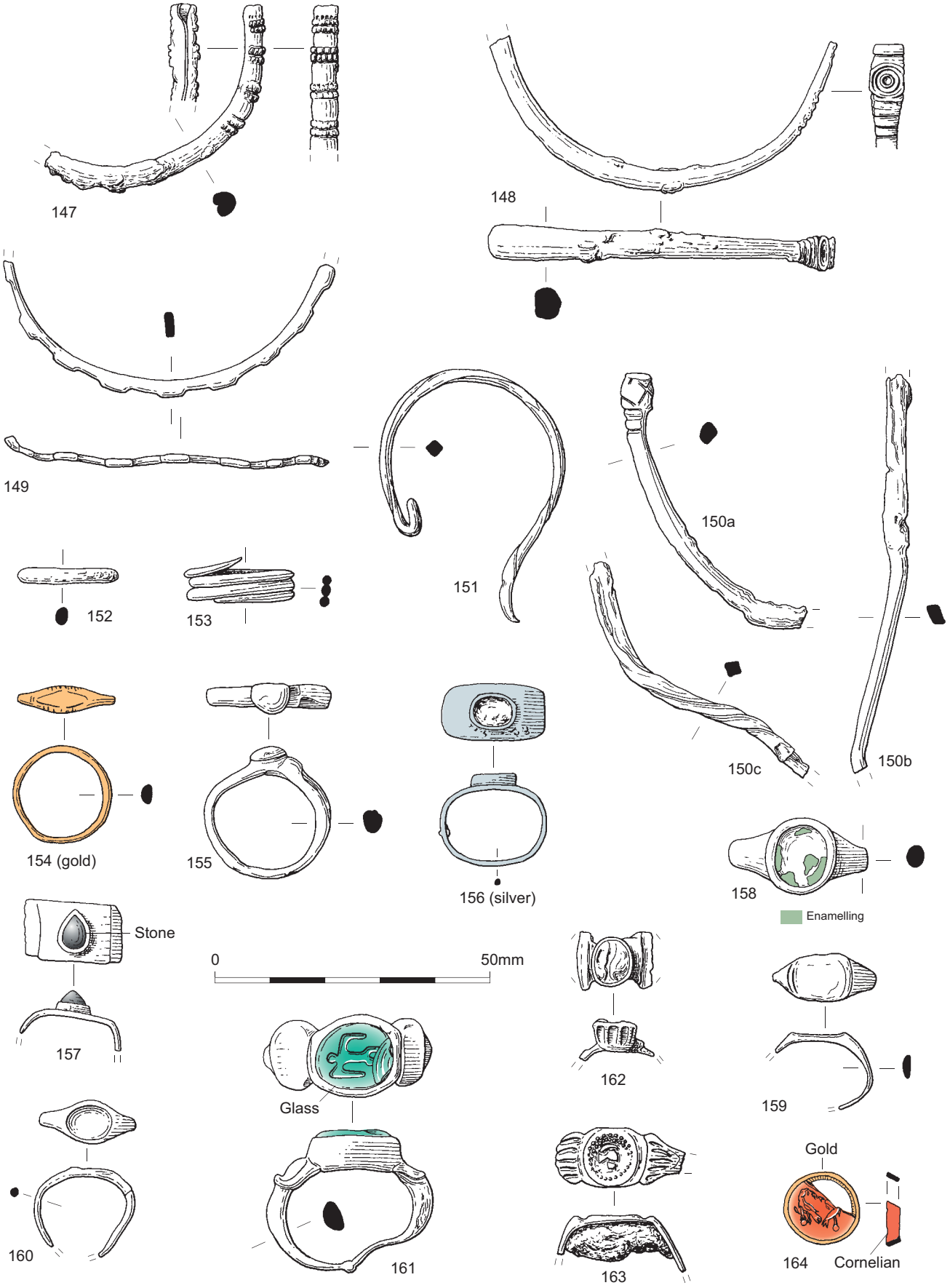


Figure 103 Springhead: bracelets (147–50), ear-ring (151), finger-rings (152–63), gemstone set in gold collet (164). Copper alloy, unless indicated otherwise

Plate 10 Gold finger-ring (Cat No 154) Diam 18 mm. Photo: E Brook

Plate 11 Top: Intaglio showing two eagles on globes holding a garland between them (Cat No 164), red carnelian with gold collet L (with collet) 14 mm. Bottom: Silver finger-ring with nicolo intaglio showing ?hare facing right (SF -542; nicolo: L 88 mm). Photo: E Wakefield

e) Possible bracelets

150. Incomplete fragments, possibly from same object but do not clearly join: a) square-sectioned strip, gently curved, broken one end, cube-shaped terminal at other decorated with incised crosses (visible on two sides), double cordon separates terminal from shaft (L 55.3 mm, max W 5.5 mm); b) shaft fragment, square-sectioned at ends, flattens to rectangular section in middle, broken both ends (L 72.7 mm, max W 3.8 mm); c) square-sectioned shaft, broken both ends, bent and twisted (L 53.7 mm, max W 3.6 mm). SF 911, Context 6023, Intervention 6023 (Layer), SG 300114 (Deposits). Early Roman.

See also SF 1610.

Ear-rings

151. Possible ear-ring fragment. Square-sectioned, slightly twisted, bent in U-shape, tight bend/hook at one end, the other tapering to thin tip. SF 9365, Context 6682, Intervention 6682 (Artefact). Early Roman.

Only four possible ear-rings were identified among the metal finds from Springhead. One is a fragment of a loop of two twisted wires (SF 20531), which, if it is an ear-ring, corresponds to Allason-Jones type 5, known throughout the Roman period and distributed evenly throughout Britain, although less common in the eastern counties (Allason-Jones 1989, 7, map 12). A similar ring (SF 1788) has a loop of three twisted copper alloy wires like Allason-Jones type 6. According to Allason-Jones (*ibid*, 7, map 13) these ear-rings are more commonly found on civilian than on military sites, mainly along a corridor between Essex and the Severn Valley. Their date range is biased towards 4th century contexts; however, this does not seem to apply in this case where the ear-ring was found in the build up next to an early Roman trackway.

The other two ear-rings (Cat No 151 and SF 18023) are of the simple type 1, with square and D-shaped section respectively. The type has an even distribution throughout England with a slight clustering around the Bristol Channel. The simplicity of the form precludes any tighter dating within the Roman period as the type is also known before and after (*ibid*, 2; map 1).

Finger-rings

Twenty-four rings have been identified as finger-rings, but there may be more among the plain copper alloy rings classed as fittings in the database. Of note is the golden ring Cat No 154 (Pl 10), as it might indicate an elevated social status of its owner; in theory at least gold was only allowed to be used for rings worn by persons of senatorial and equestrian (partially) status. During the reign of Tiberius the right was granted to persons of freeborn ancestry. It is doubtful, however, whether this law was strictly enforced after the 1st century AD, and in AD 197 soldiers were granted the right to wear gold rings by the emperor Septimius Severus (Guiraud 1989, 174, note 1; Henig, note in Goodburn 1984, 19; Henig 1995, 1000, no 186). The only other precious metal rings are Cat No 156 and SF -542 of silver, the latter still with a nicolo intaglio depicting a hare (Pl 11, bottom); the remainder of identifiable finger-rings are cheaper trinket rings of copper alloy, most having lost their settings. Their distribution is shown in Figure 104.

Plain hoop

152. Complete. D-shaped cross section. Very abraded, ?transverse line decoration. One point of hoop worn away more. SF 1287, Context 3325, Intervention 3325 (Artefact), SG 300046 (Ditch).

See also SFs 378, 503, 643, 9382 and 15331

Cat No 152 may be a very abraded example of a ring with transverse grooves (*cf* Crummy 1983, 48 fig 50, 1770).

Coiled

153. *Guiraud Type 7c*. Complete. Circular-sectioned wire strip coiled three times. Max W 6.12 mm. (*cf* Guiraud 1989, 195). SF 9217, Context 6629, Intervention 6621 (Ditch). Late Iron Age.

Plain, coiled finger-rings of multiple coils are easy to make and occur in many periods and regions (Guiraud 1989, 195; Schuster 2006, 72). The relatively high number of such rings from mid-1st century AD contexts at Sheepen, Colchester has been suggested by Crummy (1983, 47) as indicating an early date range for the type. This is supported by an example from Harlow found in the Belgic layers while a second was found in the demolition debris above the temple (Gobel in France and Gobel 1985, 84, fig 43, 46–7).

Plain hoop with bezel

154. *Guiraud type 2g*. Complete. Very worn. Hoop widens at top into flat bezel with lozenge/diamond-shaped empty field indicated by faint lines, sides decorated with further transverse lines – more on one side than the other. Bezel/top decoration confined by two transverse lines on only one side of the hoop, may have worn away on the other side. Gold. SF 20117, Context 16711, Intervention 16711 (Layer), SG 300594 (Layers), Property 4. (Pl 10)

See also SF 806

In Gaul and the German provinces rings of this type and the similar type 2h are particularly frequent in the north-east and along the Rhine; of those analysed by Guiraud 16.7% were of gold (Guiraud 1989, 184–5, fig 18–9). British examples in copper alloy are known from Wanborough (Hooley 2001, 91, fig 35, 95–6).

155. Complete. Annular hoop. Oval cross section, thicker and wider towards top. Subrectangular raised bezel, no decoration visible. Very worn. SF 1256, Context 3188, Intervention 3187 (Ditch), SG 300030 (Ditched enclosure). Late Iron Age

A possible comparison for this very crude ring might come from a late Roman context in Colchester where a white-metal ring with transverse grooves has a small rectangular bezel (Crummy 1983, 50, fig 52, 1790).

Plain hoop with setting

156. *Guiraud type 4e*. Almost complete. Rectangular-sectioned hoop widens to flattened bezel, separate oval

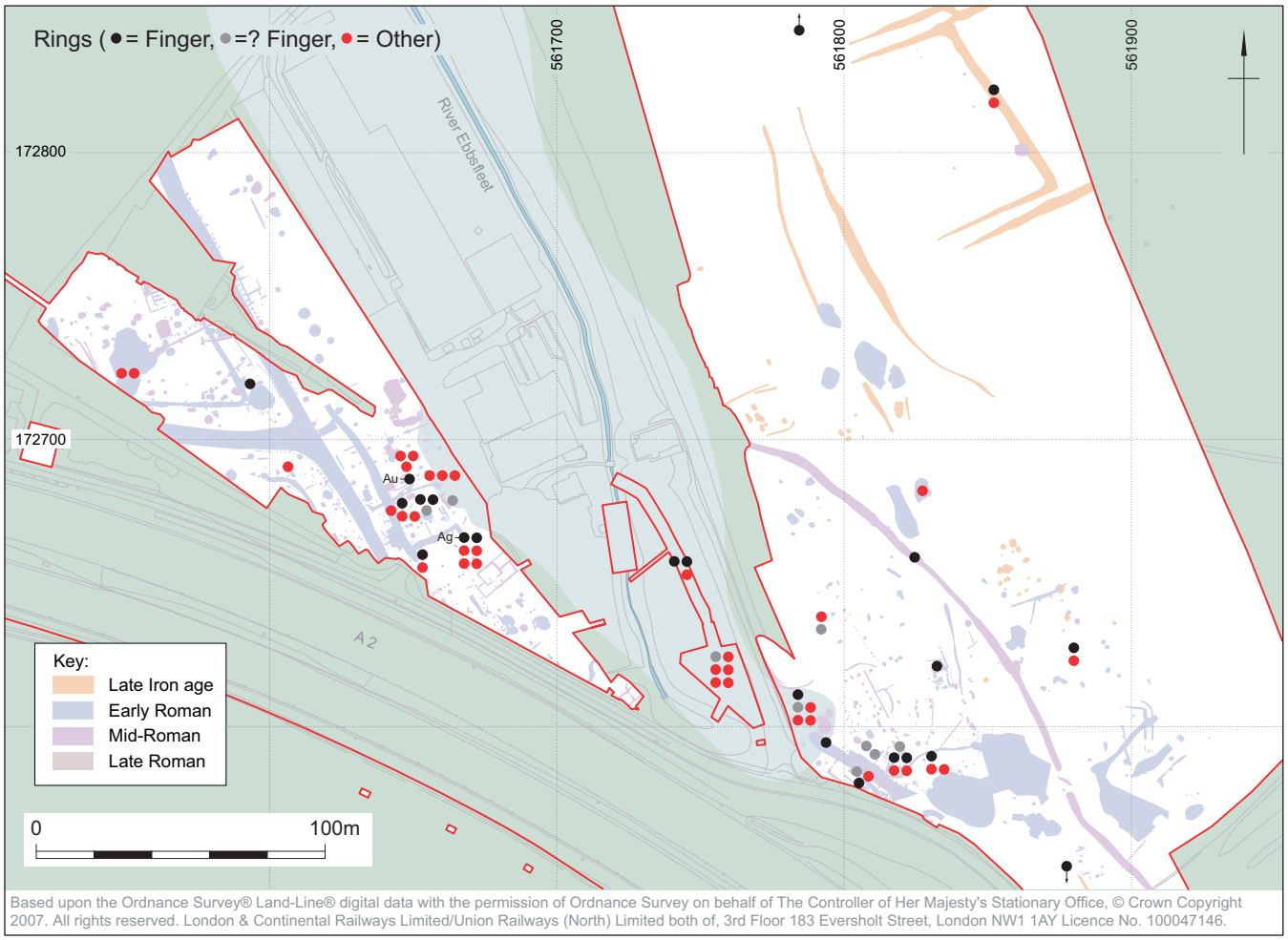


Figure 104 Springhead: distribution of rings

collar soldered to bezel, setting is missing. Silver alloy. SF 15726, Context 12374, Intervention 12374 (Layer), SG 300326 (Layers), Property 2.

157. *Guiraud type 4e var, Riha 2.1.11* (Riha 1990, reference after Bertrand 2003). Incomplete. Rectangular-shaped flattened bezel with part of angled shoulders, most of hoop missing, quite thin, rectangular in section. Small teardrop-shaped black stone in raised setting at centre of bezel. SF 20013, Context 17759, Intervention 17759 (Layer), Property 3. Mid-Roman.

In Gaul and the German provinces rings of Guiraud type 4e (37.7% gold) are especially common in the Rhine–Main area and near the mouth of the Rhône; some with inscriptions of Christian content or favouring the emperor date to the 4th century (Guiraud 1989, 189, fig 28; 191). A parallel for Cat No 157 in copper alloy comes from Antigny, France (Bertrand 2003, 46, pl 9, 44).

158. *Guiraud type 2a var*. Complete. Oval-sectioned annular hoop, widens slightly towards oval-shaped bezel. Remains of enamel or glass paste decoration still visible, now pale green colour. Max W 12.9 mm, min. 3.3 mm. SF 900, Context 6168, Intervention 6168 (Layer), SG 300087 (Deposits). Early Roman.

Cat No 158 is unusual in that it has an oval bezel with its axis orthogonal to the axis of the hoop.

159. Incomplete. Rectangular section, widens to bezel which has slight ridge around it, possibly originally decorated or holding a setting, now very worn. Possibly penannular ring (or breaks worn to sharp point). Max W 8.03 mm, thickness 1.02 mm. SF 1657, Context 3845, Intervention 3844 (Ditch), SG 300252 (Ditch). Saxon (ring ditch around grave 3903)

Although found in the ring ditch around Saxon grave 3903, this ring would not be out of place in a Roman context, eg, Guiraud types 2a or h (1989, 181), and might well be residual. Even though this part of the Sanctuary site was almost devoid of Romano-British features, a pit of that period was only *c* 10 m south of the ring ditch.

160. *Guiraud type 2a*. Incomplete. Two fragments join, D-shape sectioned hoop, widens evenly to oval-shaped recessed bezel, stone/intaglio now missing. Loop broken both ends. SF 726, Context 5256, Intervention 5256 (Layer), SG 300145 (Deposits). Mid-Roman.

See also SF 214 with a translucent white glass intaglio, possibly showing a phallus or a very degraded standing figure (eg, like Henig 1974, p. 18, 563). SF -542 (Pl 11) is a silver ring of Guiraud type 2d set with a nicolo intaglio depicting a hare facing right. SF 1350 has a D-shaped sectioned hoop of equal width with a small circular recess for a gem setting (Henig type II ring). It is a metal detector find from the top soil and not necessarily of Roman date. SF 18713 is the bezel with large setting and missing gem of a ring Guiraud type 2a.

Profiled hoop with setting

161. *Guiraud type 3a*. Complete. Oval-shaped translucent light green glass gem of very crudely cut figure with upper arms at right angle to body and lower arms hanging down perpendicularly, upper legs visible but below this slightly chipped to lower edge. Hoop has D-shaped cross section, widens towards oval bezel with angled shoulders, lower part of hoop slightly bent. SF 15635, Context 12000, Intervention 12000 (Layer), SG 300326 (Layers), Property 2. Late Roman.

The shape of the ring is typical of the late 2nd/3rd century (Guiraud 1989, 185), the motif of the cast glass intaglio joins this ring to a group of similar gemstones from Britain south of the Fosse Way, which look like a person holding a stave in each hand, possibly depicting the deity Virtus with spear in the right and pouring a libation with the left hand. The group has been linked with the beginning of signet use amongst the peasantry in Lowland Britain during the 3rd century, the motif possibly derived from the radiate coinage of the time (Henig 1974, 164 with note 18, fig 3, type 4, pl 17, 549–52; Taylor 1985, 11, fig 4,11).

162. Fragment. Oval bezel and adjoining parts of shoulders with transverse mouldings, hoop completely missing. Bezel filled with corroded, now brown, glass paste. SF 9350, Context 6682, Intervention 6682 (Artefact). Early Roman.

The shape of Cat No 162 places it among the profiled rings of the 3rd or 4th century, see for example a ring with a cabled hoop from Colchester (Crummy 1983, 48, fig 50, 1785).

Profiled hoop with bezel

163. Round bezel with stamped decoration of a head with a ?crested helmet within three concentric rings, the inner two beaded. The hoop to either side of the bezel is of triangular shape with longitudinal cable moulding. Lower part of the hoop missing. SF 9354, Context 400104, Channel fills.

Cat No 163 can loosely be associated with rings Guiraud type 3f which are often of precious metal (eg, Richborough; Bushe-Fox 1949, pl 35, 93) and some set with coins rather than gems (Guiraud 1989, 185, 187, fig 25). The form of the ring suggests a 3rd century date.

Other finger-rings (not illustrated)

SF 1669 has an interlocking bezel whose loose ends are wrapped around the ends. This type, Guiraud type 6d, is fairly common in Gaul and the Rhine–Main area throughout the Roman period (Guiraud 1989, 193–4, fig 39), British examples are known, for instance, from Wanborough, Wiltshire (Hooley 2001, 91–2, fig 35, 101) and a small bracelet from a context dated after 330 from

Richborough (Wilson in Cunliffe 1968, 98, pl 41, 156). The type continues into the Saxon period (Walton Rogers 2007, 133, fig 4.21d, left) as exemplified by an example from cremation grave 1465 at Spong Hill, Norfolk, dated to the earlier 7th century (Hills 1977, fig 123). One from *Verulamium* was found in a medieval layer over building XXVIII and is probably residual from the Roman layers (Goodburn 1984, 30, fig 10, 57). A slightly simpler variant of the type, without the central spiral (similar to Guiraud type 6a), comes from grave 1470 at Spong Hill and is paralleled by SF 528 from grave 2827 in the Saxon cemetery to the east of the Ebbsfleet at Springhead (see Schuster, Vol 4, Chap 3). It is possible that these Saxon rings were parts of necklaces rather than finger-rings.

SF 20003 may be a finger-ring with a thick D-shape sectioned hoop and the remains of the casting sprue as a bezel, imitating a jet ring (eg, Caerleon: Brewer 1986b, 145, fig 47, 22; Brewer also refers to a similar ring in gold in the British Museum). It was found to the north-east of the bakery structure in property 3.

Gemstone

with a note by Martin Henig

164. Oval cornelian of flat section with oblique sides (Henig 1974, 55, fig 1, Flat 1), approximately one-quarter missing, in plain, oval gold collet with lower rim and only very slight intermittent notch at top to hold intaglio. The top of the stone is broken at an oblique angle from the upper left to the middle right side. The intaglio comprises two eagles, the head and upper body of that on the right missing. The left eagle has its breast facing forward and right, its head facing back to its upper left, standing on/holding a small globe in its talons. The right bird may be similar to the above but its back seems to be facing the viewer; the scene is obscured by various chips and damages on this side. Both birds were holding a garland between them, the stem of which extending to the left of the head of the left eagle. A base line runs from the right bird's tail to at least below the globe of the left. Cornelian and gold. SF 9267, Context 6682, Intervention 6682 (Artefact). Early Roman. (Pl 11, top)

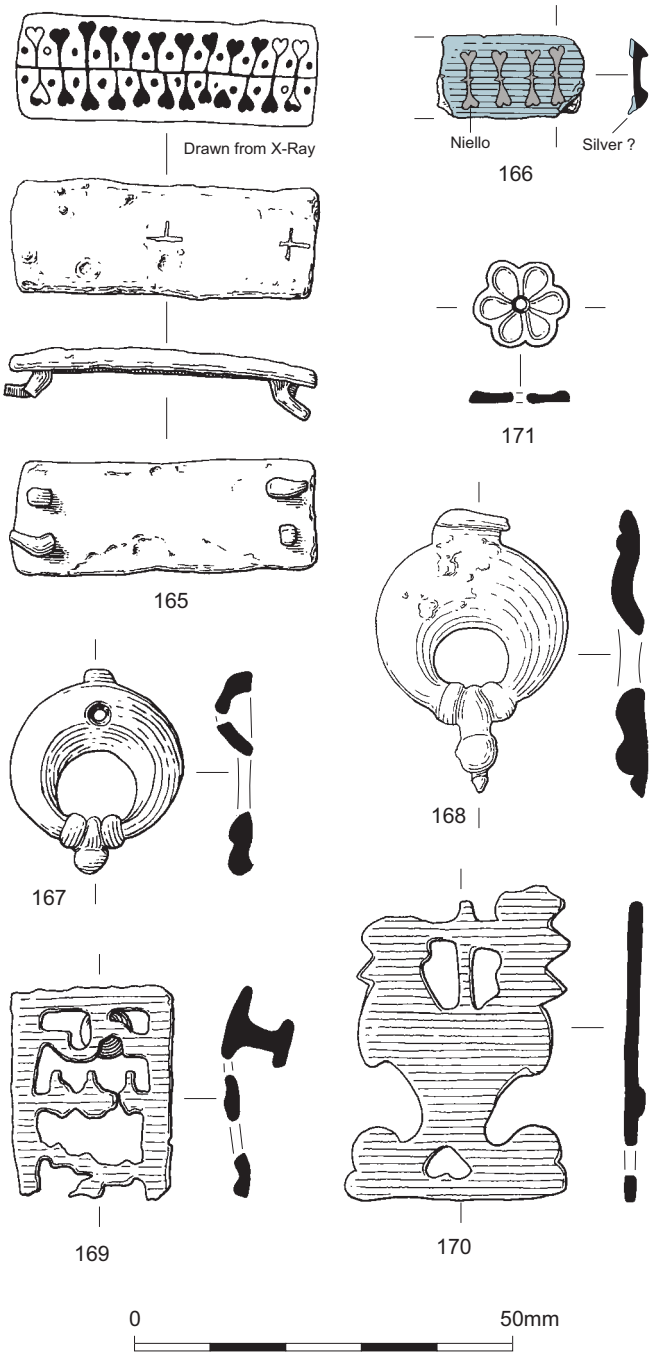


Figure 105 Springhead: copper alloy fittings 165–71

This intaglio with its gold collet was most likely set into a finger-ring, as exemplified by a silver finger-ring from the Marlowe Car Park site, Canterbury, dated to the late 2nd century (Henig 1995, 1002, fig 419, 187). The motif of an eagle on a globe is on occasion found on the reverse of Roman coins, for example on coins for Augustus (*RIC* 82, C 247 (Tiberius)) or Septimius Severus (*BMC* 423, 21 (Caracalla); *RIC* 239, 191c (Caracalla) with the legend 'CONSECRATIO'). For comparisons on intaglios, Martin Henig kindly provided the following note:

> '… the gem did indeed show two eagles holding a garland between them and both standing on globes, signifying world-rule. There is an eagle standing on a thunderbolt atop a globe on an agate intaglio from Aldborough, North Yorkshire (Henig 1974, pl 26, no App69). For an eagle, wings partly spread, simply standing on a globe, a better parallel is an agate/onyx from Pompeii set in an iron ring (Pannuti 1983, 149, no 271). For two eagles holding a garland between them but both standing on low altars or bases note a cornelian in Romania (Gramatopol 1974, 82, no 566, pl 27). Also note two eagles on bases but holding individual wreaths on a yellow jasper from Aquileia (Sena Chiesa 1966, 381, no 1266, Tav 64).'

Fittings

(Fig 105)

165. Rectangular plate with pattern of niello-inlaid hearts extending on lines from central line, separated by dots; four studs at corners on back. Surface quite corroded but niello decoration visible beneath. SF 9201, Context 0.
166. Strap or belt fitting. Incomplete. Rectangular, silver sheet applied to front. Sheet with openwork decoration of four transverse lines (a fifth visible on broken edge) with heart-shaped ends and triangular notches in the middle. Openings filled with ?niello inlay. Two fragmented rivets near broken end on back. Fairly corroded. SF 158, Context 3996, Intervention 3223 (Ditch), SG 300030 (Ditched enclosure). Late Iron Age.

See also SF 165 which lacks openwork decoration.

167. Extended crescent-shaped hoop with tips joining in three collars and knob. Ridged profile. Perforation in wider part. Slight knob at top end probably remains of suspension loop or hinge. SF 1721, Context 6379, Intervention 1001 (Spring), SG 300015 (Deposits). Early Roman.
168. Crescent shape central part, rectangular terminal one side with cordon, knobbed terminal on other side. SF 15632, Context 12000, Intervention 12000 (Layer), SG 300326 (Layers), Property 2. Late Roman.

The two very similar crescentic fittings/pendants Cat No 167 and 168 were found in contexts either side of the Ebbsfleet area. The small holes both items have in the upper part of the crescent find parallels in such pendants from Butzbach and Stockstadt on the Upper Germanic limes (Oldenstein 1976, 162–4, Taf 45, esp 442.445). All of them belong to the larger group of lunula pendants, widely used as amulets over a long period. The German parallels for the Springhead examples suggest a date in the 2nd or 3rd century.

169. Incomplete. Small openwork plate belt or strap fitting. Rectangular shape, circular-sectioned, riveted stud attached to reverse at complete end. SF 18915, Context 17710, Intervention 17710 (Layer), SG 300600 (Layers), Property 3. Mid-Roman.

A similar rectangular fitting from Osterburken on the Upper Germanic *limes* includes the letters 'IOVIS'. Oldenstein (1976, 199, Taf 65, 846) dates this and other parallels to the late 2nd and early 3rd centuries.

170. Incomplete. Possible belt or balteus fitting. Flat rectangular cross-section. Ornate shape, symmetrical with curved, zigzag, and straight sides. Remains of rivet on underside. SF 875, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman.
171. Circular 'flower' shape with six petals and central hole. Flat cross-section. Six petals radiate from middle. SF 1249, Context 3005, Intervention 3005 (Artefact). Early Roman.

Four very similar fittings but with more lancet-shaped petals were found together with other belt fittings of a military *cingulum* in a late 4th century grave in Köln-Aachenerstraße (Böhme 1974, Taf 76, 7). The motif itself is long-lived and does already occur on earlier – 2nd/3rd century – fittings, eg, from the *limes* forts at Zugmantel and Saalburg (Oldenstein 1976, 188, Taf 57, 704–6), although with a higher number of petals and a different attachment consisting of mostly two riveted studs. A later 14th century example was mounted on a brass buckle frame found at Billingsgate, London (Egan and Pritchard 1991, 113, fig 73, 520).

Three fragments of a fine double loop-in-loop chain (SF 20465) were found in roadside ditch 1 on the western side of the Ebbsfleet.

Toilet or Medical Equipment

While there are a number of objects like the spoon probes or *ligulae* that might have had a use in the handling or application of medical ointments, there are no obvious medical instruments. The *amphoriskos* Cat No 187 (Pl 12) as a possible container for a medical ointment might be the only exception. The assemblage on the whole appears more related to body care and cosmetics.

(Fig 106)

172. Incomplete toilet set. Circular-sectioned suspension loop, two instruments still attached: one complete small spoon/ear probe (rectangular-sectioned shaft, bent over at top to attach to loop, circular spoon) and part of nail cleaner (angled head, rectangular section, broken blade). Three loose fragments all possibly from pair of rectangular-sectioned tweezers, flaring slightly towards inward-turned straight jaws, two pieces join. Faint ring-and-dot decoration on exterior surface of tweezers. SF 350, Context 2183, Intervention 2183. Mid-Roman.
173. Incomplete toilet set. Circular-sectioned ring terminal with free moving tools attached: a) tweezers, complete, L 52.69 mm W 5.23 mm, two fragments join, rectangular-sectioned blades flare out slightly to straight-edged jaws, single grooves decorate edges; b) ear scoop, L 47.17 mm W 4.29 mm, rectangular-sectioned shaft, circular bowl; c) nail cleaner, complete, L 35.34 mm W 12.9 mm, leaf-shaped rectangular-sectioned blade, tip missing, line decoration along edges and very faint on blade, possibly imitating ribs of a leaf. Suspension loop in same plane as blade. SF 15694, Context 16641, Intervention 16655 (Ditch), SG 300545 (Ditch), Roadside ditch 3. Mid-Roman.
174. Toilet set. Nail cleaner and tweezers detached. Nail cleaner L 39.3 mm, tweezers not measured as incomplete, scoop (L 65.85 mm) with looped terminal attached to ring which also holds two broken shafts and ?chain (covered by corrosion). Iron. SF 509, Context 2766, Intervention 2766 (Layer), SG 300186 (Deposits). Mid-Roman.

See also SFs 771, 1879, 15309, 15996, 15998, 18025.

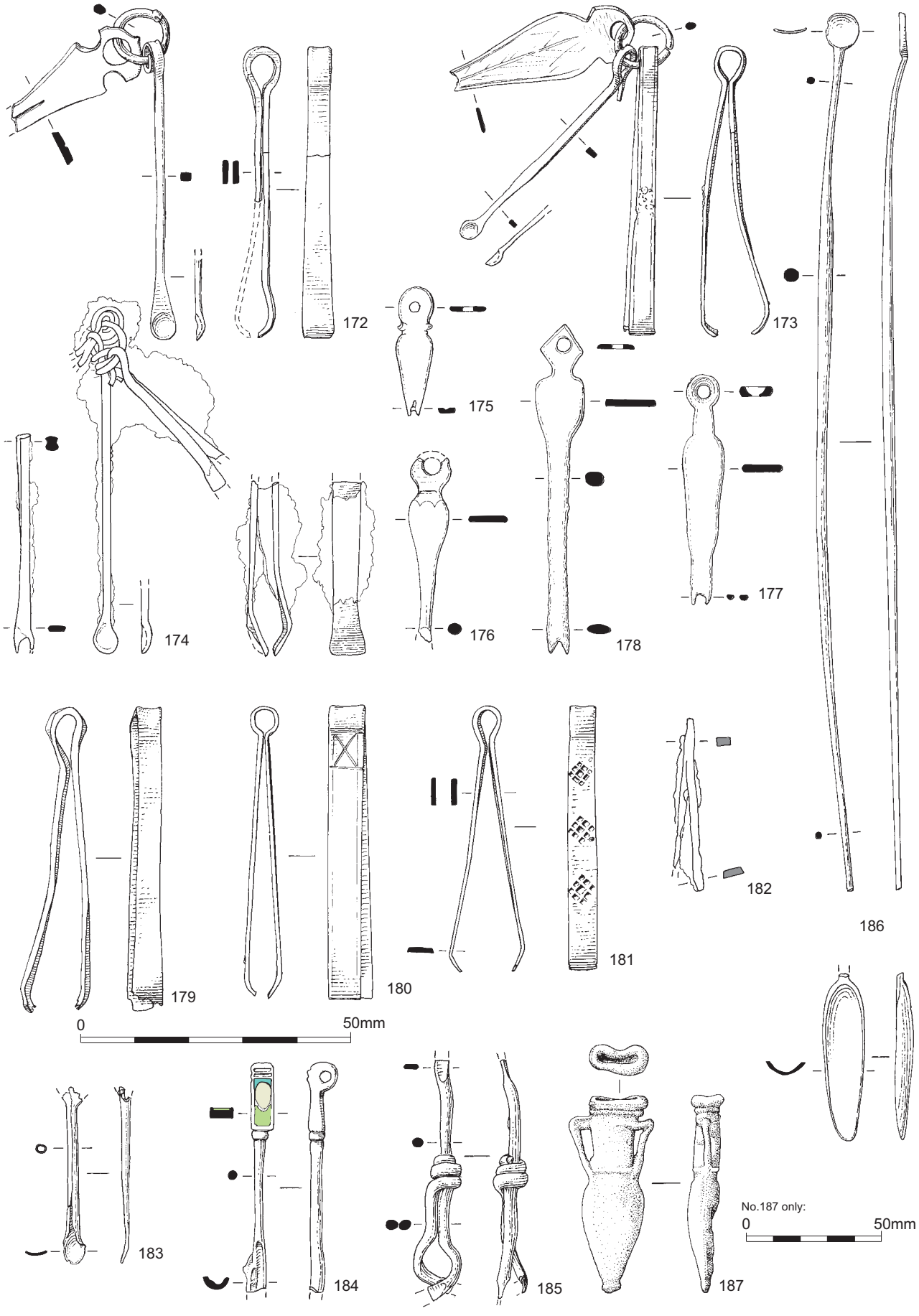


Figure 106 Springhead: toilet and/or medical equipment (172–87). Copper alloy, apart from 182 (iron), 183 (silver), and 187 (lead)

Nail Cleaners

With one exception (SF 809) belonging to Crummy's Baldock type (Crummy 2001, 3, fig 2) the 11 individual nail cleaners from Springhead as well as those which are part of the nine toilet sets all have a suspension loop which lies in the same plane as the blade. SF 723 has a shape like a nail cleaner from a context dated to AD 60–65 at Wanborough (Hooley 2001, 110, fig 44, 191) but lacks the ornament of three compressed saltires. The slightly more swollen shoulders of SF 1870 relate it to one from the Sheepen site at Colchester (Hawkes and Hull 1947, pl 100, 34). The two nail cleaners from the copper alloy sets both have more pronounced shoulders; in the case of Cat No 172 they are distinctly angular.

175. Complete. Very small leaf-shaped blade, rectangular section, narrow groove extends slightly up one side from points, small transverse moulding between blade and circular suspension loop. SF 1806, Context 6436, Intervention 6436 (Surface), SG 300083 (Deposits). Early Roman.
176. Incomplete. Broken flat-sectioned ring terminal. Flat-sectioned leaf-shaped blade, broken. SF 1870, Context 6444, Intervention 1002 (Spring).
177. Complete. Rectangular section, shaft offset from the suspension loop by plain junction, shaft tapers to points. SF 723, Context 5125, Intervention 5124 (Post-hole). Early Roman.
178. Complete. Lozenge-shaped suspension loop continues in plain junction to oval-shaped blade head, tapers slightly towards middle then flares out at points. SF 385, Context 2263, Intervention 2214 (Pit), SG 300073 (Pits). Mid-Roman.

See also SFs 734, 809, 930, 1814, 15299, 18319, 18764.

Tweezers

179. Almost complete. Parallel-sided blades flare out slightly at straight-edged jaws. Rectangular-sectioned. Tips of jaws slightly damaged. SF 1869, Context 6444, Intervention 1002 (Spring).
180. Complete. Parallel-sided rectangular-sectioned bars, straight-edged jaws bent inwards slightly. Single groove along each edge, incised cross decoration bordered by single transverse groove below terminal loop on both sides. SF 15351, Context 11919, Intervention 11892 (Other), SG 300384 (Structure), Property 12. Mid-Roman.
181. Complete. Rectangular-sectioned blades, both sides decorated with three punched lozenge shapes made up of nine smaller squares. Straight edged jaws bent inwards. SF 488, Context 2670, Intervention 2670 (-), SG 300161 (Deposit). Mid-Roman.

A pair of tweezers from Baldock, found in a pit dated AD 90–120, has a comparable pattern of three groups of squares, although not as finely worked as Cat No 181 (Stead and Rigby 1986, 133 fig 57,312).

182. Incomplete. Pair of plain tweezers with blades widening towards missing jaws. Iron. SF 20534, Context 10086, Intervention 10254 (Fill), SG 300731 (Quarry). Early Roman.

See also SFs 826, 869, 9173, 15693, 15724, 15733, 15735, 18951.

Toilet Spoons and Probes

183. Ear scoop. Incomplete. Strip of metal rolled, flattened and trimmed one end creating slightly cupped scoop. Top of shaft broken but beginning of loop remaining. Probably part of a toilet set. Silver. SF 15729, Context 12374, Intervention 12374 (Layer), SG 300326 (Layers), Property 2.

A similar small scoop from a mid–late Roman context at Colchester was made of copper alloy sheet (*cf* Crummy 1983, 60, fig 64, 1898).

184. Toilet implement. Incomplete. Scoop/spoon with rectangular-shaped terminal with perforated lug on reverse, petal-shaped enamel on front (light green colour). Small moulding below to join to circular-sectioned shaft, widens into elongated scoop, tip missing. Probably from toilet set brooch Cat No 117. SF 20017, Context 17759, Intervention 17759 (Layer). Mid-Roman.
185. Tool. Two circular cross-sectioned rods, one is twisted around the other and continues to form looped terminal, now broken. Rod at other end is flattened and ?broken. Part of tool/implement from toilet set (*cf* Crummy 1983, 62, fig 67, 1943). SF 15062, Context 10016, Intervention 300370 (Quarry). Mid-Roman.
186. *Ligula*. Small, flat, circular spoon; facetted shaft, swelling slightly towards middle of lower 3rd where it has octagonal section. Other end blunt, no point. Bowl of long cupped scoop probe, wider near base than tip, found with it, but clearly not part of *ligula* (broken from shaft at top), L 30.21 mm, W 7.25 mm. SF 20085, Context 17913, Intervention 17913 (Layer), Property 3. Mid-Roman.

See also SF 383. There are also six olive probes (SFs 878, 15195, 15207, 18001, 20092, 20520) and one blunt-ended probe and narrow spatula (SF 514).

Other Toilet/Medical Equipment

An end-looped pestle from a cosmetic set (SF 9154; Jackson 1985, 180, fig 6, 47–9) comes from the channel fills of the Ebbsfleet. Possible mirror fragments have been found in five context (SFs 318, 944, 9143, 15067, 20523).

187. Medicine container (*Amphoriskos*). Small amphora-shaped vessel, hollow but quite squashed. Lead. SF 1436. (Pl 12).

Plate 12 *Amphoriskos*, possibly used as a container for medicine (Cat No 187), lead L 72 mm. Photo: E Wakefield

Cat No 187 is a stray find from the slope to the east of the Ebbsfleet and the Sanctuary. No similarity exists with the well-known medieval lead *ampullae* with scallop or round bodies (Spencer 1990, 57–9, 85–92, figs 170–89); the round body shape could well be based on late antique 'Menas *ampullae*' (Effenberger and Severin 1992, 48, Abb 38). Its shape suggests that it imitates a type of amphora of possibly eastern Mediterranean, perhaps Graeco-Roman or Rhodian forms (eg, Peacock and Williams 1986, figs 37, 39). No exact parallels are known to the author; however, a small 'lead amphora flask' on offer on an antiquities website, and purported to be from Europe, (www.gilliscoins.com/antiquities/celtic_and_roman/pic_wro5185.htm; accessed 18 May 2008) comes closest in terms of its shape and general appearance. This 50 mm high vessel also has a pointed body which in contrast to the Springhead *amphoriskos* is decorated with a pattern of circles, saltires, and triangles arranged in zones on the body of the object; its handles, which are triangular like those on Cat No 187, are attached at either side of the shoulder area but only continue to the base of the neck.

Small lead *ampullae* looking like flat-bottomed amphorae are known from the eastern parts of the Roman Empire where they were used as medication containers; quite a few of these have been found with texts including the word 'λυκιον' written on them or attached with a label (Simpson 1854, pl 2; Sjöqvist 1960, pl 20). The Lykion in question is a plant of the Berberis family used for medicinal purposes. The 2nd century medical author Galen claims that the most powerful Lykion comes from India. The plant had many medical uses, but most importantly it served as a medication against a wide variety of eye infections and inflammations because of its astringent and soothing properties. British doctors reported its widespread application in India during the 19th century and it was used for those conditions on British soldiers returning from Egypt (Simpson 1872, 50–2; Boon 1983, 9–10). Apart from Lykion, other medications were also sometimes carried in lead *ampullae* (E Künzl, pers comm), as exemplified by the labels '*xeron presidi*' on a phial from *Lauriacum*, Austria, (Ruprechtsberger 1974) or '*aitnaion*' on a small lead container from Italy (Ferrandini Troisi 1981).

Apart from its use as a container, the *amphoriskos* itself could also have had an apotropaic property, which can also be assumed for amphora-shaped 4th century strap-ends (*cf* Simpson 1976, 198–200) like those from Lullingstone (Meates 1987, 73, fig 30, 163), Richborough (Bushe-Fox 1949, pl 36, 112–13) or Bremen-Mahndorf, grave 208 (Böhme 1974, Taf 9,16) which are stylistically close to lanceolate or discoid strap-ends with lateral animal tendrils (eg, *ibid*, 74, Abb 28; Taf 115, 10).

Textile Manufacture or Working of Textiles

(Fig 107)

188. ?Wool comb. Iron. SF 9398, Context 2675, Intervention 2675 (Layer), SG 300163 (Deposit). Mid-Roman.
189. Spindle whorl. Disc-shaped, perforation at centre. 17 g. Lead. SF 559, Context 2831, Intervention 2831 (Layer), SG 300186 (Deposits). Early Roman.

Although it is uncertain whether identification as spindle whorls is correct for some of the perforated lead discs (SFs 1446, 1511, 1722, 9136, 15078, and 18647) are similar to such discs from South Shields where they have been described as caulking (Allason-Jones and Miket 1984, 331, figs 8.96, 8.97, 8.99). At the medieval Tyske Bryggen at Bergen, Norway, the seven lead spindle whorls found there range in weight from 9.5 g to 71.3 g, their diameters vary from 19 mm to 28 mm and the heights from 8.5 mm to 22 mm (Øye 1988, 49–50, fig II.14); at Springhead these measurements are: weight: 12–46 g, diameter: 20–29 mm, and height: 4–11 mm. SF 15078, which comes from a mid-Roman quarry in property 12 and weighs 46 g, could well have been used as a weight of 10 *sextulae* (nominal weight 45.5 g). Other possible lead spindle whorls have biconical (SF 1512, 64 g and 15923, 32.2 g), or D-shaped profiles (SF 1711, 72 g), and thus the weight range of the Springhead whorls is comparable to that from Bergen.

Needles

190. Complete. Flat spatula head, rectangular eye, circular-sectioned shaft bulges out slightly at centre. Crummy Type 2a (*cf* Crummy 1983, 66, fig 70; 1977). SF 1562, Context 3547, Intervention 3546 (Pit), SG 300245 (Pits). Early Roman.
191. Simple needle with eye set in short groove near the top of the shaft. Iron. SF 15214, Context 10608, Intervention 10608 (Layer), SG 300407 (Layers), Property 11. Early Roman.

This iron needle is similar to Crummy Type 3 of copper alloy with a groove above and below the eye.

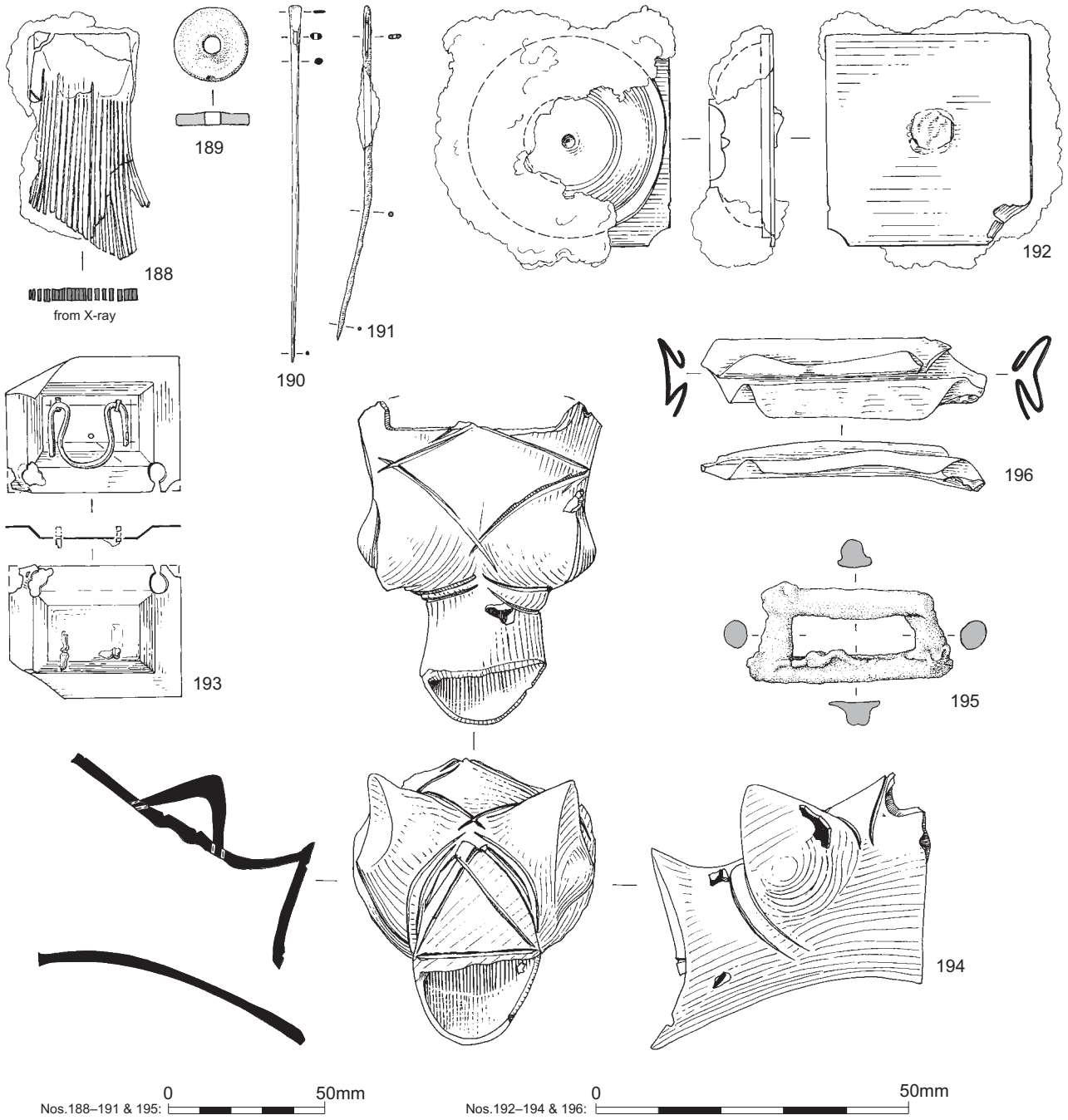


Figure 107 Springhead: wool comb (188), spindle whorl (189), needles (190–1), domed stud (192), box handle (193), spout (194), pot-mend (195), rivet (196). Copper alloy, apart from 188 and 195 (lead) and 191 (iron)

The iron needle is similar to a 1st/2nd century example from Walbrook in London (Manning 1985a, pl 15, D22). With a length of 106 mm it sits near the middle of the range of needles discussed by Manning (*ibid*, 35–6).

See also SFs 384, 15104, 15627, 18305, 20018, all of Crummy type 3. SF 15390 may be the heavily bent shaft of a needle.

Household Utensils and Furniture

192. Box fitting. Domed stud with central recess marked by circular outer ridge. Riveted to square base sheet. Corrosion products on upper side of fitting contain spelt glume fragments (C Stevens, pers comm). This item has possibly been burnt or cremated, which suggests it may belong on a burial casket. SF 976, Context 6378, Intervention 1001 (Spring), SG 300015 (Deposits). Mid-Roman.

193. Small box handle. Very thin. Rectangular with recessed central panel. One corner badly bent. Small circular perforations in two opposing corners. Within central panel a fine piece of copper alloy wire has been threaded through two hoops (these fixed on reverse by twisting ends and bending backwards against panel), itself forming small U-shaped loop (*cf* medical *etui* from Wehringen, Germany, grave 7; Nuber 2000, 170, Abb 141). SF 18721, Context 17709, Intervention 17709 (Layer), SG 300600 (Layers), Property 3.

See also fittings from caskets in graves 6104 and 6345 and lock-bolt SF -515

Two bell-shaped lock-pins (SF 15753 and 18270) come from property 2. Ring-key SF 9373 could have served to lock a small casket. It appears to belong to Guiraud's type 5a of general Roman date, which is common in eastern and north-eastern Gaul and along the Rhine (Guiraud 1989, 191, fig 33).

Parts of Metal Vessels

194. Zoomorphic spout. Lower jaw forms spout, snout/nose upturned and decorated with grooved lines forming triangle. Oval groove is possible eye on left side only. Triangular 'ears' protrude from top. Top also decorated with incised lozenge-shaped lines. SF -523, Context 66, Intervention 66 (Tree-throw hole), Property 7. Early Roman. Found under floor of early Roman building 300522, as was Cat No 265.

Strainer bowls with zoomorphic spouts representing fish heads (eg, Felmersham, Bedfordshire; Watson 1949, pl 5a–b, 42, figs 3–4), a dog or lion (eg, Marlborough, Wiltshire; Robinson 1998, 147, fig 1) or an ox head (eg, Kirmington, Lincolnshire; May 1971, 254, fig 1) appear to be a native British product (Sealey 1999, 121), linked to the consumption of beer, and possibly mead, rather than wine (*ibid*, 123–4). The oldest bronze example comes from the late 1st-century BC burial at Welwyn Garden City (Stead 1967, 24, fig 12), and no bronze examples are found after Nero or the Boudiccan revolt; in pottery, the earliest strainers of the carinated CAM 323 form are dated to the 2nd quarter of the 1st century AD, and they go out of use by the early 2nd century (Sealey 1999, 121–2; Mills, this vol, Chap 1). Three strainer bowls with similar spouts were recently discovered in a hoard consisting of three *trullei* and two strainer bowls at Kingston Deverill, Wiltshire (Worrell 2006, 458–62, figs 31–2) and at Chettle, Dorset (A Fitzpatrick, pers comm).

A fragment of a vessel with five perforations (SF 590) was found in the channel fills of the Ebbsfleet and may have been part of a strainer bowl similar to the type that Cat No 194 belonged to. Of interest in conjunction with the presence of at least one strainer bowl or its fragments at Springhead is fitting Cat No 297 (see below) which looks remarkably similar to a crescentic plate which projects from the back of the head of the Felmersham spout, presumably originally supporting a firmer attachment of the spout to the rim of a vessel (Watson 1949, 41–2, figs 3–4). However, there are no traces on the rim of Cat No 297 which would suggest an attachment of a similar kind.

The bottom fragment of a strainer (SF 15970) with a perforation pattern similar to den Boesterd 52 (den Boesterd 1956, 19, pl 13, 52) was found in tank 16831 in property 4. Dipper and strainer sets of this and similar forms date to the later 1st and 2nd centuries.

Three fragments of metal vessel rims are too small to identify a type (SFs 1603, 1783, 9440), as is a folded strip (SF 1900) perhaps from the body of another vessel.

Plate 13 Type 1 lead plug on a vessel in a shelly fabric (Fig 46, 636) from Context 2319. Photo: E Wakefield

An escutcheon (SF 9224) for a bowl or bucket was found in quarry 300204; a similar piece comes from South Shields where it was suggested to belong to an uncommon 2nd century type (*cf* Allason-Jones and Miket 1984, 216, no 3.732). SF 9001 is a fragment of a handle with plain leaf-shaped terminal from a metal vessel similar to one from Colchester (Crummy 1983, 72, fig 76, 2045). SF 9412 is an iron handle, possibly for a bowl, found in deposits pre-dating the sanctuary.

An iron swivel and loop (SF 20552) with chain of figure-of-eight-shaped links was found in quarry pit 10016. It may have served for the suspension of a cauldron (*cf* Manning 1985a, 138, pl 64, S4) but, among other uses, could also have been part of a dog chain. A similar swivel and loop was found at Northfleet villa (see Schuster, Chap 4, Cat No 10). SF 18294 from the waterfront area in property 4 may be a leg of a small stand for a dish or bowl (*cf* Pompeii: Ward-Perkins and Claridge 1976, nos 320–1).

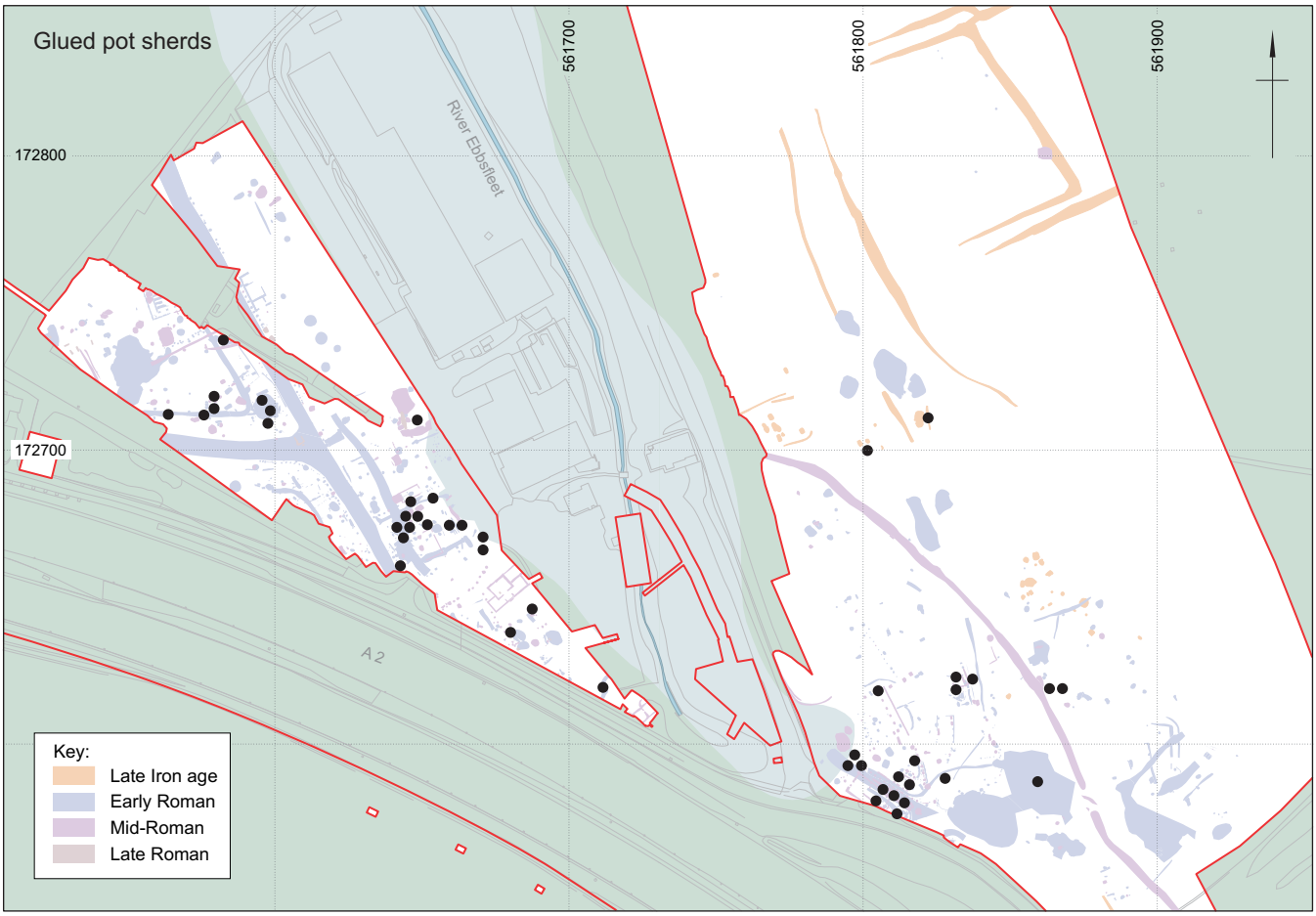
Pot-mends

(Figs 107 and 108)

195. Two almost D-shaped sectioned bars with flattened sides facing each other, joined by two circular-sectioned shafts at opposing ends. Lead. SF 15427, Context 16022, Intervention 16022 (Layer).

See also pot-mends of type 1: SFs 263, 265, 346, 406, 520, 842, 863, 9172, 9451, 15404, 15405, 15407, 15408, 15410, 15617, 15740, 18207, 18208, 18292, 18378, 18844, 18873, 18882, 18917, 20101, 20398, and a vessel in a shelly fabric from Context 2319 (Fig 46, 636 and Pl 13) and an oxidised flagon from context 16776; type 2a: Cat No 195, SFs 894, 1708, 9370, and samian vessels from contexts 16687 and 16863; type 2b: SF 15617.

The 34 pot-mends from Springhead are all of lead. They can be sub-divided into two types. Type 1 is the most frequent with 27 examples. It has irregularly shaped inner and outer discs (relative to the position on the vessel), normally joined by a narrower middle part which creates a notch around the circumference. The inner and outer discs can be of similar size, as SF 406 or the very carefully crafted SF 18378 with two almost circular discs and fragments of the ceramic vessel still held in the middle. Others have discs of considerably different sizes, like SF 15410. Fabric imprints on SF 9451 on the larger inside surface of the pot-mend suggest that the person carrying out the repair had at



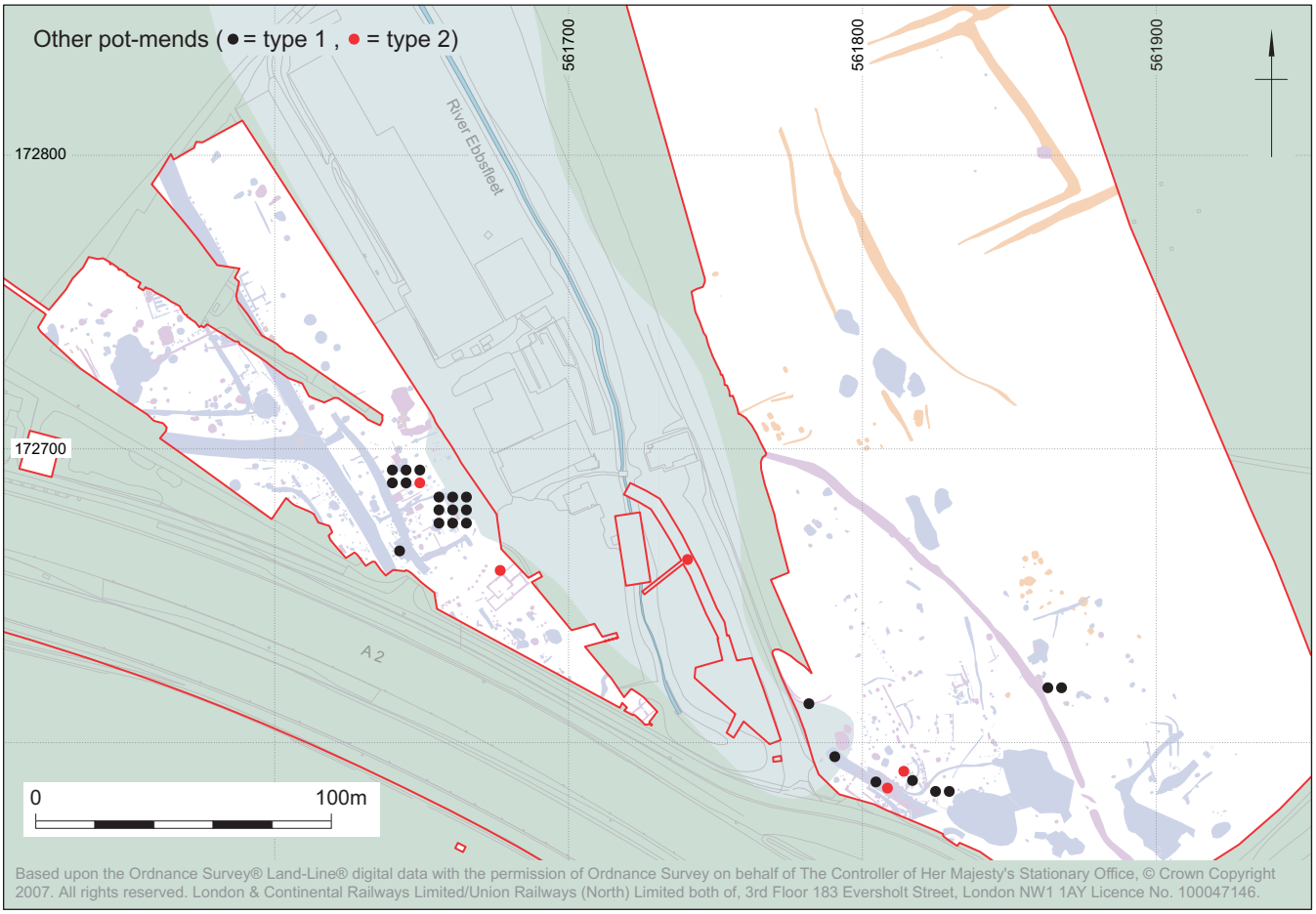


Figure 108 Distribution of lead pot-mends and glued pot sherds

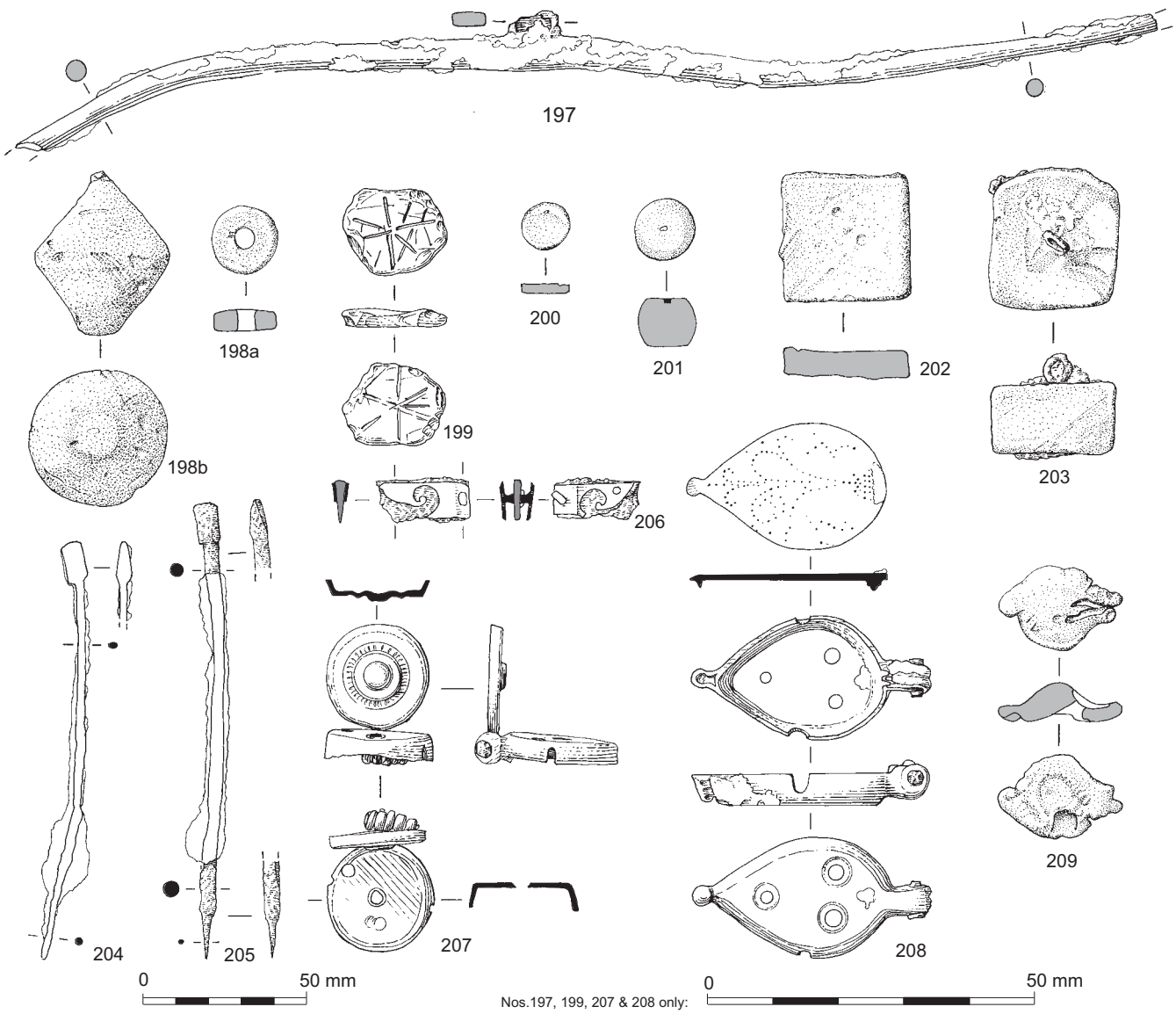


Figure 109 Springhead: objects employed for weighing and measuring (197–203) and writing/written communication (204–209). Copper alloy: 197, 207–8; iron: 204–6 (206 with copper alloy); lead: 198–203 (203 with iron)

least some basic understanding of techniques used by later, medieval, pewter workers which have recently been summarised by Egan (1998, 189, fig 153, 240, fig 188; see also Schuster 2006, 92–3). SF 9172 may be a possible variant of type 1; with a length of 70 mm it is quite large and one side roughly shaped like a bow tie with rounded, semi-circular ends connected by a thinner bar in the middle. The other side has one T-shaped and one irregular end, and the notch around the middle still contains remains of some unidentified oxidised ware.

Type 2 is of a cramp-like shape with an upper bar, normally of D-shaped section, with two shafts at or near the ends. The four examples of variant 2a have shafts continuing into another D-shaped bar; while in the one of variant 2b the shafts end in two flatter points bent inwards at right-angles to the shafts. At Springhead, evidence for pot-mends of type 2 is confined to samian vessels and takes the form of drilled or filed holes, two vessels even had the pot-mends still in place. While pot-mends of type 1 are commonly used on coarsewares (see Fig 46, 636; Pl 13), type 2 pot-mends are also occasionally found on such fabrics, for example at Kingscote (Redknap 1998, 112, fig 64, 15.23–4). A third type of pot-mend, consisting of copper alloy strips with separate rivets, is known from grave 24 at *Verulamium*, KHL, dated *c* AD 30–55 (Stead and Rigby 1989, 279, fig 92, 24.2); if dismantled, such fittings would be extremely difficult to distinguish from simple strips with rivet holes either end. None was noted among the material from Springhead but small strip fragments like SF 1885 could have been part of such a mend, among many other uses, for instance, on leather. Evidence for organic ties and glues is discussed elsewhere in this volume (Seager Smith and Marter Brown, Chap 1).

The distribution of lead pot-mends follows that of the glued pot sherds (Fig 108) but is more restricted, focusing on properties 3 and 4 to the west of the Ebbsfleet, and the southern area of the Sanctuary and pre-Sanctuary contexts. Based on a sample of 76 vessels from Silchester with holes pierced deliberately after firing, some of which were subsequently repaired, Fulford and Timby (2001) have argued against

deliberate 'piercing, as a kind of ritual killing, being part of the ritual of deposition.' They suggest as more likely that the holes were pierced for uses such as timing devices or food preparation (*ibid*, 296). While these are certainly feasible explanations, the concentration in the Sanctuary area might have some connection to ritual practices, while those in properties 3 and 4 could perhaps rather be related to the lead working carried out in these properties.

196. Rivet. Folded towards centre and bent back again lengthwise. Slightly bent. SF 52007, Context 411, Intervention 411.

Spoons

Four spoons have been recorded, including an almost complete spoon with round bowl (SF 15951) and the bowl of another (SF 924), belonging to Crummy type 1 of the later 1st and 2nd centuries (Crummy 1983, 69). The two others are fragmented oval bowls only (SF 9265 and 9361).

Weighing and Measuring

The finds of scales and weights at Springhead do not show any particular concentration. While some may be indicative of unspecified commercial activities, those found in layers associated with the riverbed may also have served a votive function.

Scales

(Fig 109)

197. Balance. Incomplete, balance arm. Circular cross section, tapers slightly both ends, both tips are missing. Base of small lug mid-way along shaft. Badly corroded. SF 1809, Context 6444, Intervention 1002 (Spring).

A badly corroded copper alloy rod (SF 18311) found unstratified in the ARC SHN02-area may be a further balance arm. Neither this nor Cat No 197 are sufficiently well preserved in the area of the lug for suspension to allow for a basic dating on the basis of Steuer's (1990, 44, Abb 1) typology.

Weights

Twenty-three weights have been recorded at Springhead. Table 50 gives an overview of the various shapes, which appear not to be linked to specific weight classes. Unfortunately, only six weights were found in secure Roman contexts, most of the remainder coming from overburden deposits.

Of the disc-shaped weights, only Cat No 199 is from a secure context, but it may be either a weight or a token; if the latter, it may be that the ornament was meant to represent a Chi-Rho, although the ornament's crude manner of execution precludes any certainty. A similar object from the fortress baths at Caerleon has some faint scored lines on one side but certainly no Chi-Rho and was described as a small lead disc or counter (Zienkiewicz 1986, 190, fig 65, 13). If no similarity to a Chi-Rho was intended on the Springhead disc but the weight of the object was of interest, the symbol could have been intended to represent a double cross which was used as a symbol for the denarius, eg, on a lead tag also from Caerleon (Hassall and Tomlin 1989, 342–3, fig 8). This suggestion is supported by the object's weight of 3.5 g which is reasonably close to a *drachma* of 3.41 g, the standard weight of a *denarius* after Nero's debasement of that coin denomination (Chantraine 1961, sp 622). Cat No 199 was found in an early Roman chalk quarry which also contains some 3rd/4th century coins in the upper fills. Thus, in terms of the date range of the fill both interpretations are feasible. A plain copper alloy disc of that weight was found at Colchester (Crummy 1983, 101, fig 105, 2512); its dimensions, apart from its weight, are similar to the lead disc SF 1822. However, double crosses are also found on much later weights, as on a possibly Carolingian weight weighing 68.8 g from Mainz, Germany, which has a more accurately incised double cross on both sides (Wamers 1994, 175, fig 103, M09).

The inclusion in the table of the unstratified cylindrical weight SF 1310, which was cut off from a lead baton, is based on its weight of almost exactly one *sextula*. Somewhat more uncertain is SF 18647 with a weight of almost 16 scruples, found in the channel fills of the waterfront in the Roadside Settlement area. It is of irregular cylindrical shape with a central hole and may have been used as a small suspended weight on a steelyard, but a use as net sinker is equally feasible. The same applies to SF 18438 with a weight of 7 g.

The cone-sectioned weight SF 9395 was found in deposits overlying the riverbed; considering its weight of almost exactly half a Roman pound it may well be a Roman weight, while SF 15406, which was found in a spread above properties 3 and 4, may be a 3rd of a Celtic pound. With 309.1 g (Anderson 2001a, 117; Frere 1972, 150 gives 310.05 g) the Celtic pound was lighter than the Roman and a 3rd would weigh 103.03 g.

The biconical weight SF 15113 was found in the fill of late Roman Grave 10150, while the other two biconical weights were found overlying Romano-British features at the base of the slope in the Sanctuary area. All have remains of suspension loops for use on steelyard scales.

An ounce weight of similar truncated spherical shape to Cat No 201 was found at Wanborough, Wiltshire, in a later 4th century context (Hooley 2001, 115, fig 47, 246). Apart from a central dot it also had the Greek symbols to denote one *uncia*; from the time of Diocletian onwards it had become customary in the West to use Greek numerals on weights (Steuer 1990, 43). While truncated spherical copper alloy weights are a very

Table 50 Springhead metal finds: weights

Disc	Cylindrical	Cone-section	Biconical	Truncated-spherical	Square	Uncertain
260a) Cat No 198a); 19.3 g, may represent ¾ of an *uncia* = 20.47 g, or 17 scruples = 19.33 g	1310 4.4 g, represents 1 *sextula* = 4.548 g	9395 166 g, may represent 1 *semis* = 6 *unciæ* = 163.73 g	260b) Cat No 198b); 315 g, represents 11½ *unciæ* = 313.8 g	1226 6 g	18664 Cat No 202 108, represents 1 *triens* = 4 *unciæ* = 109.15 g	83 2 g (CuA)
1582 114 g, may represent 1 *triens* = 4 *unciæ* = 109.15 g	18647 18 g, may represent 16 scruples = 18.192 g	15406 98 g	261 100 g	1333 5.6 g, may be 5 scruples = 5.685 g	18712 Cat No 203; 317 g, probably equivalent to 11½ *unciæ* = 313.8 g	239 4 g
1822 Cat. No. 200; 4.2 g may represent 1 *sextula* = 4.548 g			15113 32.8 g	1392 Cat. No. 201; 26.0 g (CuA), possibly 1 *uncia* = 27.288 g	20046 61 g (heptagonal)	9222 4.6 g, represents 1 *sextula* = 4.548 g
1874 31 g				50931 95 g		18680 10 g
9323 Cat No 199; 3.5 g, may represent 1 *drachma* = 1 *denarius* = 3.411 g						

SF numbers and weight, Cat No if included in catalogue and illustrated. All lead unless marked CuA = copper alloy. Roman weights according to Chantraine 1961, sp 620

common Roman type which continues into the 6th century, they again become very widely used throughout Europe from the 10th century onwards (Steuer 1997, 46). The truncated spherical or bun shaped weight SF 50931 was found in an evaluation trench which produced pottery of the 1st–3rd centuries. The two smaller SFs 1226 and 1333 are both hemispherical; both are unstratified and their use as weights is uncertain.

The only two square weights were found during metal detecting of a mixed surface layer in property 3. Their square shape would allow placing them in the late Roman period when this form became quite common for weights (Steuer 1990, 43) which usually had the weight units displayed on them in either Roman or Greek numerals. Equally, a much later date is feasible also, as similar weights are known from late medieval/early post-medieval contexts like a weight from Schleswig, Germany, which has a ring-punch mark very similar to Cat No 203, although arranged in a way that makes it appear as a number '8' (Steuer 1997, 67, Abb 34). With a weight of 46 g, SF 15078, recorded as a spindle whorl, weighs almost exactly the equivalent of ten *sextulae* (45.48 g) and may have been used as a weight.

198. Two weights. a) small disc-shaped weight. 19.3 g. b) larger biconical-shaped steelyard weight, slightly flattened at bottom end, pointed at top where iron corrosion indicates the remains of a suspension loop; 315 g. Both lead. SF 260, Context 2183, Intervention 2183 (-). Mid-Roman.
199. Irregular, roughly cut out subcircular disc; incised decoration of what looks like a six-armed cross on both sides, one possibly a Chi-Rho; 3.5 g. Lead. SF 9323, Context 6568, Intervention 6571 (Other), SG 300204 (Quarry). Early Roman.

If a Chi-Rho was indeed intended to be shown, it may be compared with equally crude examples from grafitti on 4th century bowls found in London and Caerwent (Thomas 1981, 89, fig 5, 5.9; Green 1976, pl 24c).

200. Thick disc, possibly with impression on one side. 4.2 g. Lead. SF 1822, Context 6445, Intervention 1000 (Spring).
201. Complete. Spherical with flat top and bottom. The top is less affected by corrosion and has a small silvery rectangle in the centre. 26 g. SF 1392.
202. Square shape, rectangular section. Two ring-punch marks on one side just off centre. 108 g. Lead. SF 18664, Context 19026, Intervention 19026 (Other).
203. Square shape, rectangular section with two slightly convex sides; iron shaft through centre folded back onto base, protrudes at top: remnants of suspension loop. 317 g. Lead. SF 18712, Context 19026, Intervention 19026 (Other).

Writing and Written Communication

204. Stylus Manning type 1. Shaft slightly bent. Iron. SF 18248, Context 11320, Intervention 11320 (Layer), SG 300456 (Layers), Property 10. Early Roman.

See also SF 15898 which may be a copper alloy variant of the type.

205. Stylus Manning type 2. Iron. SF 15698, Context 16642, Intervention 16642 (Layer). Mid-Roman

See also SF 9465 and possibly 15322 (bent at right-angles). SF 20329 is a stylus Manning type 4, SF 244 may be a copper alloy stylus.

206. Fragment of knife handle, with diagonal appliqués with lower edges decorated with a volute, and small part of iron tang. SF 268, Context 2183, Intervention 2183 (-). Mid-Roman.

Knives with similar handles, frequently counted among toilet equipment (eg, Boon 1991, 22, fig 1a), have recently been identified as pen knives for sharpening the *calamus* during writing and are thus listed here with other writing accessories (*cf* Feugère 2003). Cat No 206 belongs to the type with sawn handle for which numerous parallels can be cited, especially from early Roman contexts, amongst others Alba, France (*ibid* 10, fig 2, 2) or Newstead (Curle 1911, pl 60, 12).

207. Circular seal-box. Complete. Base has three perforations: one in centre, two towards edges. Two rectangular notches on opposing sides at right-angled plane to hinge axis. Hinge intact (not free moving) – double perforated lugs and ?iron pin hold perforated lug of lid. Lid bent backwards at right-angles to base. Incised/stamped ?decoration (of transverse lines) inset in circle around possible rivet. Rivet suggests possible further decorative plate (eg of bone) may have been at centre. SF 1572, Context 3547, Intervention 3546 (Pit), SG 300245 (Pits). Early Roman.

See also SFs 367, 1836 (bases only), 9200, 18727.

208. Lanceolate seal-box. Complete – lid and base separate, contents from within box removed by conservator and retained in small tube. Tear-drop shape. Lid has small lug at narrow end (that opposite the hinge), upper surface has possible dotted decoration, some dots create swirling lines (others may be result of corrosion). Base has four perforations in bottom, three at wider end, one at narrow end. On the exterior shallow depressions can be seen around these holes. Double perforated lugs at one end hold iron rod for hinge, at opposing end is further small lug (corresponds to lug on lid). Along edges are two rectangular notches, these lie at right angles to the hinge axis. SF 15744, Context 12061, Intervention 12059 (Post-hole), SG 300329 (Post-holes), Property 2.

See also SF 15618 (base fragment).

A similar seal-box lid from Great Walsingham has four lanceolate petals in a cruciform arrangement (Bagnall Smith 1999, 41, fig 4, 48). A comparable object from Colchester was considered too thin for a seal-box lid (Crummy 1983, 167, fig 204, 4647).

209. Seal. Oval shape, ends more pointed, flat one side where small circular depression can be seen, one hole goes through to upper surface where it is split into two smaller holes, two grooves then run off at right-angles probably where ?string ran out of mould. Upper surface is conical shape. Lead. SF 977, Context 6378, Intervention 1001 (Spring), SG 300015 (Deposits). Mid-Roman.

See also possible lead seals SFs 1769, 9380, 18688.

Objects Associated with Transport

Harness

Bridles

(Fig 110)

210. One half of snaffle-bit with ring and link with tubular loop, loop at other end of link missing. Iron. (*cf* Manning 1985a, pl 28–9, H11 and H14). SF 20393, Context 16890, Intervention 16902 (Pit), SG 300579 (Pits), Property 4. Mid-Roman.

Snaffle-bit SF 15084 from Grave 10079 is of the same type.

211. Snaffle-bit. One ring and link with thick tubular loop, other end, link and ring missing. Iron. SF 20438, Context 19580, Intervention 19581 (Ditch). Mid-Roman.

Buckles

212. Strap buckle, complete. D-shaped frame, D-shaped cross section. Rectangular terminal with T-shape cut out, two grooves along opposing edges on one side only (*cf* Bishop and Coulston 2006, 191, fig 124, 7; Oldenstein 1976, Taf 76, 1008). SF 15631, Context 12000, Intervention 12000 (Layer), SG 300326 (Layers), Property 2. Late Roman.

Strap distributors

213. *Phalera*. Flat circular disc head, raised circular decoration at centre. On reverse is rectangular/D-sectioned bar forming a right angle (originally a U-shape, but part missing). ATC33MH. SF 50995.

Such *phalerae* are most likely part of military horse harnesses, used in conjunction with pendants similar to Cat No 294–5 (see discussion below).

Hipposandals

214. Right side wing of a hipposandal (Aubert 1929, 1F). Strip with lower edge bent at right angles where it would continue into the sole which is missing. Upper edge tapering triangularly towards front (compare Cat No 215). Iron. SF 20425, Context 17896, Intervention 17896 (Layer), SG 300642 (Layers), Property 3. Mid-Roman.

215. Right side wing of a hipposandal (Aubert 1F). Strip with lower edge bent at right angles where it would continue into the sole which is missing. Upper edge tapering triangularly towards front (compare Cat No 214). Iron. SF 20458, Context 16894, Intervention 16902 (Pit), SG 300579 (Pits), Property 4. Mid-Roman.

216. Left side wing of hipposandal (Aubert 1F). Wider part slightly curved, with two slots (x-ray). Iron. SF 20152,

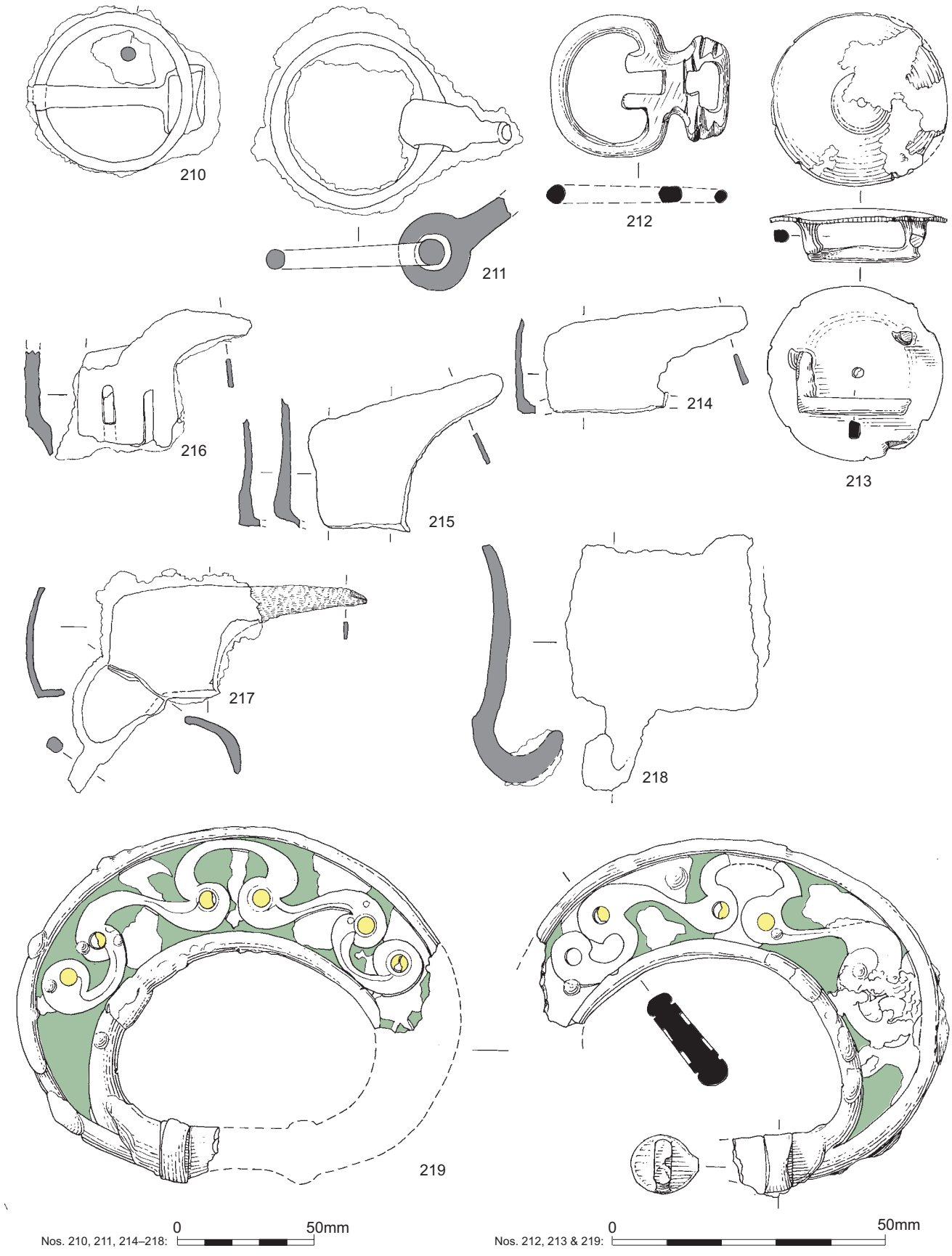


Figure 110 Springhead: objects associated with transport (210–19). Iron, apart from 212–3 and 219 (copper alloy)

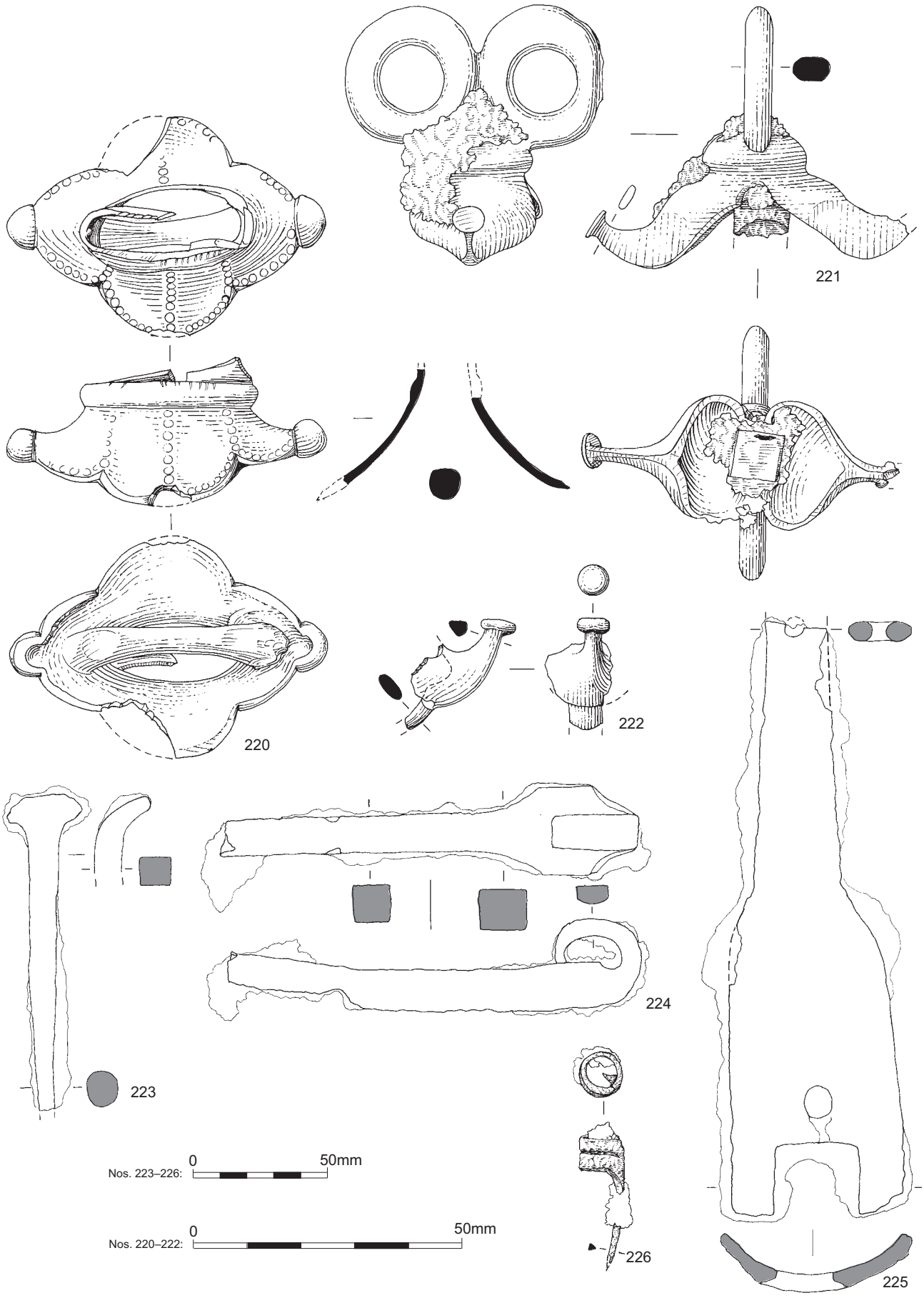


Figure 111 Springhead: objects associated with transport. Copper alloy (220–2), iron (223–6)

Context 12131, Intervention 12131 (Layer), SG 300336 (Layers), Property 2. Early Roman.

217. Two fragments join together. Right side wing of hipposandal with long end, ends in a sharp point protruding beyond the outline of the square part. SF 20319, Context 17177, Intervention 17179 (Pit), SG 300556 (Pits), Property 5. Early Roman. Might be developing towards Aubert's second series.

218. Flat base with rear downward-facing hook only. Iron. SF 1510a), Context 3418, Intervention 3228 (Pit), SG 300214 (Pits). Mid-Roman.

Terrets

219. Incomplete. Wide D-shaped frame, approximately one-third missing, widens in middle, rectangular section. Straight rectangular-sectioned bar. Decorated on both sides: raised curvilinear tendrils with additional groove decoration and yellow enamel dots, recessed area around this is enamelled in *champlevé* technique (now green colour) – this decoration repeated on other side. SF 18271, Context 12132, Intervention 12132 (Layer), SG 300336 (Layers), Property 2. Early Roman.

(Fig 111)

220. Incomplete. D-shape sectioned ringed terret. Skirted base has scalloped edges. Knobs at opposing ends. Grooved decoration visible around collar, stamped dot decoration radiates from top in lines (only visible on one side but possibly on other also) and around edge of base. SF 15396, Context 16157, Intervention 16157 (Layer), SG 300491 (Layers), Shrine.

221. Double ringed head sits at right-angles to moulded hollow base; two knobbed upturned protrusions at sides with flat circular head surviving on one side. Remains of square-shaped shaft protrude from underside. SF 15910, Context 16022, Intervention 16022 (Layer).

222. Incomplete. Fragment of harness fitting with remains of loop and skirt with knob at one end of crescentic terminal. SF 248, Context 2183, Intervention 2183 (-). Mid-Roman.

The ornate terret Cat No 219 belongs to a group of similar objects found in the south and east of Britain (Jope 2000, 157; pl 292–4). Their method of fixture on the yoke is shown by MacGregor (1976, 40, fig 3). These terrets have a red *champlevé* enamel patterning on the flat surface of a wide frame. The technique itself was used in Britain from the 1st century BC onwards and by the early 1st century AD began to be employed on a variety of fittings like the terrets similar to Cat No 219 (Jope 2000, 159). The Springhead terret was found in a late 1st century AD context which is part of the make-up layers prior to the construction of the temple in property 2. That the ornament was still in use by the late 1st century can be demonstrated by two neck collars of Flavian date from Stichill and Plunton Castle in Scotland, which show an ornament called a 'swash N' by Leeds (Ulbert 1977, 41, Abb 3.5–6, after Leeds 1933, 110). Related ornaments are also found on some trumpet brooches (eg, Cool and Philo 1998, 48, fig 12, 73), and the dragonesque brooches are another instance of a flourishing of ornaments based on indigenous Celtic design after the Conquest (MacGregor 1976, 127–9, fig 6).

Simple terrets are widely known throughout the Roman Empire, with a focus on its north-western provinces. Their function and position on Roman yokes and horse collars has been reconstructed by Alföldi and Radnóti (1940, 310, Taf 23,6; *cf* also Radnóti 1961, 31, Abb 13 left), based on near complete yokes and documentary evidence from Pannonia. Terrets with iron spikes like Cat No 221 were certainly nailed into the wooden part of a yoke, and this arrangement would be needed when a third animal was harnessed as a lead in front of two others. Terrets with loops could be strap-fitted but are also found on the sides of a yoke, as described above, where they were set into a hollow and secured with a small stick. The hoops through which the reins were running are most commonly round or oval, but there are also pelta-shaped hoops and, much rarer, double hoops like Cat No 221. A British example with double hoops was found at Chinnor (Worrell 2006, 446, fig 15), a few more are known from Pannonia and both Germanies (Alföldi and Radnóti 1940, 315 with note 34, pl 25, 2). Interestingly, the three terret fragments Cat No 220–2 all have more or less pronounced croissant-like terminals at the small sides of the base collar.

Terrets with distinctly croissant-like terminals like Cat No 221 and 222 have thus far mainly been confined to Raetia and the two Germanic provinces, with a focus in the Rhine-Main area, and a possible manufacture of such terrets was suggested for the legionary fort at Mainz (Koch 1997, 167). A further four were found outside the *limes* in *Germania magna* as far north as the southern North Sea coast (Schuster 2006, 80). The distribution has, however, received a significant addition in Britain with 12 terrets with croissant-like terminals recorded by the Portable Antiquities Scheme. The objects are mainly found in the east of England, from Surrey to Lincolnshire with concentrations in Suffolk and Norfolk, but one very good example was found in Wales near Langstone, Newport (S Worrell, pers comm). The terminals of Cat No 220 are less pronounced and more like an end-knob. Parallels for this detail appear so far to be confined to Britain, with examples from London (Webster 1958, 87, fig 6, 166 with a square lower loop), Bancroft, Buckinghamshire (Hylton 1994, 319, fig 151, 150), and Ferrybridge Henge, West Yorkshire (Duncan *et al* 2005, 153, pl 27, 156, fig 116, 4) as well as the above mentioned double hooped terret from Chinnor where the knobs appear in the middle of the long sides of the skirt, while the London example has knobs there and at the raised longitudinal ends. The Springhead examples fit well within the known date range of the type, which covers the period between the late 1st and 3rd centuries (Koch 1997, 165).

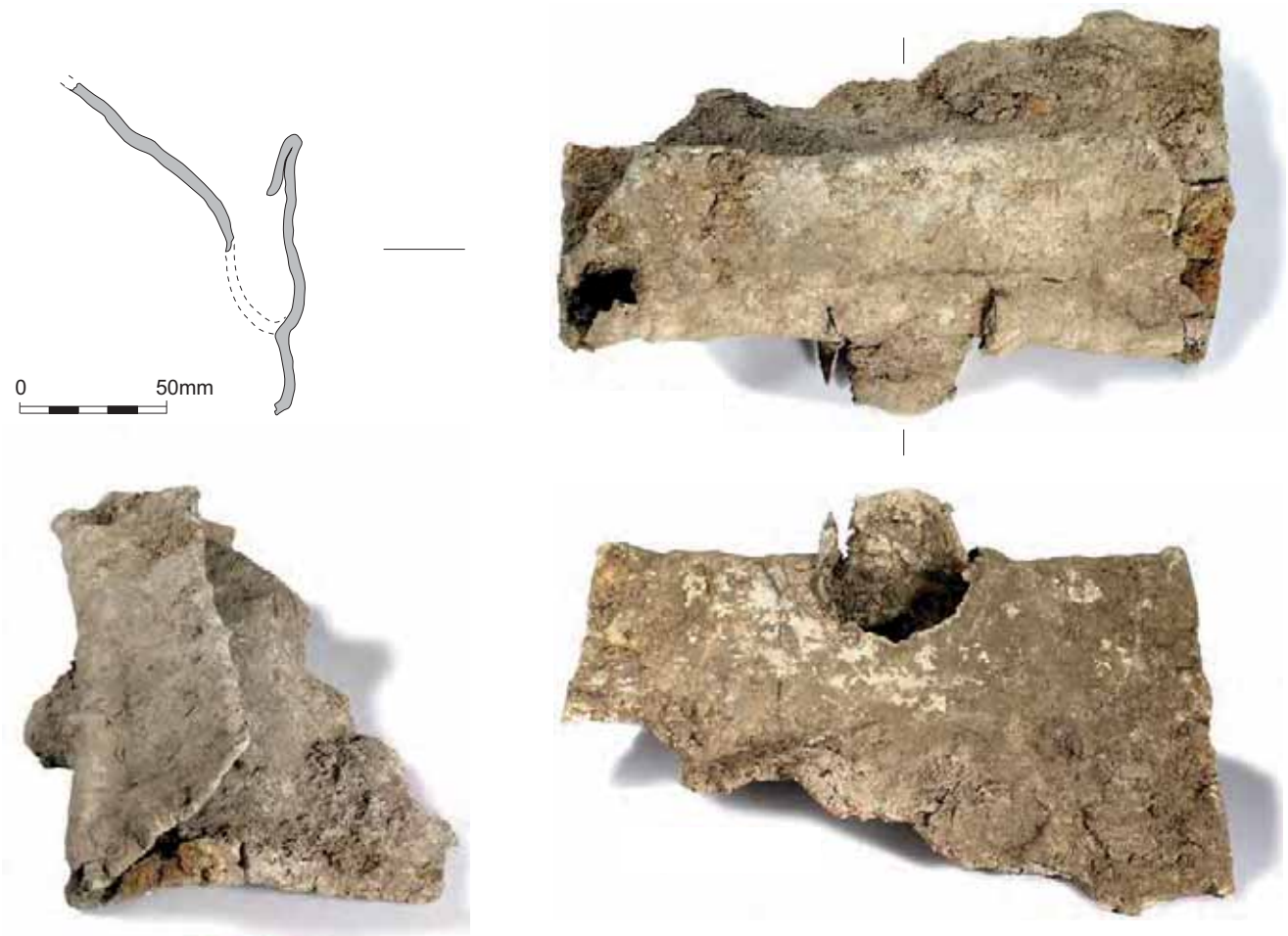


Figure 112 Springhead: lead guttering (227)

Cart fittings

223. Possible lynch pin (Manning type 2a). Spatulate head, bent at *c* 60°. Square-sectioned shaft. Iron. SF 20137, Context 12220, Intervention 12165 (Pit), SG 300346 (Pits), Property 2. Mid-Roman.
224. Lynch pin. Spatulate head tapering towards stem, with turned-over loop at the top (Manning type 2b). Rectangular-sectioned stem with rebate starting *c* 42 mm from lower end. Iron. SF 9400, Context 2945, Intervention 2945 (Layer), SG 300163 (Deposit). Mid-Roman.
225. Possibly pole or beam binding for cart? Arched plate with rectangular opening in middle of base with nail/rivet hole above it. Tapers in the middle and continues as a flat bar with another hole at its broken end. Iron. SF 20112, Context 19026, Intervention 19026 (Other).

The identification of Cat No 225 is by no means certain, but it is not inconceivable that it could have served to protect the tip of the draught-pole of a cart from wear. Other possible bindings are known from Newstead (Curle 1911, 288, pl 15, 4; Manning 1985a, 75, fig 21, 2), which appears to be flat and looks like it has a square loop at the wider end, and a slightly curved binding from Warrington (Jackson 1992, 79, fig 43, 8, 82).

Animal driving implements

226. Ox goad. Socket of two coils, increasing in width towards the long point. Iron. SF 20537, Context 10808, Intervention 10808 (Layer), Property 11. Early Roman

Although it probably does not apply to this example because of its size, many ox goads (like that from Gadebridge Park: Neal 1974, 164, fig 71, 404, or Northfleet, see Schuster, Chap 4, Fig 124, Cat No 12) could well rather be ink pen nibs. At *Vindolanda* three such 'ox-goad' pen nibs were found with a wooden shank still attached to the iron nib, some still with ink traces. A narrow hole bored down the centre of the shank allowed a use similar to a fountain pen (Birley 2002, 35, fig 26). The use of the ox goad to drive animals is best illustrated by the probable 2nd/3rd century Piercebridge Plough Group, a tiny bronze model depicting a man holding an ox goad in his right hand, ploughing with a bull and a cow (Manning 1971, 126, fig 1, pl 44a); the combination of a male and a female animal in the plough team and the ploughman's head covered with a hood suggest the statuette represents a ritual act (*ibid*, 134). In Gaul 'ox goad' like objects are frequently found in late Celtic and early Roman sanctuaries and temples and uses discussed include both the above as well as candle/lamp holder (*cf* Nickel *et al* 2008, 153 with note 341 and further refs),

and the latter might also provide an interesting explanation for Cat No 226. A support for the interpretation as lamp holder is provided by very similar objects with a cup formed by two lateral flanges rather than a spiral, known as cupped candleholders, dating from the high medieval period onwards (eg, Egan 1998, 142, fig 108).

Buildings and Services

(Fig 112)

227. Fitting. Incomplete. ?Guttering. Rectangular shape, rectangular cross section, one side bent and folded. Orange patches from iron corrosion attached. Lead. SF 18014, Context 16837, Intervention 16831 (Pit), SG 300570 (Pit), Property 4. Mid-Roman.

A lead spout of a shape that might have fitted a piece of guttering like Cat No 227 was found at Lullingstone villa in the final destruction levels of the bath (Meates 1987, 93, fig 40, 221). A strip of possible lead guttering (SF 9453) with six nails was found in a timber- and clay-lined tank (5917) to the rear of temple 400035 in the Sanctuary complex. A *c* 460 mm long, more or less rectangular lead sheet with nails through its edges found between two pipe collars at the Roman villa site at Dicket Mead near Welwyn, has been interpreted as a patch applied to a water pipe (Rook 1987, 151–2, fig 61, 4). From the villa at Lullingstone there is a 750 mm long lead sheet strip with nail holes along both long sides, interpreted as a sealing for a wooden box or a tank (Meates 1987, 92, fig 39).

Only four T-clamps (SFs -559, 9137, 20461, and context 2762) and one L-clamp were identified among the iron objects from Springhead.

Tools

Knives

Twenty-one knives have been recorded from Roman contexts, those identifiable are listed here.

(Fig 113)

228. Manning 1b. Parallel-sided blade, tip formed by back turning down sharply at angle of *c* 30° in lower fifth of blade. Blade runs on into plate tang without shoulder. End of tang missing. Two rivet holes. Iron. SF 15685, Context 12077, Intervention 12079 (Post-hole), SG 300341 (Post-holes). Mid-Roman.
229. Manning 7b. Handle with two decorated bone plates attached by two copper alloy rivets and loop at end. Back of blade begins straight and then falls in a concave curve towards tip. The cutting edge has a gentle S-curve. Iron. SF 18759, Context 17043, Intervention 17043 (Layer), Property 3. Mid-Roman.

This type of knife may have been used as a razor and is common during the 1st and early 2nd centuries. Parallels are known from Britain and the Upper German province (Manning 1985a, 111–2).

230. Manning 11. Tip and end of tang missing. Iron. SF 20372, Context 16860, Intervention 16860 (Layer). Early Roman.
231. Manning 11b, blade more 12a. Spiral terminal in same plain as blade. Strongly curved cutting edge. Iron. SF 677, Context 5269, Intervention 5268 (Gully), SG 300177 (Gully). Early Roman.
232. Manning 13. Knife with slightly arched back continuing line of tang. Straight cutting edge. Iron. SF 20082, Context 17759, Intervention 17759 (Layer), Property 3. Mid-Roman.
233. Similar to Manning 13. Narrow blade (two pieces) with rectangular-sectioned tang extending at level with back, 3rd piece with flat disc-like terminal seems to be part of tang. The cutting edge rises gently towards missing tip. Iron. SF 20179, Context 12351, Intervention 12351 (Layer), SG 300323 (Layers), Property 2. Mid-Roman.

See also SF 15163 which is very corroded and bent but may also belong to type 13.

234. Manning 18. Incomplete, tang missing. Convex back, falling in a straight line towards tip and turning slightly downwards towards missing tang. S-shaped cutting edge, narrowest part in end third (*cf* Manning 1985, pl 55, Q56, but not like outline of type 18a!). Iron. SF 9399, Context 2766, Intervention 2766 (Layer), SG 300186 (Deposits). Mid-Roman.
235. Manning 22. Socketed knife, blade with straight back and cutting edge widest in first third from tip, rising in gentle curve towards tip, the end missing. Socket hexagonal near end, opening on left side of handle. Iron. SF 15653, Context 11919, Intervention 11892 (Other), SG 300384 (Structure), Property 12. Mid-Roman.
236. Manning 23. Tanged knife with slightly concave back, curved cutting edge and upturned tip. Tang now bent almost at right-angles. Blade L 63 mm, W 23 mm, Tang L 36 mm. Iron. SF 15697, Context 16642, Intervention 16642 (Layer). Mid-Roman.
237. Manning 23. Knife with curved blade and tip turned up above level of short tang. Complete. Iron. SF 18249, Context 11320, Intervention 11320 (Layer), SG 300456 (Layers), Property 10. Early Roman
238. Parallel-sided blade with back curving down towards missing tip. The handle is of the same width, the end is broken off. Iron. SF 15664, Context 16022, Intervention 16022 (Layer).
239. Cutting implement? with spirally rolled-up tang. Width of blade 16.22 mm, diam of spiral terminal 23.34 mm. Iron. SF 20544, Context 19196, Intervention 19196 (Layer). Mid-Roman.
240. Socketed knife. Rectangular socket. Back of blade S-shaped, straight but corroded cutting edge. Rivet hole near broken end of open socket. Iron. SF 18658,

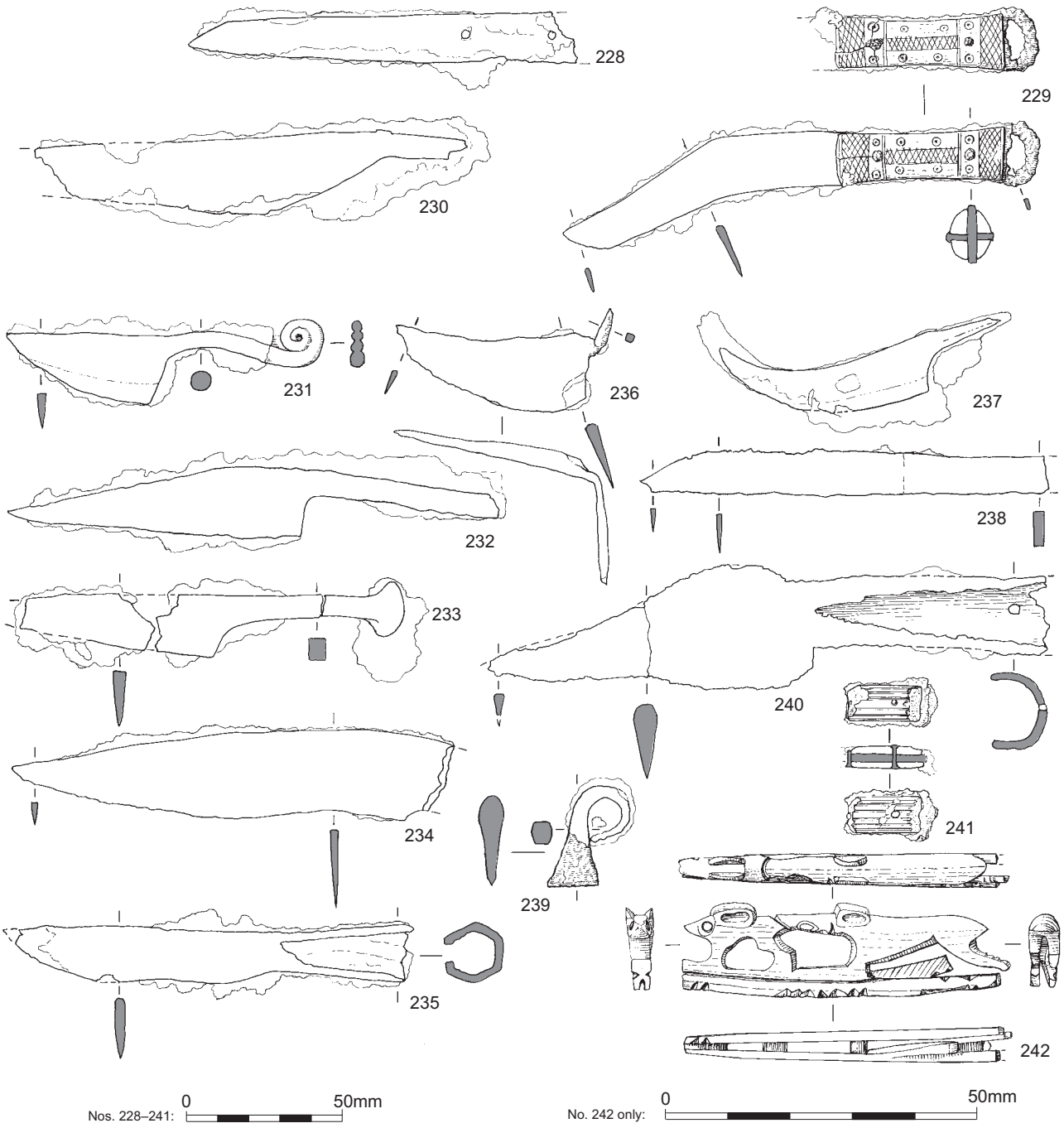


Figure 113 Springhead: knives and knife handles. Iron (228, 230–40), iron, bone and copper alloy (229 and 241), copper alloy (242)

Context 17573, Intervention 17573 (Layer), SG 300675 (Layers), Property 3. Early Roman.

241. Fragment of knife handle. Rest of tang between two bone plates decorated with longitudinal grooves. Copper alloy rivet survives near broken edge (*cf* Crummy 1983, 109, fig 111, 2933). Iron. SF 1800, Context 6436, Intervention 6436 (Surface), SG 300083 (Deposits). Early Roman.

242. Folding knife handle. Rectangular shape with openwork dog chasing hare on a base with notches in the centre and near the ends. Groove in bottom for blade to be folded into, hinge for blade was probably located behind the dog's hind legs where the handle is damaged. SF 15728, Context 12374, Intervention 12374 (Layer), SG 300326 (Layers), Property 2.

A very similar rendition of the motif is known from Richborough (Bushe-Fox 1949, pl 36, 118); others such as that from the Thames at Hammersmith (Wheeler 1930, 78, fig 19, 4), and a handle from Canterbury, Marlowe Car Park, has oblique lines on the base where Cat No 242 has its notches (Lloyd-Morgan in Garrard 1995, 1034, fig 441, 452). The possible religious connotation of the motif as well as the ritual aspects of hare coursing are discussed by Smith (2006, 50; *cf* also Vaughan 2001, 326–30).

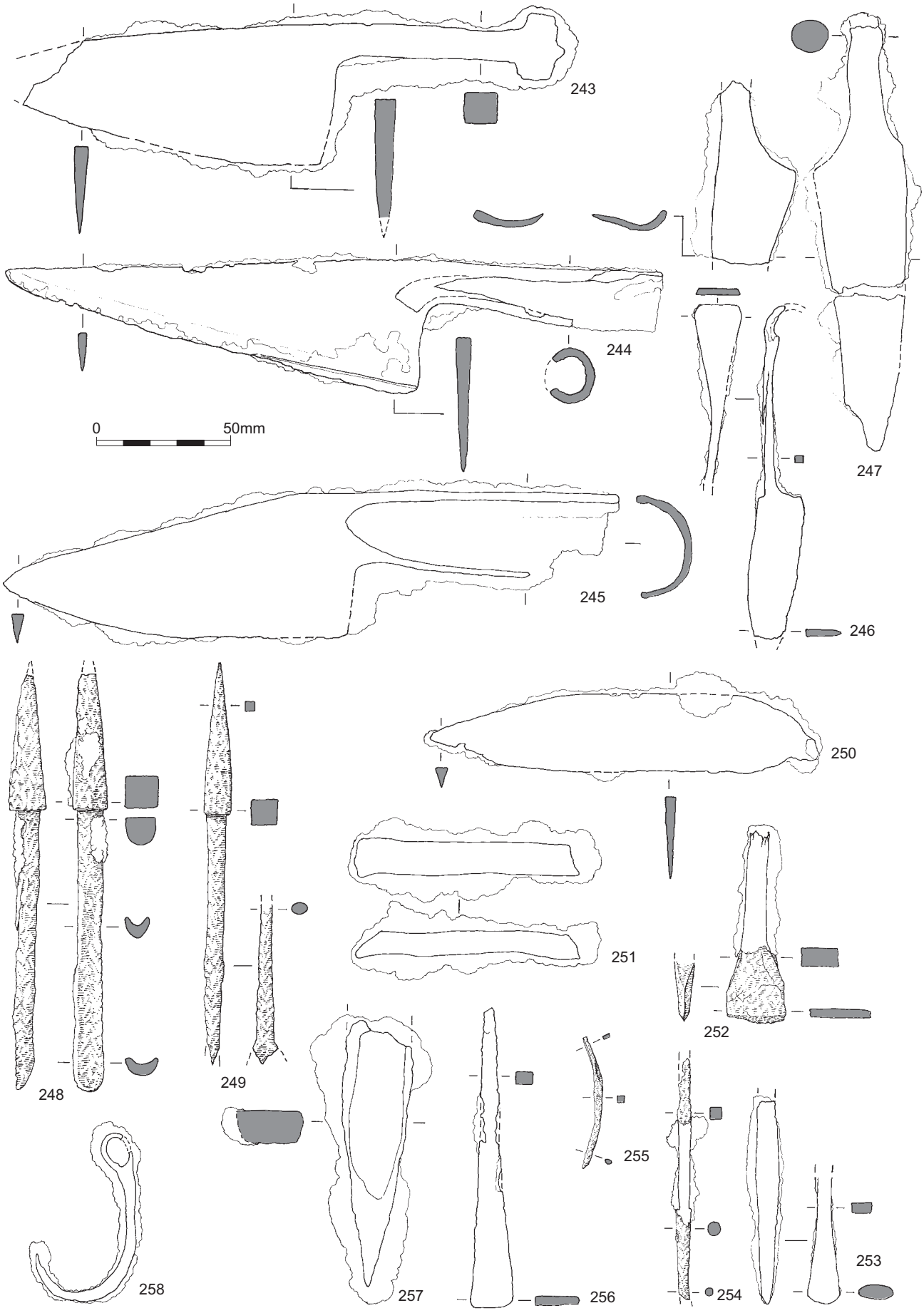


Figure 114 Springhead: cleavers, shears, and other iron tools (243–58)

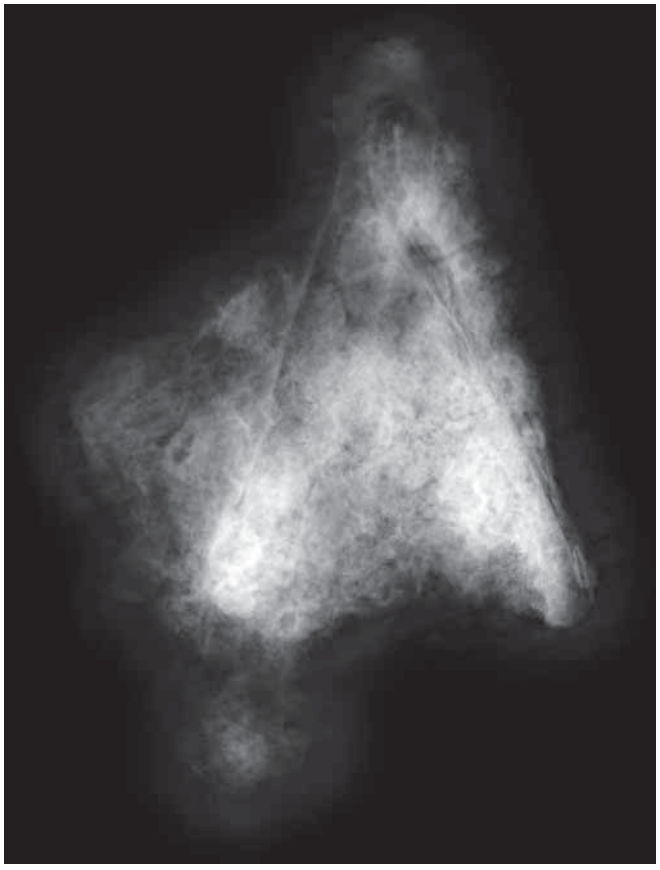


Plate 14 X-radiograph of possible iron dividers (Cat No 259) L 92 mm. Photo: J Watson

Cleavers

(Fig 114)

243. Cleaver with triangular blade and rounded pommel. Iron. SF 416, Context 2559, Intervention 2555 (Ditch), SG 300047 (Ditch). Mid-Roman.
244. Socketed cleaver (Manning type 3). Iron. SF 15666, Context 12374, Intervention 12374 (Layer), SG 300326 (Layers), Property 2.
245. Manning type 4. Open socket for thick handle (opening at end *c* 30 mm in diameter). Iron. SF 20270, Context 16134, Intervention 16464 (Pit), SG 300506 (Pits), Property 10. Early Roman.

Shears

246. Blade and handle of shears. Straight-sectioned blade with back curved towards tip. Rectangular-sectioned arm with omega-shaped spring. Iron. SF 9415, Context 2674, Intervention 2674 (Layer), SG 300164 (Deposits). Mid-Roman.
247. Fragments of shears. Back of one blade with gentle curve, the other too short to determine. Both blades with curved sections and oval-sectioned arms. Iron. SF 9421, Context 2675, Intervention 2675 (Layer), SG 300163 (Deposit). Mid-Roman.

Wood-working Tools

248. Drill bit. Spoon bit with pyramidal head with flat tip and square-sectioned stem with long round-ended spoon. Iron. SF 20197, Context 12411, Intervention 12411 (Layer), SG 300325 (Layers), Property 2. Late Roman.
249. Drill bit. Pyramidal point and square-sectioned stem with what seems to be remains of spoon. SF 20440, Context 19197, Intervention 19197 (Layer). Mid-Roman.
250. Drawknife blade. Straight back and edge, one end with triangular tang in same plane as blade, tapering from back but with step from cutting edge, the other tang bent at right angles to plane of blade. Iron. SF 15665, Context 16022, Intervention 16022 (Layer).

A similar drawknife from Abbeville, France, which is however twice as long, has been suggested to be a cooper's or cartwright's tool (Champion 1916, 219, pl 3, 63645).

Chisels

No distinction between metal, wood, or masonry working has been attempted in the identification of the chisels as their poor condition precludes certainty of identification (*cf* Manning 1985a, 8–9, 21).

251. Mortise chisel. Square section at upper end, top missing, tapering to rectangular section at slightly splayed cutting edge which is bevelled on one side (*cf* Manning 1985a, pl 10, B40). Iron. SF 20392, Context 16917, Intervention 16917 (Layer). Mid-Roman.
252. Chisel with triangular blade, rounded cutting edge and sub-rectangular shaft, its end missing. Iron. SF 20541, Context 16775, Intervention 16775 (Layer). Mid-Roman
253. ?Chisel. Upper half rectangular-sectioned, swelling towards its middle. Axis of lower half at *c* 90°, splayed towards rounded cutting edge. Iron. SF 15323, Context 10647, Intervention 10646 (Pit), SG 300410 (Pits), Property 11. Mid-Roman.

Leatherworking Tools

254. Awl. Square-sectioned tang and round-sectioned shaft (Manning type 4b). Iron. SF 20542a, Context 17157, Intervention 17157 (Layer). Early Roman.

Tools of Uncertain Use

255. Possibly awl or small tracing punch, bent. Middle square-sectioned, one end subtriangular section, the other subrectangular. Iron. SF 18663, Context 11875, Intervention 11874 (Post-hole), SG 300367 (Post-holes), Property 12. Early Roman.

256. Rectangular-sectioned blade/bar, tapers to one end, which seems broken off. Possibly flat chisel for stone trimming? Iron. SF 20360, Context 16685, Intervention 16685 (Layer), SG 300578 (Layers), Property 4. Mid-Roman.
257. Triangular bar, possibly unfinished piece. Pointed end not broken (x-ray). Iron. SF 20470, Context 16744, Intervention 16740 (Pit), SG 300546 (Pit), Property 6. Mid-Roman.
258. Hook with suspension hole. Iron. SF 9413, Context 2674, Intervention 2674 (Layer), SG 300164 (Deposits). Mid-Roman.
259. Possible dividers (Pl 14). Two arms joined by hinge at ?rounded ends, tapering gently towards tips which may be broken. Iron. Mineralised remains analysis (JW): Re-x-rayed to try and see what the organic layers were, but no sign of a wooden case, just layers of wood fragments and straw. Stereo-radiography revealed several parts to this object including at least two flat strips, folded together, and short lengths of chain. To identify what this object is will probably have to require the removal of the extraneous organic materials and reveal the metal pieces. SF 20295, Context 16463, Intervention 16464 (Pit), SG 300506 (Pits), Property 10. Early Roman.

Fasteners and Fittings

Nails

No systematic analysis of the more than 3000 iron nails and nail fragments has been attempted in the course of this study. However, a rapid scan of the radiographs shows that the most common type of nail is the flat-headed variety Manning type 1b, followed by Manning type 1a with pyramidal head. There are also at least four examples of nails with a triangular head like Manning type 2. The head as the main feature of nail typology is a detail which is often affected by corrosion and thus prevents any closer identification.

(Fig 115)

260. Manning type 1a. Large nail or bolt with domed head. Iron. SF 20223, Context 12630, Intervention 12630 (Layer), Property 2. Mid-Roman.
261. Manning type 1b. Iron. SF 20545, Context 19198, Intervention 19198 (Layer). Mid-Roman.
262. Manning type 2. Nail with flat triangular head. Iron. SF 20446, Context 17313, Intervention 17309 (Pit), SG 300556 (Pits), Property 5. Mid-Roman.

Studs

Plain studs

263. Sub-rounded flat head, eight small protrusions, alternating ribs and dots, around perimeter on underside of head; rectangular-sectioned shaft slightly bent. SF 9251, Context 400104, Channel fills.

Similar copper alloy studs are known from Chichester (Down 1978, 300, fig 10. 35,73) and two from Richborough, one of which was found in a group of what the excavator assumed to be the stock of a metal worker. The group was found in a deposit dated AD 55–75 and also contained a number of *lorica segmentata* fittings (Bushe-Fox 1932, 12, fig 2, 3980; 82, pl 11, 27). Bushe-Fox (*ibid*, 80) reports similar studs from the two 1st century AD ships found in Lake Nemi in Italy (McGrail 1993, 47, fig 36B) where they may have fixed the lead sheathing of the tenoned hull. A similar construction was used for the ship from Grand Conglué, France, a reconstruction section of which shows small nails or studs fixing the sheathing to the hull (Throckmorton 1972, 71, fig 10; the shape of the studs is not shown). Similar protrusions have also been found on Viking period and medieval clench nails, for example at Dublin (McGrail 1993, 24 fig 20D; 46–7 fig 36C), a preserved medieval wreck from Bole, Telemark, Norway, and an impression of such a nail noted on a late 12th century ship at Bergen (*ibid*, 46). It is worth noting that while the Roman nails all had an alternating pattern of four dots and four ribs, the later nails only had four dots. Similar rib-and-dot patterns are also known from Roman period iron hobnails, eg, from the Treveran temple on the Martberg near Pommern on the river Mosel in Germany (Nickel *et al* 2008, 313, Abb 200, 10; 321, Abb 207, 9–10). One possible explanation for the patterns on both the ship and the hobnails could be to prevent a twisting or turning of the nails during use. If Cat No 263 was indeed, as seems likely, used for fixing lead sheathing to the hull of a ship, it would be an indication that the ship so treated was built in the Roman tradition, fitted for use in more temperate climes than north-western Europe where ship-worm, against which the sheathing afforded some protection, did not occur. In the English Admiralty sheathing was not considered necessary for the rebuilt *Resolution* in 1698 'unless for a foreign voyage' (Lavery 1987, 60), and the surgeon Robert Spotswood reports about the preparation for a voyage to the West Indies in 1744 that 'a ship destined to remain long within the tropicks is sheathed & fill'd [ie, pliable pieces of wood fastened along the whole bottom with nails whose heads are larger than a crown piece] as thick as can but prevent the destructive corrosion of worms' (Bingeman *et al* 2000, 219, after Spotswood 1793, 13).

264. Large stud with sub-rectangular-sectioned tapering shaft and large sub-circular head. Iron. SF 20084, Context 17710, Intervention 17710 (Layer), SG 300600 (Layers), Property 3. Mid-Roman.

Two sets of small studs (SFs 945 and 20525) with flat circular heads and short, riveted shafts were found in a shallow drainage ditch in temple 400033 in the Sanctuary site and in property 12 of the Roadside settlement. Another variety is SF 15241 with slightly domed head and a narrow flange. Parallels from the Rhineland date to the end of the 2nd and the 3rd centuries (*cf* Oldenstein 1976, 171, pl 48, 516–27).

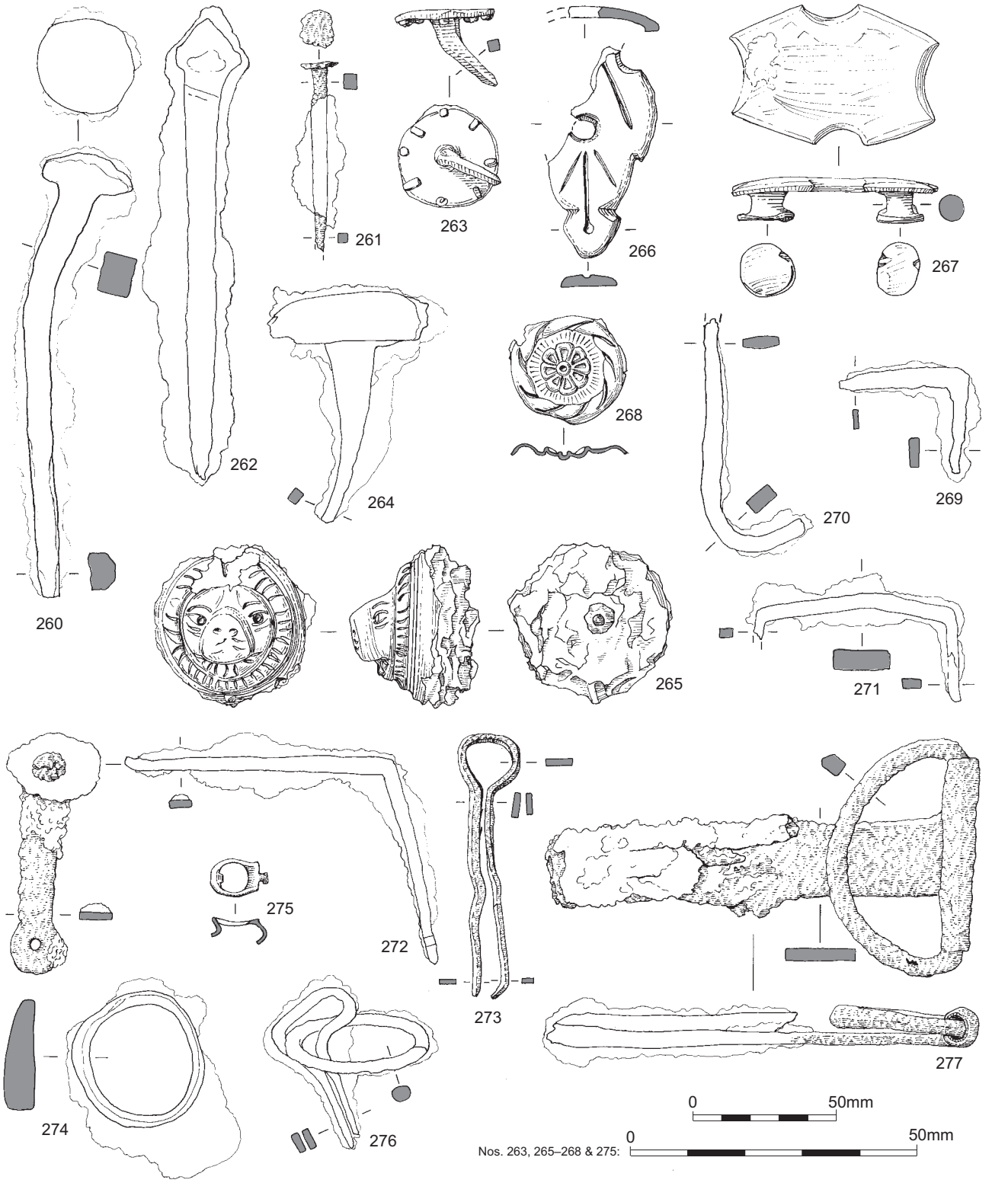


Figure 115 Springhead: nails, studs, fasteners, fittings, and lock bolt. Iron (260–62, 264, 269–274, 276–7), copper alloy (263, 265–8, 275)

The most numerous variety of studs at Springhead are the 32 dome-headed studs, with head diameters ranging between 11 mm and 39 mm and clusters between 22–4 mm and 31–2 mm. Some of the larger studs and three with diameters of 15 mm, 19 mm, and 20 mm have the hint of a flat rim; one (SF 892) has a down-turned rim similar to Crummy 1983, no 3157. SF 15360 is a domed stud with two ribs and a wide flange whose iron shaft was soldered to the back. SF 20507 has a conical rather than a domed head. Thirteen studs have flat heads, with diameters from 15 mm to 37 mm. Such studs could have been used for a variety of purposes, among them decoration of boxes or upholstery (*cf* Crummy 1983, 117, fig 120, 3151, 3173, 3187; Oldenstein 1976, 166–7, Taf 46, 451–69). SF 18018, from the large SFB 300555 in property 5, is a copper alloy bolt with a chunky head.

A possibly riveted stud with a flat, circular head and scalloped rim (SF 692) was found in the abandonment deposits above beam-slot building 300157 in the Sanctuary. The head has a decoration of three crossing lines creating six heart-shaped panels. The head was probably coated in white metal and the lines inlaid with niello. Such studs were found in mid-1st century contexts at Colchester (Crummy 1983, 129, fig 144, 4175; 133, fig 151, 4208 and 4212). A second, riveted stud (SF 1779) has a niello-inlaid floral ornament. It was found in the probable colluvial/build-up deposits by the side of the trackway 300045 which may be contemporary with the clay-floored circular structure 400028. The ornament is similar to motifs found on pre-Flavian/Flavian belt fittings (Grew and Griffiths 1991, 57 fig 4, 1–3); four exactly similar studs are reported from Wallbrook, London (Webster 1958, 87, fig 6, 151c). These and the following two studs could be components of military belt or strap fittings.

Two studs with unusual heads are unfortunately unstratified metal-detector finds. SF 243 has an almost square head with two convex ridges separated by an angular groove. Possible comparisons come from Niederbieber and Weißenburg in Germany (*cf* Oldenstein 1976, Taf 51, 588–9). A square stud from Atworth villa, Wiltshire, has a ridged profile with a raised centre (*cf* Bircher in Erskine and Ellis 2008, 83, fig 23, 79). SF 258 has a hexagonal head with six incised petal leaves radiating from the centre and separated by dotted lines. SF 15345 from property 11 is a late 2nd/early 3rd-century riveted stud with domed head and wide rim (*cf* Oldenstein 1976, Taf 49, 561–2).

Decorated studs

265. Lion-headed, slightly damaged on edge at top. Reverse filled with lead holding central iron shaft. SF -513, Context 143, Intervention 143 (Spread), Property 7. Early Roman.

This lion-headed stud was found under the floor of early Roman building 300522, as was zoomorphic spout Cat No 194. Six similar but slightly smaller bosses originally held the lock-plate of the box found in grave 6345. Two more come from the channel fills of the Ebbsfleet (SFs 1824 and 1832) and an individual, slightly more detailed example was found in the channel fills of the waterfront at the Roadside settlement. Parallels for this very common type of boss are found in a bedding trench, probably earlier than AD 75, at Fishbourne (Cunliffe 1971, 117, fig 48, 125) and at Richborough in a context pre-dating the late 3rd century (Bushe-Fox 1949, pl 44, 168). Borrill (1981, 320–1, table 46) lists another ten sites from south-east England and East Anglia where lion-headed studs were found, mainly from Flavian contexts but ranging from Vespasianic to Antonine in date.

Various Fittings

266. Incomplete. Flat cross-section. Shape is irregular but would have been symmetrical, curved sides, lozenge-shaped point at one end. Four decorative grooves, imitating leaf veins, visible on front. Hole at centre. SF 829, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman.

This object could be a heart- or leaf-shaped pendant similar to such items described from 2nd century contexts from Britain and the Rhineland by Oldenstein (1976, 127, Taf 29–30, esp 207–8); some from Rheingönheim, which seem typologically earlier, even have fully moulded ribs and circular holes instead of the kidney-shaped openings observed in the later types. While this interpretation would place Cat No 266 among the military equipment, another comparison allows an intriguingly different interpretation. One of the chain head-dresses from the Roman temple at Wanborough, Surrey, has attached to it a small pendant in the shape of an ivy leaf, with veins, some of which end in a punched dot, incised on both faces (O'Connell and Bird 1994, fig 23; 101, pl 15). Unfortunately, Cat No 266 is broken and its mode of attachment is no longer visible. As it is a metal detecting find from the overburden above the Sanctuary area, there is no indication of any other component indicative of a head-dress. However, next to the casket in grave 6345 lay a ring with four chain fragments attached to it. While this could be the suspension arrangement for a small bowl or lamp, such chain distributors are also part of priestly chain head-dresses found, for example, at Wanborough (*ibid*, fig 24, pls 11 and 17) and Cavenham (Green 1976, 213).

267. Fitting, complete. Elongated diamond shape with convex scooped edges. Rectangular cross-section, two studded rivets on reverse. Very slightly bent. White-metal coating on surface. SF 845, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman

See also SF 1752 with only one studded rivet.

The shape of the two fittings Cat No 267 and SF 1752 appears similar enough to suggest that they belonged to the same piece of equipment, possibly a belt or bridle strap. Although the author is unaware of parallels with similar shaped plates, it might be that the Springhead fittings are evidence of a very localised production and thus indicating a situation comparable to that discussed by Oldenstein (1976, 188–9) for mid-2nd century elliptical fittings from Saalburg and Zugmantel.

268. Repoussé disc with central ornament of eight-leaved flower surrounded by a beaded field and a cabled rim. Edges slightly squashed and torn. Brass. SF 329, Context 2221, Intervention 2221 (Artefact).

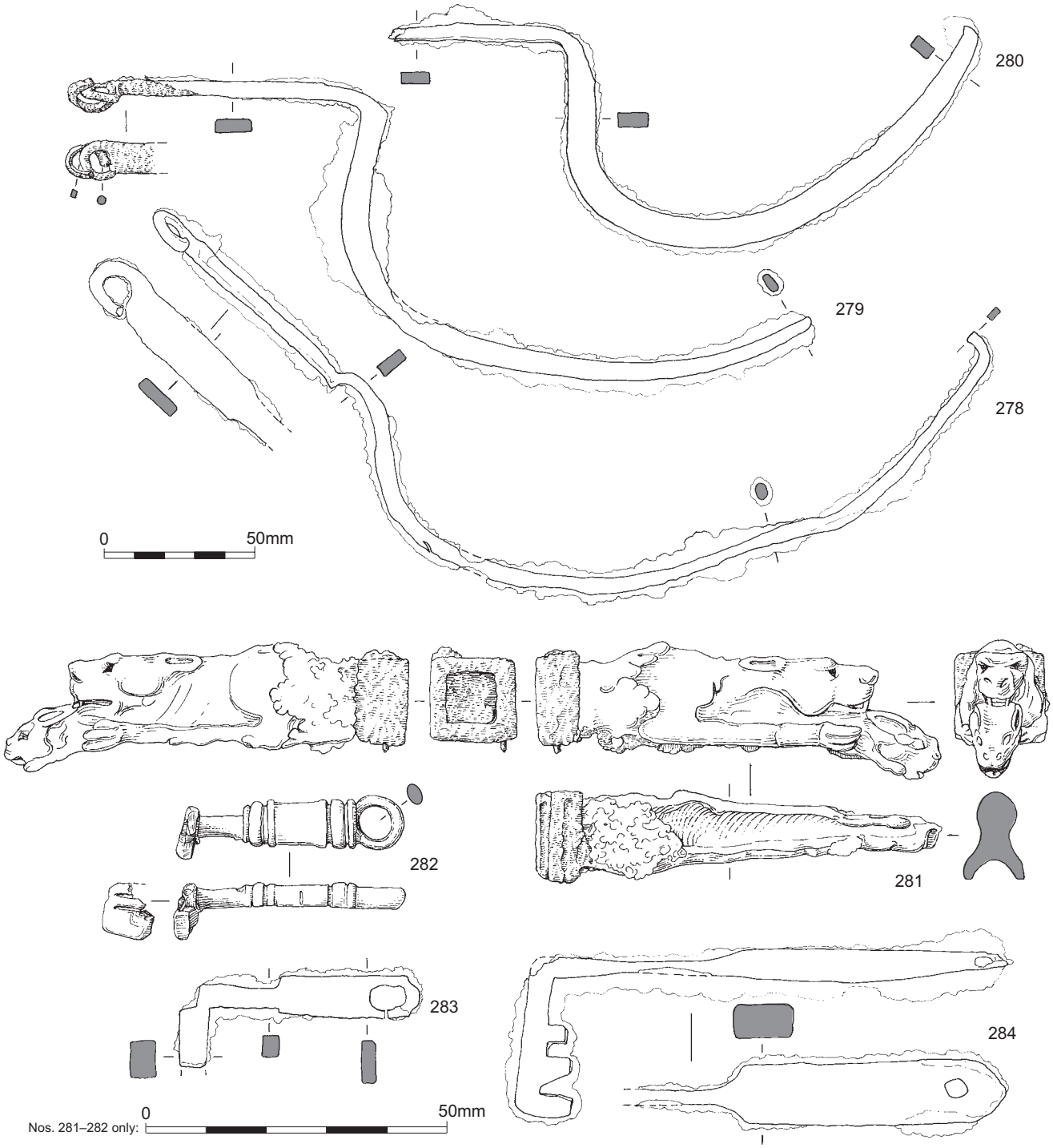


Figure 116 Springhead: Latchlifters and keys. Iron (278–280, 283–4), copper alloy (281), copper alloy with iron (282)

This may be the head of a stud or ornamental fitting of a helmet. A similar ornament can be found on the back of one of the Roman helmets found in the Thorsberg bog in Northern Germany, buried there in the first half of the 3rd century (Raddatz 1987, Nr 400, Taf 86–7).

Two conical copper alloy studs or knobs with spherical finials and iron shafts (SFs 1312 and 20002) can be compared to such objects from South Shields and other places in Britain and Germany with date ranges from the 2nd to the 4th centuries (*cf* Allason-Jones and Miket 1984, no 3. 733–4.736).

Hooks

269. L-shaped wall hook. Iron. SF 20538, Context 10956, Intervention 10955 (Pit), SG 300410 (Pits), Property 11. Early Roman.
270. Hook or bent rod with rectangular section. Iron. SF 20540, Context 16001, Intervention 16001 (-). Mid-Roman.

Joiner's dogs

271. Elongated oval plate with shafts either end, one broken off. Iron. SF 15978, Context 16861, Intervention 16861 (Layer). Mid-Roman.

Brackets or tie-strips

272. Corner brace, possibly for box. Shorter arm with rounded, perforated end, slightly wider than width of strip. Iron. SF 20377, Context 16863, Intervention 16863 (Layer), Property 4. Late Roman.

See also SF 15202.

Double-spiked loop

273. End of one arm bent to meet the end of the other with straight end. Iron. SF 20138, Context 12000, Intervention 12000 (Layer), SG 300326 (Layers), Property 2. Late Roman.

Rings

274. Ring with stone attached by corrosion products. Iron. SF 9418, Context 2675, Intervention 2675 (Layer), SG 300163 (Deposit). Mid-Roman.

275. Fragment. Oval-shaped loop, rectangular cross-section. Two small lugs attached at sides and bent at right-angles to loop. SF 20237, Context 19565, Intervention 19565 (Layer), SG 300362 (Layers), Property 1.

Handles

276. Ring with double-spiked loop. Iron. SF 15164, Context 10405, Intervention 10405 (Layer). Mid-Roman.

Locks, Keys, and Latchlifters

Lock bolt

277. Sprung lock bolt with semi-circular handle, the bent ends of which fit into the tubular ends of a thick strap with probably three springs extending from the other end (although this is not clear in the x-ray). Iron. SF 15249, Context 10326, Intervention 10324 (Pit), SG 300396 (Pits), Property 11. Mid-Roman.

An exact parallel for this sprung bolt was found in burial 6 at Baldock (Stead and Rigby 1986, 70, fig 31, 27), where it was part of a box which is presumed to have had a sliding lid as the hinges found in the grave were found away from the remains of the box (*ibid*, 65, fig 28; 68, fig 30). A padlock bolt (SF 9317) was found in the area of the Ebbsfleet. Other parts of boxes are discussed under the casket from Grave 6345 (see below, Roman graves).

Three bell-shaped lock-pins come from properties 2 and 3. SF 18270 has a copper alloy shaft cast in one with the head (*cf* Crummy 1983, 125, fig 137, 4143), while the other two (SFs 15753 and 18948) are of the same type with an iron shaft which is now lost.

Latchlifters

(Fig 116)

278. Latchlifter with looped handle and sub-circular sectioned blade with rectangular tip bent upwards. Iron. SF 15209, Context 10687, Intervention 10660 (Ditch), SG 300386 (Ditch), Roadside ditch 1. Early Roman.

279. Latchlifter with loop at end of handle holding a ring and sub-circular sectioned blade. Iron. SF 15878, Context 16422, Intervention 16419 (Pit), SG 300506 (Pits), Property 10. Mid-Roman.

280. Flat rectangular sectioned handle, the end is missing. Blade of rectangular section at 90° to plane of handle. Iron. SF 20375, Context 16861, Intervention 16861 (Layer). Mid-Roman.

Keys

281. Zoomorphic key handle in the shape of a dog rising out of a calyx. The dog's ears lie flat against its back, its extended front paws clutch the shoulders of a hare whose head projects to the front. Square iron terminal at other end with remains of shaft still in socket; iron corrosion filling part of flat-bottomed groove in base of object. SF 18694, Context 19026, Intervention 19026 (Other).

This handle belongs to a group of keys with anthropomorphic or zoomorphic handles for which a number of examples can be quoted from Britain, in the shape of a 'docile lion' from Fishbourne (Cunliffe 1971, 121, fig 50, 144) and *Verulamium* (Goodburn 1984, 46, fig 18, 165), a boar, also from *Verulamium* (Adamson and Niblett 2006, 157, fig 46, 60) or a dog with a long snout from Richborough, area V, dated to AD 50–80 (Bushe-Fox 1949, 129; pl 36, 117). While the motif of a dog chasing a hare is very common in Britian, eg, the folding-knife handle Cat No 238 (for a discussion of the motif on folding knife handles see Vaughan 2001, 326–30), the style of the handle itself – a horse, lion, or dog rising out of a calyx – finds better parallels in the Rhineland, where such key handles are dated as early as the 1st century AD (eg, Simpson 2000, 145, pl 19, 1; Menzel 1966, Taf 66; Kaufmann-Heinimann 1998, 35–6, Abb 12), with a key handle from Heddernheim, Germany, particularly similar in the treatment of the dog's face (*ibid*, Abb 12, 3). However, a key handle with a lion rising out of a calyx was also found at Baldock in a 3rd or 4th century context (Stead and Rigby 1986, 137, fig 59, 370), and a recent find of such a handle showing a lion with a ram's head between its front paws was made at Winthorpe, Nottinghamshire (Worrell 2006, 439–40 fig 8). Although a metal-detector find, it should be mentioned that Cat No 281 was found in the overburden in the area of property 3, immediately adjacent to the temple in property 2 in the Roadside settlement.

282. Slide-key with rectangular sectioned handle. Edges with transverse mouldings before shank and before loop of bow. Iron nail with rectangular sectioned shaft attached to bit (separated during conservation). SF 9135, Context 6541, Intervention 6540 (Other), SG 300014 (Pits).

283. *Manning type 2*. Slide-key with rectangular handle and sub-rectangular hole at its end. Bit with probably two broad teeth (thin dividing line in x-ray) (*cf* Manning 1985a, 93, pl 41, O52). Iron. SF 20435, Context 17043, Intervention 17043 (Layer), Property 3. Mid-Roman.

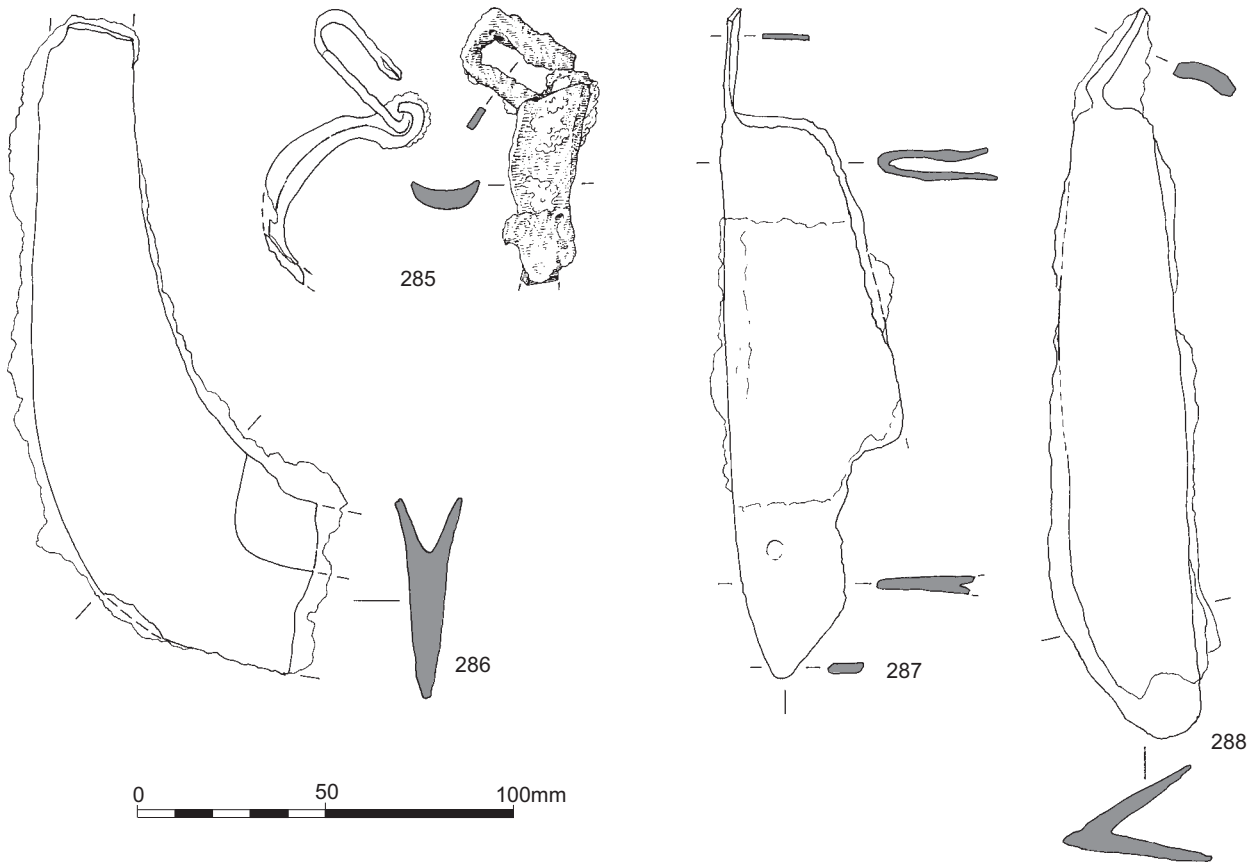


Figure 117 Springhead: iron shackle (285) and spade shoes (286–8)

See also SF 1833.

284. L-shaped lift-key with rectangular handle and triangular top with convex sides and round hole. Almost square sectioned stem. Triangular bit with three teeth. Iron. SF 15387, Context 16141, Intervention 16141 (Post-hole), SG 300505 (Post-holes), Property 10.

A small lever lock key (SF 910), perhaps for a small box, was found in floor deposits associated with rectangular building 400029 which is probably a smithy. A tapering iron strip, probably a barb-spring padlock key, SF 18659, was found in post-hole 17921 in property 3.

Objects Associated with Agriculture, Horticulture, and Animal Husbandry

(Fig 117)

285. Part of shackle with rectangular loop attached to looped end or circular eye. Iron. SF 9417, Context 2675, Intervention 2675 (Layer), SG 300163 (Deposit). Mid-Roman.

As only one half of Cat No 285 survives it cannot be assigned to one of Manning's (1985a, 81–3, figs 22–3) types. The shackle was found in the layers above temple 400035 in the Sanctuary site and may have served as a hobble for animals rather than for humans. Such hobbles have been found in Viking graves in Scandinavia and were still used in Iceland until the 20th century (Roesdahl 1992, 232, No 16).

286. Spade shoe Rees type 1a. Slightly less than half of a spade shoe with U-shaped blade. Inner edge of mouth and arm with V-shaped groove to hold wooden blade of spade. Iron. SF 9416, Context 2674, Intervention 2674 (Layer), SG 300164 (Deposits). Mid-Roman.

A very similar example comes from Chesters Roman villa (Rees 1979, 324; 373, fig 114a). Rees mentions a further type 1a shoe of 2nd century date from Springhead (*ibid*, 398, table 10). A spade shoe of this type was found at Stonea together with the completely preserved wooden parts of the spade made of ash (Malim 2005, 119, fig 59).

287. Spade shoe Manning type 1d. Fragment of blade with deeply grooved side arm; short tang continuing from the cutting edge at the top of the arm. Back of arm straight and very wide. Iron. SF 20154, Context 12411, Intervention 12411 (Layer), SG 300325 (Layers), Property 2. Late Roman.

288. Spade shoe Manning type 1d. Grooved side arm of a spade shoe with fragment of flat arm flange at top of arm. Iron. SF 20370, Context 16855, Intervention 16855 (Layer), SG 300553 (Layers), Property 5. Early Roman.

An iron hoe (SF 1432, Pl 15) was found during metal detecting in the upper fill of quarry 300207. With its two-pronged fork and triangular blade it belongs to a type of hoe which is likely to be the *ascia-rastrum*

described by classical authors; a tool used for weeding, aerating the soil and tending to young plants (Rees 1979, 309–10; 341–4, figs 85–7). This type of hoe appears to have been introduced to Britain early in the Roman period and is predominantly found in forts (eg, Richborough; Bushe-Fox 1949, pl 61, 338), towns and small settlements rather than villas (Rees 1979, 348, map 6). A probable reaping hook (SF 9401) was found in the abandonment deposits overlying beam-slot building 300157. A reaping hook (SF 20072) Manning type 1 was found in property 5.

Military Equipment

Military awards in the form of flat, bracelet-like bands, so-called *armillae*, were only identified as such after the sequence of the catalogue and drawings had been fixed and are therefore discussed under bracelets (see above). In the tables (Tables 51–2) considering function groups for the various site entities at Springhead they have, however, been counted in the category 'military equipment'.

Arms

(Fig 118)

289. Pilum. Pyramidal head and short length of ?round-sectioned stem. Iron. SF 20422, Context 19593, Intervention 19592 (Pit). Early Roman.

The identification is not certain. A similarly corroded, unprovenanced head in the British Museum has been grouped among the drill bits (*cf* Manning 1985a, pl 12, B59).

290. Spearhead Manning Group IIa. Socketed, tip of blade missing. Iron. SF 20202, Context 12310, Intervention 12310 (Layer), SG 300326 (Layers), Property 2. Late Roman.

A catapult bolt head (SF 9464, not illus) of Manning type 1 was found in an upper layer of Viewing platform 300173, thus possibly not related to the use of that structure. These bolt heads, which were probably in use throughout the Roman period, have been found on many sites in Britain and on the Continent, especially in Germany (Manning 1985a, 175, pl 83–5).

291. Socketed ferrule with square sectioned stem, a rivet hole in the lower part of the split socket. Iron. SF 20472, Context 16744, Intervention 16740 (Pit), SG 300546 (Pit), Property 6. Mid-Roman.

This ferrule has a close parallel at the Roman fort of Carrawburgh (*Brocolitia*) on Hadrian's Wall with a rivet hole in a similarly low position of the socket (Manning 1976, 46, fig 13, 26).

Plate 15 Iron hoe (SF 1432) L 228 mm. Photo: E Wakefield

292. Tanged dagger. Remaining length of tang *c* 50 mm, tapering towards the tip; very slightly waisted blade has a flat mid-rib. Remains of right valve of oyster corroded on to top of blade/beginning of tang. Iron. SF 18367, Context 12656, Intervention 12666 (Pit), SG 300348 (Pits), Property 2. Early Roman.

The shape of the blade of Cat No 292 suggests a relation to Scott's type C daggers, although with a width at the shoulder of only 27 mm this piece is slightly narrower than these (35–45 mm; Scott 1985, 154). The blade profile of Cat No 292 is very similar to one from Kingsholm (Manning 1985a, pl 75, V19), but as that blade is not one of the standard 1st century military types, Scott is somewhat doubtful of its association with the Roman army, 'although in the context of Kingsholm this is probable' (Scott 1985, 159). Type C daggers are tentatively dated to the 1st century AD and probably continued into the Trajanic period (*ibid*, 156).

293. Scabbard mount. Straight sided frame with lateral facets, flaring outwards slightly then stepped back to upper part which is ribbed and tapers to a point. SF 866, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman.

Cat No 293 belongs to a well known type of scabbard mount (Carnap-Bornheim IIIC1) of the late 2nd/early 3rd century, which is found predominantly along the German *limes*, but also in Britain, Romania, and Gaul; considerable numbers have also been found beyond the *limes* in northern Germany and especially some of the Danish bogs like Vimose (*cf* von Carnap-Bornheim 1991, 35–6; 100, Fundliste 12, Karte 2; Oldenstein 1976, Taf 12–3, 45–50; Schuster 2006, 86–7).

SF 626 may be a possible belt or sheath fitting, and the iron staple SF 1645 could be a cramp for a scabbard.

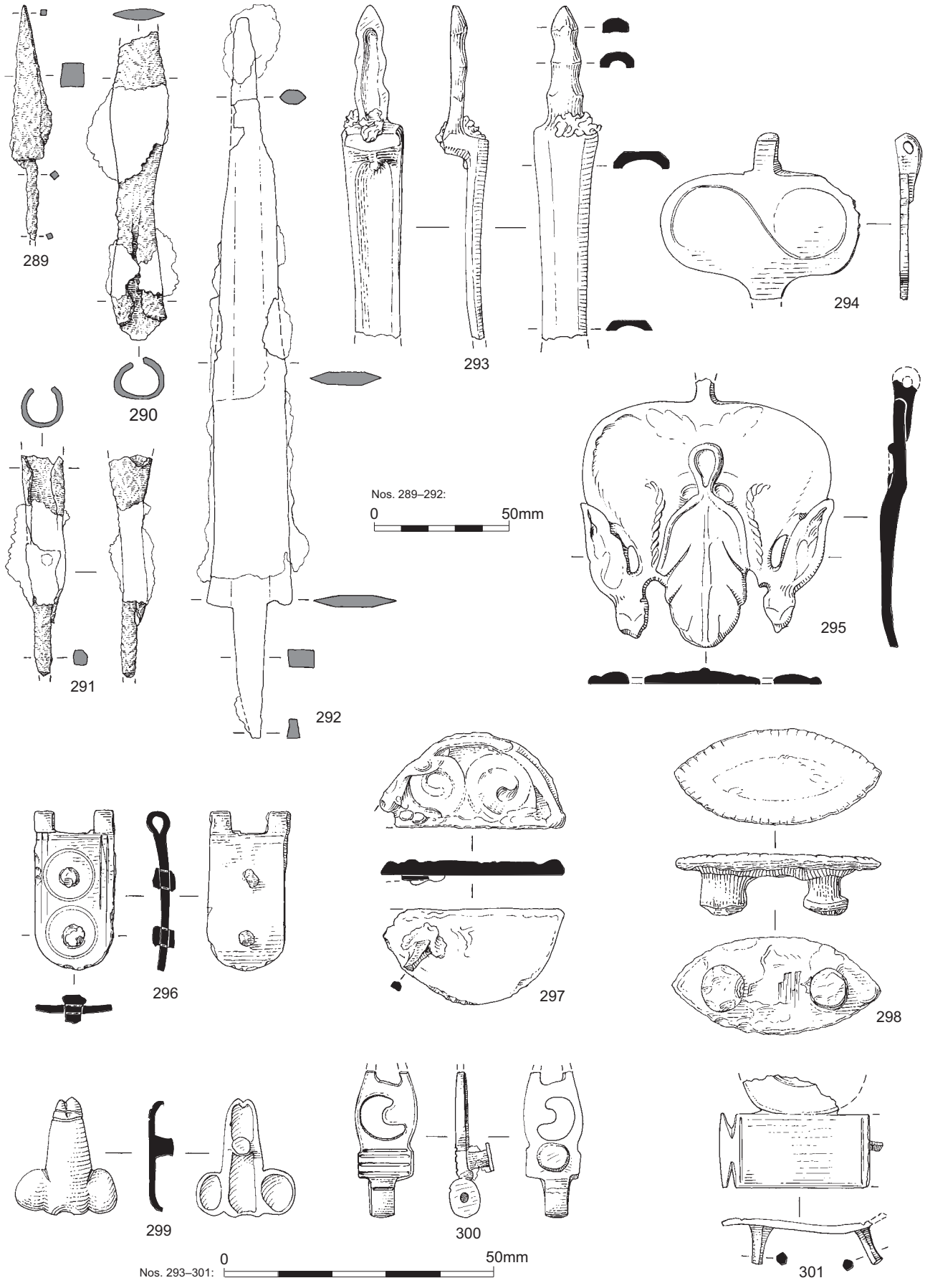


Figure 118 Springhead: weapons and military equipment. Iron (289–92), copper alloy (293–301)

Cavalry Harness Pendants

294. Horse harness fitting. Oval plate, flat section. Perforated lug attached one side, broken bar on other side. Incised decoration on one side consisting of an S-shaped twirl. SF 1799, Context 6436, Intervention 6436 (Surface), SG 300083 (Deposits). Early Roman.

Better preserved examples of this pre-Flavian type with a design of leaves, tendrils, and berries on the tinned surface, which also show the likely outline of the tendril for Cat No 294, were found at Camerton (Jackson 1990, pl 7, 77) and in the Fremington Hagg hoard (Webster 1971, 113, fig 12, 19–20).

295. Trifoliate horse harness fitting. Rectangular cross-section, probably leaf-shaped form with outer leaves ending in small acorns. Remains of rectangular sectioned suspension loop at top edge. Possibly niello and white metal covering, despite cleaning any surface decoration is obscured by corrosion products. Photographed before and after conservation. SF 1766, Context 6356, Intervention 6356 (Layer), SG 300099 (Deposits). Early Roman.

Pendants like Cat Nos 294–5 are normally joined to strap distributors like Cat No 213 which is here grouped under objects associated with transport. They belong to the 1st century AD (eg, from Magdalensberg: *cf* Bishop and Coulston 2006, 120, fig 70, 3; Newstead: Lawson 1995, 994, fig 418). In his discussion of the Canterbury harness hoard Lawson (1995, 995) suggests that such pendants had been reserved for cavalry horses, and were not generally issued but may have been awarded, perhaps for 'bravery or outstanding equestrian skill or … used as a sign of rank.'

Armour Fittings

296. Possibly from a buckle fitting/plate or *lorica* fitting. Rectangular shape, one end has rounded edges, rectangular section. Two perforated lugs at one end for hinge. Two grooved ring motifs and linear border decoration. Two rivets at centre of rings (*cf* Bishop and Coulston 2006, 99, fig 56, 19 and 20). SF 1854, Context 6444, Intervention 1002 (Spring).

SF 18760, and possibly also 18379, may be a fitting of early Roman Corbridge type *lorica segmentata* (*cf* Bishop and Coulston 2006, 99, fig 56, 7 and 10–11; Crummy 1983, 117, fig 120, 3148), while SF 940 is a rectangular hinge plate (Bishop and Coulston 2006, 99, fig 56, 15 and 22). SF 15330 resembles a strap union link from Camerton (Jackson 1990, pl 6, 63, but lacking thin backing plate).

Belt- and Apron Fittings

297. Semi-circular ?fitting with decoration of two spirals, almost rectangular cross-section. On the back near this break is a small strip with subtriangular section set in a layer of irregular corrosion which might be the remnants of a solder. Corroded enamel in sunken areas of front. SF 287, Context 2183, Intervention 2183 (-). Mid-Roman.

The fitting, Cat No 297, does not show any obvious method of attachment but it may have been a broken part of a larger object, unsuccessfully repaired with the ?soldered metal strip on the back. The motif of the enamelled panel is common in late Iron Age and early Romano-British art, eg, on an unprovenanced strap union (Jope 2000, pl 294k) or other bridle or belt fittings (*cf* Ulbert 1977, 40, Abb 3). The best comparison, however, is found on the early 1st century AD fish-head spout from a strainer bowl found at Felmersham, Bedfordshire, where a crescentic plate projects at the back of the head, presumably originally supporting a firmer attachment of the spout to the rim of a vessel (Watson 1949, 41–2, figs 3–4). Another fitting, possibly attached to two leather straps, is SF 20418 for which there are parallels from Mariaweiler-Hoven and Zugmantel, Germany (Oldenstein 1976, 201–2, Abb 6, Taf 67, 879).

298. Elliptical plate with two large riveted studs on reverse. Possible pattern on upper surface (*cf* Oldenstein 1976, nos 715–19). SF 9213, Context 6619, Intervention 2856 (Pit). Mid-Roman.

Another type of strap fittings is represented by Cat No 267 and SF 1752. With their concave notches on all four sides they are slightly unusual but it is not impossible that they were part of military gear. They may be a variation of fittings like Oldenstein (1976) nos 733–6.

299. Phallus shaped fitting. Trace of circular shaft on reverse. SF 15270, Context 11347, Intervention 11347 (Layer), SG 300439 (Layers), Branch Road.

300. Incomplete. Strap-end for military apron. Rectangular cross-section. Strip folded over at one end forming loop for ?bar. Rectangular section/plate beneath loop has three transverse lines incised. Lower part of object with crescentic openwork decoration, broken at end. On reverse is a riveted projection (*cf* Crummy 1983, 136–7, fig 157, 4236; Allason-Jones and Miket 1984, 227–8, no 3.790). SF 830, Context 5707, Intervention 5707 (Sanctuary overburden). Mid-Roman.

301. *Tabula ansata* with loop on one long side. Fragment. Rectangular sheet with grooved edges either end, '*ansata*' at one end, the other broken. Attached to one long side of rectangle is fragment of probably circular disc. Two prongs/rivets on reverse. (*cf* Crummy 1983, fig 157, 4239). SF 15414, Context 16022, Intervention 16022 (Layer).

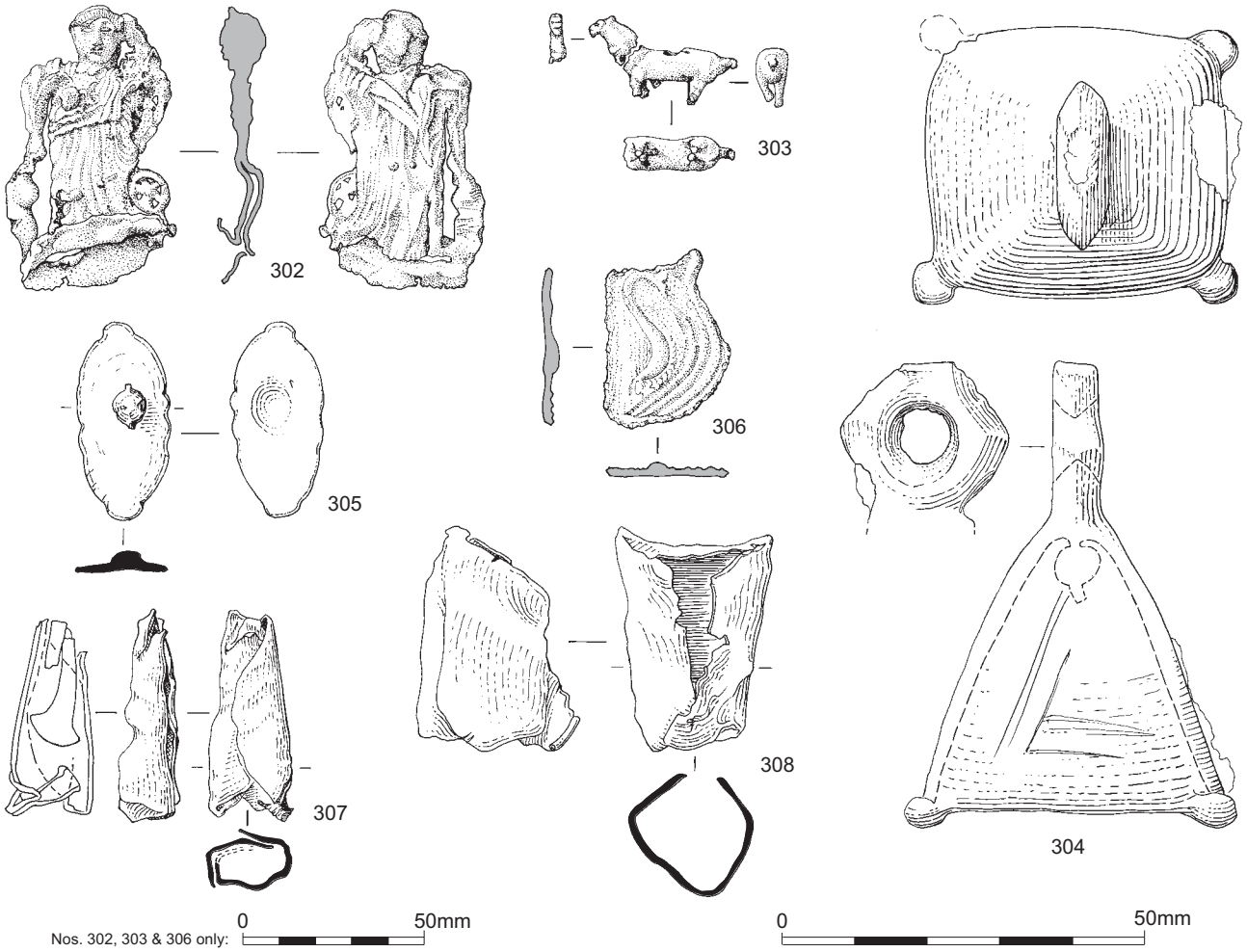


Figure 119 Springhead: figurines and other objects associated with religious practices and beliefs. Lead (302–3, 306), silver (305), copper alloy (304, 308), copper alloy with iron (307)

Objects Associated with Religious Practices and Beliefs

(Fig 119)

302. Figurine (Pl 16, right). Female in long, flowing dress with multiple longitudinal lines indicating folds of fabric. The hair above the forehead is either laid in plats forming a wreath or she wears some sort of diadem. The left arm appears to hold a cornucopia, the right arm extends downwards to support a rudder or steering oar. A four-spoked wheel rests against her lower right leg. The distorted base is formed out of the casting sprue. Casting flashes can be seen along the sides of the outline of the figurine. On the back side, two irregular round bulges in the area of the lower back may be remains of two casting channels. Lead. SF 50957, Context 200wb (chainage: 2ATC-29A+2ATC-23B), Intervention 200wb. Mid-Roman.

See also SF 20114 (Pl 16, left).

The attributes *cornucopia*, rudder or steering oar, and wheel identify both figurines as the goddess Fortuna or Fortuna-Rosmerta. The type represented in the two pieces from Springhead is well-known in stone reliefs, for instance, from Frankfurt-Heddernheim (*Nida*; kept in Wiesbaden Museum; Espérandieu 1931, 86, no 129; Webster 1986, 63, fig 2, 6) or Jagsthausen (Espérandieu 1931, 425–6, no 673). A more accomplished figurine of Fortuna or Abundantia in a similar pose is represented by a small copper alloy figurine from Colchester which, however, lacks the wheel found at the left foot of the Springhead figurines (Crummy 1983, 142, fig 168, 4264). Lead figurines are generally very rare; the author is only aware of one possible lead Fortuna, reported through the Portable Antiquities Scheme and found in Kent (PAS find KENT1713, and E Durham, pers comm).

The flashes from the casting have not been removed on either figurine. Slight variations in the details of the folds visible on the backs of the figurines suggest that both were created using the same model but were not cast in the same two-piece mould. The crude craftsmanship, coupled with the fact that the figurines are made of lead, suggests that they were cheap trinkets sold and, most likely, also produced, locally. That one is bent suggests it was perhaps used as a votive, an interpretation which is further supported by its deposition in the channel fills of the waterfront in property 4. In contrast, Cat No 302 appears to have been deposited closer to the metalworking area discovered to the south of the route of the A2.

303. Figurine of a horse. Head fragment separate, appears to be broken deliberately. Faint ridges running from the poll to the mouth, across the nose, and along the neck probably indicate the bridle. Body has casting sprue behind forelegs. Body L 31.45 mm, W 9.41 mm, H 16.09 mm. Head L 13.52 mm, W 3.69 mm. Lead. SF 18476, Context 17710, Intervention 17710 (Layer), SG 300600 (Layers), Property 3. Mid-Roman.

304. Bell. Incomplete. Pyramidal shape with lozenge-shaped suspension loop at top and four corner lugs at bottom corners, three remaining. Iron clapper missing but corrosion remaining. Corrosion on outer surface on half of object. SF 1813, Context 6445, Intervention 1000 (Spring).

The use of bells is discussed below (see Roman grave goods: grave 12222).

305. Shield (Pl 17). Oval, two long edges have scallop-like decoration mid-way, flat bulges on either end. Rectangular cross-section. Small circular raised central boss. The object has not been polished to hide the rough casting surface. Silver alloy. SF 18709, Context 19026, Intervention 19026 (Other), metal-detector find, Property 3 near the boundary to Property 2.

If Cat No 305 is indeed a miniature shield, it adds an as yet unknown variant to the corpus of such objects. Miniature Iron Age shields like those from the Salisbury Hoard are usually hide-shaped, oval, or hexagonal and of copper alloy (Stead 1991, figs 12–21). A chalk model of a shield was found at Garton Slack (Stead 1971, 32, pl 4d). While all but one of the Salisbury shields have separate handles riveted across the back of the shield behind the umbo, handles were not always fitted (*ibid*, 31 appx 2G; Knowles and May in May 1996, 270–1). The shape of the Springhead shield is closer to the outline of an enamelled plate brooch from the General Post Office site in London whose enamelled field exactly reproduces the hide-shape familiar from the Salisbury shields (Stead 1991, 25, fig 12). The 2nd century date of this brooch suggests that the Springhead shield was made and deposited during the Roman occupation of the site. Apart from the three miniature shields from the temple site at Worth, Kent, such objects are not usually found in south-eastern England but are more common in 'regions attributed to the Durotriges, Dobunni, Corieltauvi and Parisii' (Knowles and May in May 1996, 271, fig 11.18). However, miniature shields are not confined to Britain but are also known from late Iron Age contexts on the Continent, eg, on the Titelberg in Luxembourg (Metzler *et al*

Plate 16 Front and back view of Fortuna figurines (SF 20114) left: L 53 mm and (Cat No 302) right: L 76 mm, both lead. Photo: E Wakefield

Plate 17 Miniature silver shield (Cat No 305) L 27mm. Photo: E Wakefield

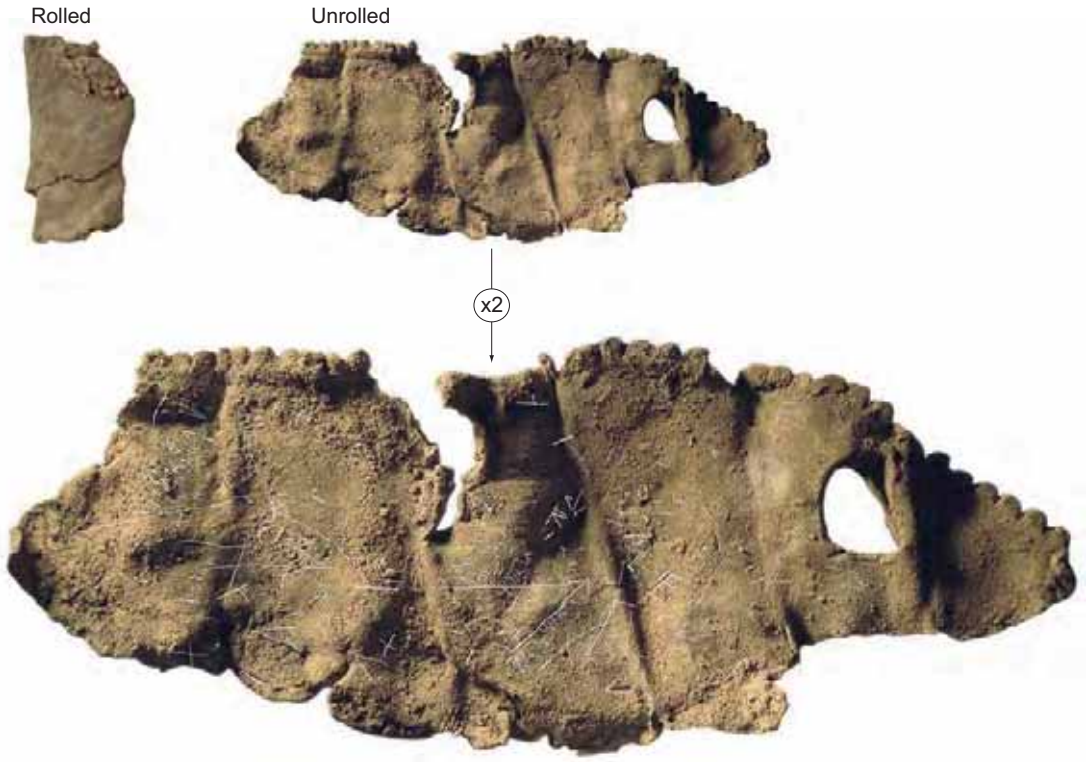


Plate 18 Lead sheet (SF 18667) L 55mm b) Unfolded, lines and marks highlighted in c) L 140 mm. Photo: T Goskar

2000, 436, Abb. 5, 1–2) or Mouzon, Dépt Champagne-Ardenne, France (Müller 2002, 125, Abb 85). It is possible that the disc-shaped fitting, Cat No 316, which has been folded twice before its deposition, is another model shield of an as yet unparalleled shape.

306. Incomplete. Model helmet cheek piece? Fairly flat sheet, one edge curved with three ribs along side. Possible dolphin shaped cast decoration in centre with lines radiating from its convex edge. Lead. SF 1898, Context 6445, Intervention 1000 (Spring).

Although no comparisons are known for this model cheek piece, the votive use of helmet cheek pieces is known from the 4th century BC Samnite sanctuary at Pietrabbondante, Italy, where real pieces were nailed to the walls (Müller 2002, 98–9, Abb 65). A cheek piece of an auxiliary cavalry helmet dredged out of the Tyne near South Shields shows a dolphin incised below the image of a Dioscurus (Allason-Jones and Miket 1984, 213, pl 7, 3.723).

307. Thin circular token, wrapped around a nail. SF 571, Context 2855, Intervention 2856 (Pit). Mid-Roman.
308. Sheet fragment, folded/rolled to form small container. Irregular shape. SF 15622, Context 12000, Intervention 12000 (Layer), SG 300326 (Layers), Property 2. Late Roman.

The placing of a single nail or a small number of nails has been considered in the context of ritual, magic, or the warding-off of evil (eg, Black 1986, 223; Dungworth 1998, 153). The circumstances of discovery of Cat No 307, found in ritual shaft 2856 together with a chained dog, emphasise the ritual and/or apotropaic connotations of the object. Cat No 308 may be a container for a similar purpose, and the possible circular fitting, Cat No 316, may have been bent into its current shape for the same reason.

A small lead rod with wider, flattened ends (SF 9276) was found in the channel fills of the Ebbsfleet. Comparable objects which are quite common in the Netherlands and north-west Germany have been interpreted as lots, ie, implements used to 'draw straws', or – less likely – weights or rules (*cf* Schuster 2006, 97–8). An object from the Roman villa at Dicket Mead near Welwyn (Rook 1987, 151, fig 61, 2) may be related, but with a length of 84 mm it would be the longest example.

Metal sheet fragments – *defixiones*?

Nine folded metal sheet fragments were identified as possible curse tablets or *defixiones*, eight were of lead and one of copper alloy. It was possible to unfold five of these without risk of damaging the objects and check for writing, but none was found (numbers of those unfolded are in **bold**): SFs 691 (copper alloy), **967**, **9379**, 18293, **18667**, **18674**, 18736, 18819, and **-555**. However, SF 18667 (Pl 18) was found to have numerous faint lines, some possibly letters but none forming any words. It has a lobate border very similar to those on sheets from Chelmsford, interpreted as an applied ornament (Drury 1988, 99 fig 66, 87), and Caerleon, possibly re-used as a weight (Zienkiewicz 1993, 115, fig 41, 7). An alternative may be that it derives from a bowl with a

beaded edge like on some pewter bowls, eg, from Wanborough (Anderson 2001b, 119, fig 49, 1–3). Twenty-seven lead sheet fragments with one or more straight cut edges, often folded, have been included in the category metalworking in the quantification tables.

Objects and Waste Material associated with Metalworking

Of the 273 objects in this category, two are gold (Pl 19): SF 1459 is an end of a small ingot which has been flattened but not processed further; SF 770 is a small gold link; both are metal-detecting finds from the east side of the river. There are 224 lead and 40 copper alloy objects, mostly sheet, strip, or unidentifiable waste fragments which cannot be related to a specific production process; almost half were found in dump layers in the waterfront area of property 4 on the western side of the Ebbsfleet. Seven casting sprues may be evidence for the process of casting on site but may equally well have been part of scrap metal collected for reuse; two found in the watching brief south of the A2 may relate to either of the workshops located in this area in the 2nd and 3rd centuries (*cf* Boyle and Booth in Boyle and Early 1999, 40–1; Penn 1968b, 257). Of the six iron bars, three come from property 2, *c* 100 m north-east of these workshops. While none of the others shows any typologically distinctive detail, Cat No 309 is a sword-shaped bar (Allen 1967, 308–10) belonging to Crew's Bearwood type (Crew 1995). Such bars are assumed to have been produced and deposited in the Middle Iron Age (between 250/200 BC and 50 BC and the birth of Christ; Hingley 1990, 92, 111; 1997, 13) and are found mainly in southern Britain and the West Midlands, with a small number found further east along the Thames as far as Hammersmith and Bigbury in Kent (Allen 1967, 313, fig 2; Hingley 1990, 93, fig 1; 96, fig 2). Considering the possible symbolic/ritual character of such bars, it is worth noting that Cat No 309 was found in a late Roman layer in the overburden above the temple in property 2, where it may have been curated for several hundred years before its final deposition.

(Fig 120)

309. End of sword-shaped currency bar with tubular socket. Iron. SF 15864, Context 12312, Intervention 12312 (Layer), SG 300326 (Layers), Property 2. Late Roman

Plate 19 Gold link (SF 770) left: L 11mm and gold ingot end (SF 1459) right: L 13 mm. Photo: E Wakefield

Objects the Function or Identification of which is Unknown

Possible Toilet or Medical Equipment

(Fig 120)

310. Octagonal shaft, widens in middle, broken one end, at other is moulded collar and square 'plate' with groove along side, knob at top (or broken part of continuing shaft?). SF 18019, Context 17194, Intervention 17185 (Other), SG 300555 (Structure), Property 5. Mid-Roman.

Possible Household Utensils

311. Possibly part of fire shovel. Potsherd attached by corrosion. Iron. SF 20083, Context 17710, Intervention 17710 (Layer), SG 300600 (Layers), Property 3. Mid-Roman.

A fire shovel with a handle similar to Cat No 311 was found in the Mithraeum at Carrawburgh (Manning 1976, 39; 56, fig 23, 149), another one from *Verulamium* has a twisted stem (Frere 1972, 165, fig 60, 6).

Possible Fittings

312. Incomplete. Fitting for unidentified use. Decorated central circular disc, flat. Outer band with radiating grooves, central motif within single line border is a cross with three billets arranged in clover leaf-like fashion at either end of four arms. Central disc void on reverse but outer edges with curved flanges. On one side a leaf/fan-like shaped arm extends, rivets at tip and at two points along bar close to decorated disc (visible in x-ray). This was probably mirrored on the opposing side of the disc but is now broken; only one rivet hole still visible in x-ray. SF 819, Context 5901, Intervention 5917 (Other), SG 300128 (Pit). Mid-Roman.

This object from clay-/timber lined tank 5917 to the rear of temple 400035 in the Sanctuary site comes from the lower fill and should thus have a firm mid-Roman date. It may have a remote resemblance to harness fittings like one from the Canterbury hoard (*cf* Lawson 1995, 987, fig 414, 145), but the present author has so far not come across a fitting with comparable projections at the back. Elements of its decoration suggest that it is considerably more recent than the context date would suggest. The central ornament resembles what would heraldically be described as a cross bottony. A finger-ring from a 7th century grave at Tawern-Röler, Germany, has a similar ornament, although featuring a cross potent (Böhner 1958, Taf 22, 17). However, a probably Roman bronze clasp from a necklace found in the area of the late Roman/Merovingian cemetery 'bei der Niederburg' in Gondorf, Germany, has stylised

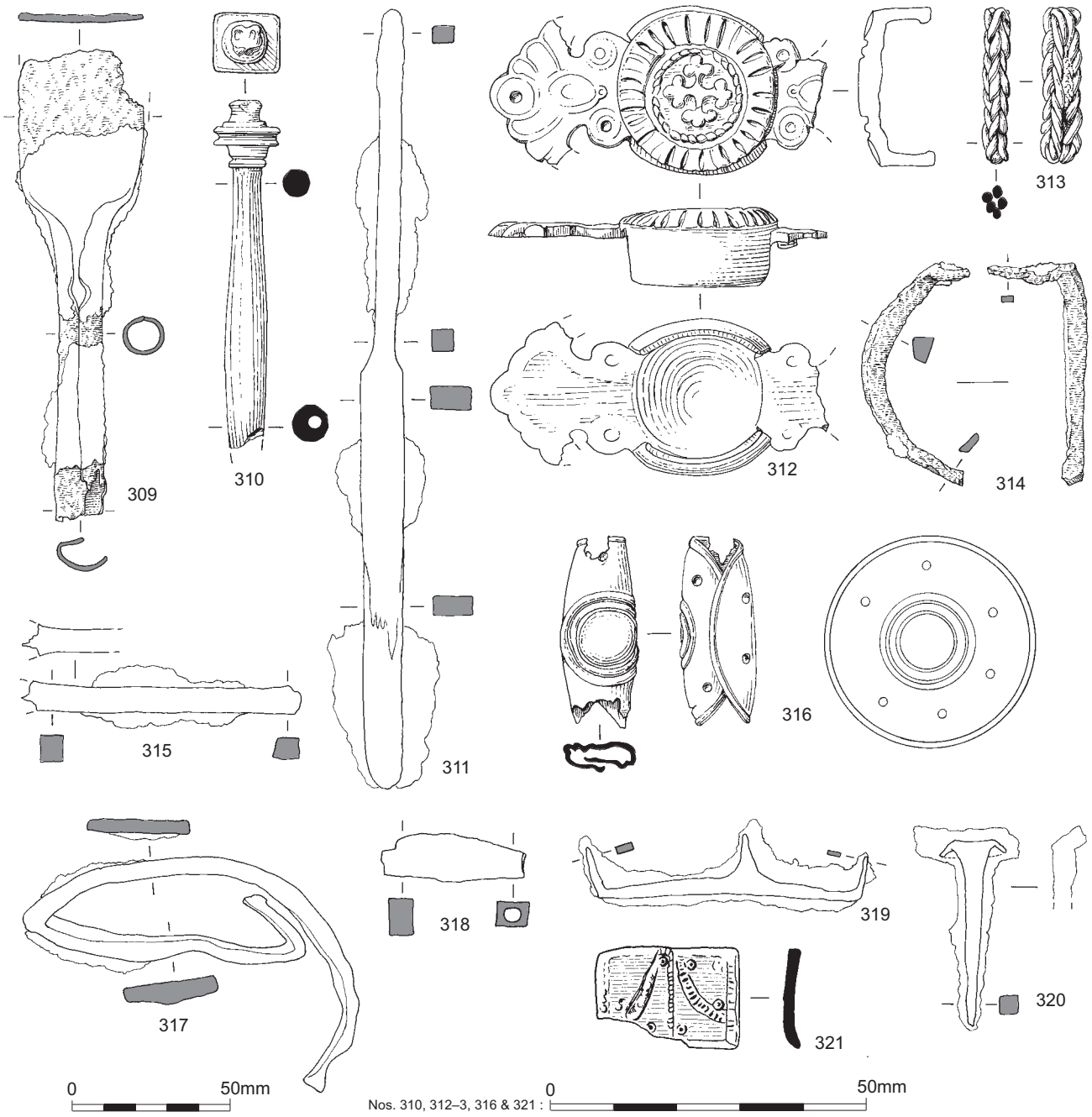


Figure 120 Springhead: iron currency bar (309) and objects of unknown or uncertain function. Iron (311, 314–5, 317–20), copper alloy (310, 312–3, 316), and silver (321)

leaf-shaped arms closely comparable to Cat No 312 (Ludwigshafen Wilhelm-Hack-Museum, Coll Wilhelm Hack No a1405; M Schulze-Dörrlamm, pers comm).

313. Incomplete. Double loop-in-loop chain, broken both ends. SF 889, Context 5938, Intervention 5938 (Surface), SG 300108 (Floor). Mid-Roman.
314. Possible handle. Iron. SF 15686, Context 12077, Intervention 12079 (Post-hole), SG 300341 (Post-holes). Mid-Roman.
315. Possible handle, one end socketed? With remains still in socket. Iron. SF 18016, Context 17194, Intervention 17185 (Other), SG 300555 (Structure), Property 5. Mid-Roman.
316. Disc shape fitting, two sides folded in. Raised decoration of two concentric circles, six circular perforations around edges. SF 15155, Context 10399, Intervention 10399 (Other).
317. Perhaps a strip or binding. Iron. SF 15875, Context 16022, Intervention 16022 (Layer).
318. Sub-rectangular sectioned hollow bar, perhaps part of a lock. Two halves of rectangular void through centre stand at right-angles to each other. Iron. SF 20056, Context 11974, Intervention 11892 (Other), SG 300384 (Structure), Property 12. Mid-Roman.
319. Bar of sub-rectangular section with ends bent at right angles to form points, a third point wrought out of the bar in its middle. Perhaps a three-pronged joiner's dog.

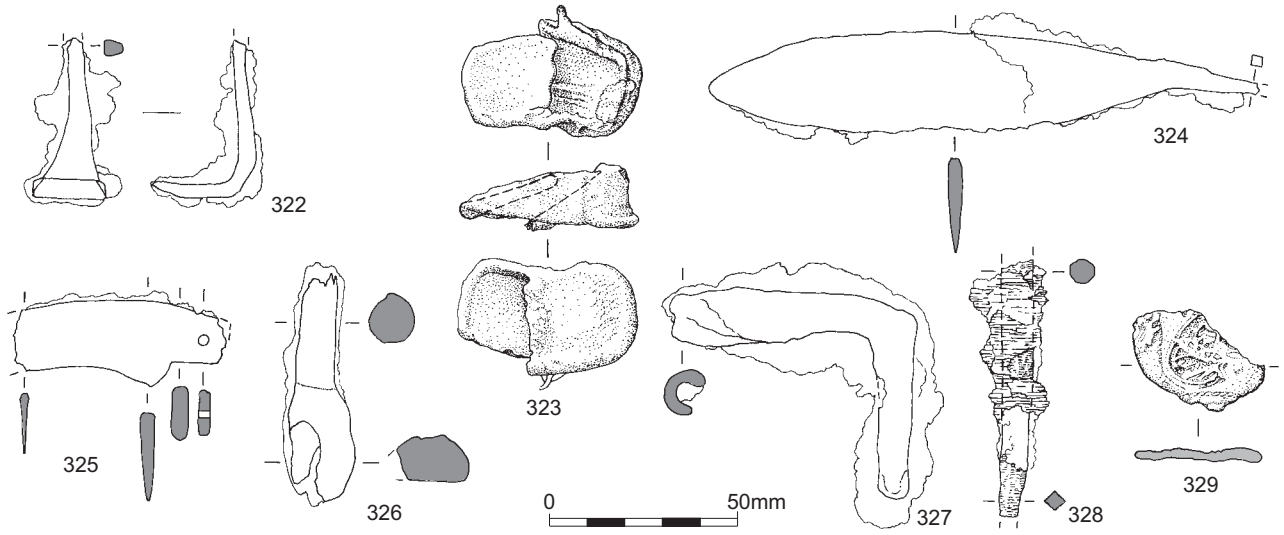


Figure 121 Springhead: objects of unknown or uncertain function. Iron (322, 324–7) and lead (323 and 329)

Iron. SF 20371, Context 16855, Intervention 16855 (Layer), SG 300553 (Layers), Property 5. Early Roman

320. Stem/tang of sub-rectangular section, tapering to end. Other end widens sideways and to front to form flat ?plate at oblique angle to stem, broken off on two sides. Iron. SF 20258, Context 16482, Intervention 16481 (Pit), SG 300677 (Pits). Early Roman.
321. Fitting. Incomplete. Small rectangular plate. Dotted border decoration, two internal panels created by central line of ring-and-dot; both panels with curved line with transverse grooves and larger ring-and-dot on the inner side of the end points. One corner missing. One side bends up slightly. Silver. SF 9186, Context 400104, Channel fills.

The small silver fitting Cat No 321 was found in the channel fills of the Ebbsfleet. Its decoration, similar to but not the same as on military belt plates (eg, Böhme 1974, Taf 129, 5; 139, 16; 142, 7), would suggest a late Roman date. Any form of attachment must have been fitted to the now missing parts.

Possible Tools

(Fig 121)

322. Incomplete. Drawknife? Blade set at right-angles to tang at line of back, its lower sides curving out towards blade. Iron. SF 822, Context 5451, Intervention 5450 (Ditch). Early Roman.
323. Fragment, perhaps fitting for a plane's bench mouth. Subrectangular shape with rounded corners, wedge-shaped in section with oblique opening in the middle. Lead. SF 18922, Context 17710, Intervention 17710 (Layer), SG 300600 (Layers), Property 3. Mid-Roman.

Of similar outline but lacking the oblique opening is a lead shovel of unknown purpose from Lullingstone villa, found in a 3rd century level (Meates 1987, 93, fig 40, 226).

324. Lanceolate blade with short tang. Iron. SF 15197, Context 11442, Intervention 11441 (Ditch), SG 300366 (Ditch), Property 12. Mid-Roman.

This blade may have belonged to a knife or perhaps more likely a pair of shears, but the preservation prevents certainty of identification.

325. Possibly a knife blade with a wooden handle (analysed with SEM, but too degraded to identify), attached to the curved blade by a copper alloy rivet. Iron. SF 20535, Context 10242, Intervention 10233 (Ditch), SG 300387 (Ditch), Roadside ditch 1. Early Roman.
326. Incomplete. Perhaps nail extractor or stem with looped end. Iron. SF 20539, Context 16001, Intervention 16001 (-). Mid-Roman.
327. Open socket at one end, the other bent at right angles and slightly tapering. Iron. SF 18009, Context 11281, Intervention 11211 (Pit), SG 300465 (Pits), Property 10. Mid-Roman.
328. Perhaps punch or nail. Iron. SF 15969, Context 16836, Intervention 16835 (Beam-slot), SG 300570 (Pit), Property 4.

Possibly Associated with Metalworking

329. Oval shape, flat. Stamp decoration on one side, very worn. Lead. SF 9198.

Roman Grave Goods

by Jörn Schuster with Jacqui Watson (mineralised remains analysis)

Grave goods are not counted in the catalogue sequence; they are listed by individual grave, and on the grave plans in Vol 1 the objects are referred to by their small finds numbers (individual nails not numberd on plans, illustrated SFs in **bold**).

Grave 3142

(Vol 1, Fig 2.54)

SF 1268. Leg ring with expanding fastening. Iron. Context 3182, Intervention 3142, SG 300048 (Burial). Mid-Roman. Grave 3142 also contained one hobnail (SF 1269).

Grave 3428

(Vol 1, Fig 2.54)

SF 1584. Fragment of knife blade; tip, shoulder, and tang missing. Iron. Context 3429, Intervention 3428 (Grave), SG 300048 (Burial). Mid-Roman.

Grave 6104

(Vol 1, Fig 2.20)

1. SF 913. Mineralised remains analysis (JW): nine large iron nails with sections of mineral preserved wood: oak (*Quercus* sp.). At least one nail represents the join between two radial surface planks, *c* 22.4 mm thick. Context 6012, Intervention 6104 (Grave), SG 300078 (Burial). Early Roman.
2. SF 914. Seven iron nails, one with stone attached by corrosion products, one with dog bone. Mineralised remains analysis (JW): six large nails with sections of mineral preserved wood: oak. At least one nail represents the join between two radial surface planks, *c* 24.2 mm thick. Context 6012.
3. SF 9433. Irregularly shaped lump, possibly waste. Copper alloy, but probably with high lead content. Context 6012.

'Casket burial' Grave 6345

(Vol 1, Fig 2.20; Fig 122 and Pl 20)

1. **SF 970**. Lock-plate. Rectangular lock-plate: one corner badly damaged. Rectangular cut-out (L 18.9 mm, W 4.8 mm), for clasp, and L-shaped keyhole (L 15 mm, W 16.2 mm) both slightly off centre. Small club/L-shaped plate protrudes from below keyhole at right-angles to plane of plate. Plate originally attached with six lion-headed studs (three either side), one *in situ*, three separate but retained, max diam 19.1 mm. Nail shafts remain in two central opposing holes but heads no longer attached – separate studs 2 and 5 probably came from these as corrosion patterns line up. Separate iron nail (L 23.72 mm) with wood attached. On reverse of plate fragments of mineralised wood adhere in three places. See associated SFs 971–4.
2. **SF 971**. Lock bolt. From lock-plate 970. Now in two pieces which join. Six circular holes (two lines of three) in central rectangular block, one end continues tapering from rectangular cross-section to square, the opposing end is rectangular sectioned but with slight cut-out on one side. Slight white discoloration at break.
3. **SF 972**. Studs. From lock-plate 970. Lion-headed studs 1 and 4. Square sectioned shafts of nails protrude from reverse.
4. **SF 973**. Nails. Three nails, square sectioned, flat heads with mineral preserved wood: beech (*Fagus* sp.). These represent the joint between two sides, with the thickness of one being 11.5 mm. L 27.61 mm, L 34.12 mm, and L 29.20 mm. Iron.
5. **SF 974**. Plate. From lock-plate 970. Large fragment: rectangular but broken along one edge, L 55 mm, W 27 mm, H 3 mm; small perforation visible in one corner, matching hole on opposite corner with radial surface of wood preserved. Smaller fragment: L 19 mm, W 18 mm, T 2 mm. Two edges form corner, mineralised wood attached on one side, possibly small perforation. Iron. This is the cover for the lock mechanism on the inside of the box as no leather is preserved between the metal and the wood. Possible fragment of human mandible attached. Context 6355, Intervention 6345 (Other), SG 300079 (Graves). Early Roman
6. **SF 975**. Suspension chain. Rectangular sectioned ring with four chain fragments attached, links clearly visible in x-ray. One further chain fragment separate. Tips of some have iron corrosion/staining attached. Context 6355.

Suspension chains like this could have multiple purposes, eg, for the suspension of bronze lamps (*cf* Ward-Perkins and Claridge 1976, no 135) or scale/balance pans (*ibid*, no 248). Distribution rings for a chain with much larger rings are also part of the priestly chain head-dresses found at Wanborough (O'Connell and Bird 1994, fig 24) and Cavenham (Green 1976, 213).

Notes on the casket from Grave 6345
by Jacqui Watson

The cremation casket itself is *c* 250 x 175 mm from plan, but the height is uncertain. It was a wooden box with the sides nailed together, then covered with leather and decorated with copper alloy fittings, including a lock with six lion-headed studs. This is a common form of casket construction found with early Roman burials (Table 51). The box was made from beech, like most other cremation caskets.

Although the burial appears to be complete and undisturbed the casket itself lacks a number of expected fittings. There are no hinges or hasp to connect the lid to the sides of the casket. Also only three nails remain, which is barely enough to hold together a single corner of a casket. Possibly the casket is incomplete, like the examples from Brougham, Cumbria (Mould in Cool 2004, 393–6), or was originally made with dowelled or articulated joints that did not require nails.

A box with an identical lock-plate held by six lion-headed studs was found in the late 1st century grave 171 in the St Pancras cemetery at Chichester (Down 1971, 85, fig 5.16, 171k).

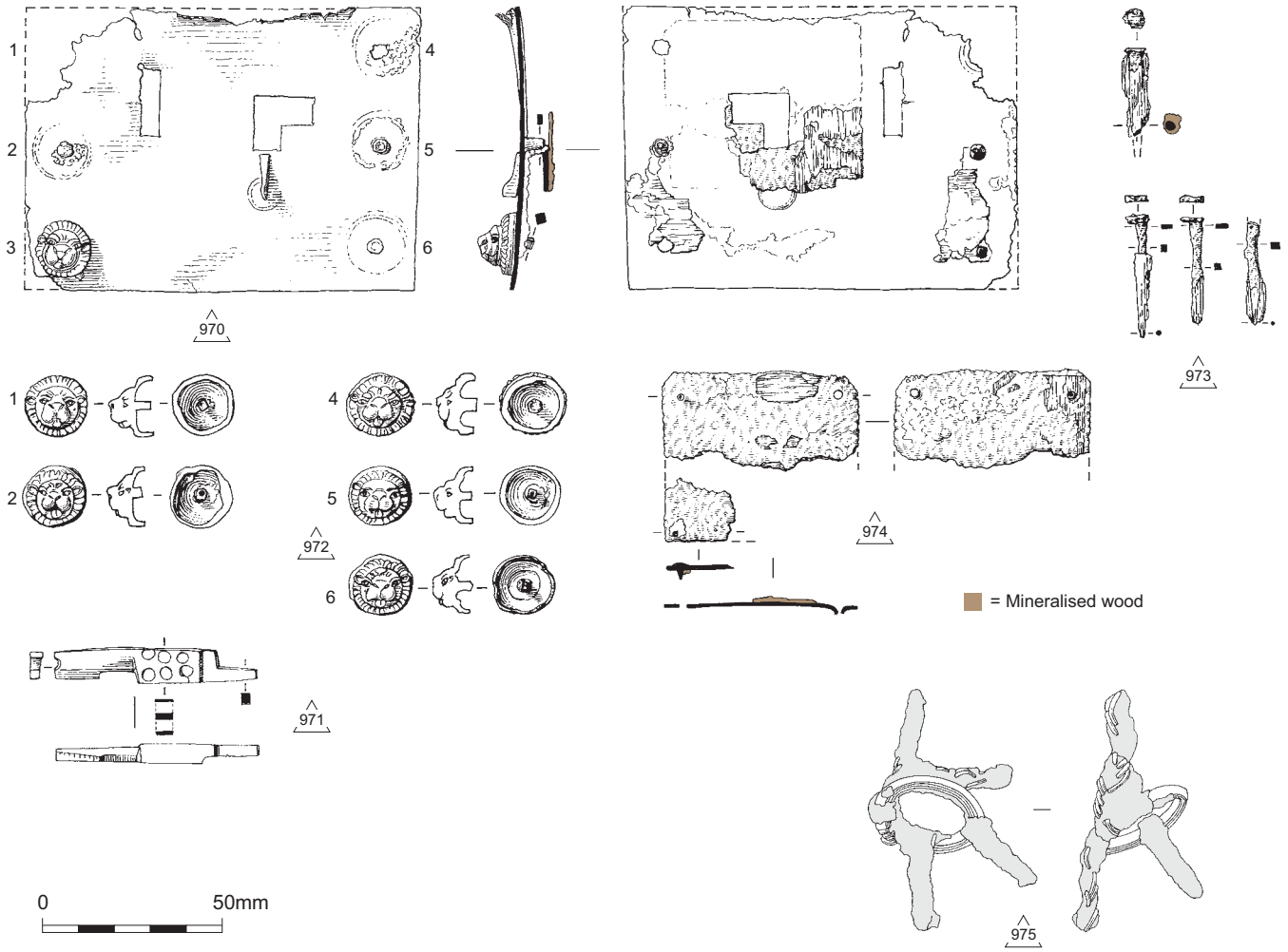


Figure 122 Lock-Plate (SFs 970–974) and suspension chain (SF 975) from casket burial in grave 6345 at Springhead

Plate 20 Copper alloy lock-Plate (SF 970) L 109 mm, with lock bolt (SF 971), lion-headed studs (SF 972), and iron nails (SF 973) from casket in grave 6345. Photo: E Wakefield

Grave 10079
(Vol 1, Fig 2.97)
SF 15084. Snaffle bit. Incomplete, one ring and one half of bit with tubular loop remaining (*cf* Cat No 210 and Manning 1985a, pl 28–9, H11 and H14). Iron. Context 10080, Intervention 10079 (Grave), SG 300363 (Burials). Late Roman.
Grave 10079 also contained at least 25 coffin nails and two hobnailed boots (x-rays of hobnailed boots (left boot SF 15031, 9158–61, right SF 15032)). The snaffle bit is not marked on the grave plan as it was recovered from the backfill.

Grave 10150
(Vol 1, Fig 2.97)
Weight (not illus). Biconical shape, perforation at one end for suspension loop; the hole at the other end is blocked, probably by remains of the shaft of the suspension loop. 32.8 g. SF 15113, Context 10151, Intervention 10150 (Grave), SG 300363 (Burials). Late Roman.

Grave 12222/Pot Burial 12224
SF 15748. Small bell (not illus), double grooved line decoration around circumference towards base, triangular suspension loop. Iron clanger in place but not free moving. Context 12223, Intervention 12222 (Artefact), SG 300344 (Burial), Property 2. Mid-Roman.
A similar bell was found in the richly furnished late Flavian grave II at Grange Road, Winchester (Biddle 1967, 243, fig 9, 23).

The grave also contained one nail (SF 20121). Both the bell and the single nail may have had an apotropaic use in this context. With regard to the nail, a more convincing example can be quoted from West Thurrock, Essex, grave 17062, where a single copper alloy nail was found in a clearly non-functional position in a wooden box containing the inhumation burial of a small child (Schuster 2009, fig 10, 19597; for the apotropaic use of bells worn by children as well as soldiers *cf* Forrer 1919, 1030; Philpott 1991, 163; Schuster 2006, 94).

Table 51 Springhead metal finds: Romano-British caskets

Site	Dimensions (mm)	Materials
Skeleton Green, Hertfordshire # (Borrill 1981)	*c* 300 x 250 x 150	
Godmanchester, Cambridgeshire # (Watson forthcoming)	410 x 290 x 150	Beech, small iron nails, leather cover, decorative brass fittings
Springhead, Kent #	250 x 175 x >80	Beech, small iron nails, leather cover, decorative CuA fittings
Mansell St, London (Watson 1997)	240 x 170 x 90	Willow or poplar, iron nail, leather cover, decorative CuA fittings

= caskets used to hold cremation burials

Discussion of the Iron Age and Roman Metal Small Finds Assemblage

The Metal Small Finds Assemblages compared across the Various Spatial Entities

The following section will examine the differences and/or similarities discernible in the composition of the functional categories of the metal small finds assemblages from various spatial entities excavated at Springhead. Admittedly, these categories only provide a rather crude tool for comparison, as some like 'fittings' include a wide range of objects, while others like 'writing' or 'weighing and measuring' are very narrowly defined and thus generally less numerous. However, Table 52 clearly demonstrates that the quantities of the different categories vary considerably across the site, and this allows some consideration of the nature of the activities carried out within the different site entities.

Late Iron Age enclosure 400012
More than half the metal finds from enclosure ditch 300030 (mainly the upper fill) forming part of late Iron Age enclosure 400012 are personal objects, including seven brooches which are exclusively mid-1st century AD types, with some, like rosette brooch Cat No 30, very likely of pre-Conquest date. Other personal items comprise finger-ring Cat No 155, two hobnails, and two 1st century strap fittings covered in silver foil. A knife is the only tool from the ditch. A perforated token (SF 1263), possibly a very worn or deliberately smoothed coin, can be compared to similar objects interpreted as amulets from temple 10 at Balkerne Hill, Colchester, which has recently been attributed to Mercury (Crummy 2006, 64, fig 32, 6–7).

Viewing platform 400045–8
Of the 40 objects from this feature, 24 belong to the early and 16 to the mid-Roman phase. Overall, a third of these are personal items. Interestingly, all personal items of the early period are brooches, mainly post-Conquest types but including two of the four penannular brooches from Springhead. Other finds include a possible lead spindle whorl, two knives, and a probable iron flesh hook. No brooches were found in mid-Roman layers; the items from this phase include two pins, an iron toilet set, and a knife.

'Bakeries' 400037–41
These five features only contained 24 objects. Of the ten personal items, six are brooches dating to the 2nd half of the 1st century AD. Feature 400039, where six out of the nine objects were personal, yielded two finger-rings; 400041 contained a two-piece Colchester brooch, a cramp-like pot-mend and a double-spherical object (SF 623) of unknown function, perhaps a pin head.

Early road 400009 and associated features
Of the 35 objects in this group, 21 were found in or on the road and only four in the associated ditches. The

Table 52 Springhead metal finds: total no metal small finds of Late Iron Age and Roman periods

Site entity	Personal	Toilet/ medical	Textile	House-hold	Metro-logy	Script	Trans-port	Construc-tion	Tools	Fittings	Agri-cultural	Militaria	Votive	Metal-working	Unknown	Total
LIA enclosure 400012	12								1	4					6	23
	52.2%								4.3%	17.4%					26.1%	100%
Viewing platform 400045–8	13	1	1	1					3	5				3	13	40
	32.5%	2.5%	2.5%	2.5%					7.5%	12.5%				7.5%	32.5%	100%
'Bakeries' 400037–41	10			1						4					9	24
	41.7%			4.2%						16.7%					37.5%	100%
Early road & assoc. features	8	1	1	4					1	7		1		2	10	35
	22.9%	2.9%	2.9%	11.4%					2.9%	20.0%		2.9%		5.7%	28.6%	100%
Post-road, pre-sanctuary	11	1	1	1						9		1		1	7	32
	34.4%	3.1%	3.1%	3.1%						28.1%		3.1%		3.1%	21.9%	100%
Sanctuary complex	48	8	2	3	1		1	1	10	33	5	3	1	4	66	186
	25.8%	4.3%	1.1%	1.6%	0.5%		0.5%	0.5%	5.4%	17.7%	2.7%	1.6%	0.5%	2.2%	35.5%	100%
Spring and channel fills	83	7	1	6	7	2	1			50		3	4	5	50	219
	37.9%	3.2%	0.5%	2.7%	3.2%	0.9%	0.5%			22.8%		1.4%	1.8%	2.3%	22.8%	100%
Pool & area to east	**317**	**28**	**12**	**34**	**22**	**10**	**4**	**1**	**21**	**245**	**6**	**18**	**6**	**45**	**300**	**1069**
(ARC SPH00)	**29.7%**	**2.6%**	**1.1%**	**3.2%**	**2.1%**	**0.9%**	**0.4%**	**0.1%**	**2.0%**	**22.9%**	**0.6%**	**1.7%**	**0.6%**	**4.2%**	**28.1%**	**100%**
Springhead total	**490**	**56**	**18**	**64**	**41**	**18**	**25**	**3**	**70**	**582**	**9**	**37**	**11**	**268**	**720**	**2412**
	20.3%	**2.3%**	**0.7%**	**2.7%**	**1.7%**	**0.7%**	**1.0%**	**0.1%**	**2.9%**	**24.1%**	**0.4%**	**1.5%**	**0.5%**	**11.1%**	**29.9%**	**100%**
Area west of pool	**172**	**28**	**6**	**29**	**17**	**8**	**19**	**2**	**49**	**326**	**3**	**19**	**4**	**215**	**401**	**1298**
(ARC SHN02+51724)	**13.3%**	**2.2%**	**0.5%**	**2.2%**	**1.3%**	**0.6%**	**1.5%**	**0.2%**	**3.8%**	**25.1%**	**0.2%**	**1.5%**	**0.3%**	**16.6%**	**30.9%**	**100%**
Property 2	15	2		3		1	3	1	9	35	1	2	1	12	57	142
	10.6%	1.4%		2.1%		0.7%	2.1%	0.7%	6.3%	24.6%	0.7%	1.4%	0.7%	8.5%	40.1%	100%
Property 3	36	9	1	11	6	1	4		6	61		4	2	123	98	362
	9.9%	2.5%	0.3%	3.0%	1.7%	0.3%	1.1%		1.7%	16.9%		1.1%	0.6%	34.0%	27.1%	100%
Property 4	8			1			2	1	2	17				2	23	56
	14.3%			1.8%			3.6%	1.8%	3.6%	30.4%				3.6%	41.1%	100%
Property 5	4						3		1	3	2				9	22
	18.2%						13.6%		4.5%	13.6%	9.1%				40.9%	100%
Property 10	12	1	1			1			5	10					28	58
	20.7%	1.7%	1.7%			1.7%			8.6%	17.2%					48.3%	100%
Property 11	20	6	1			1	1		2	20		2		4	28	85
	23.5%	7.1%	1.2%			1.2%	1.2%		2.4%	23.5%		2.4%		4.7%	32.9%	100%
Property 12	13	4	2	1	1		1		7	59		1		10	39	138
	9.4%	2.9%	1.4%	0.7%	0.7%		0.7%		5.1%	42.8%		0.7%		7.2%	28.3%	100%
Roadside ditches 1–3	11	2		1					2	14		2		1	14	47
	23.4%	4.3%		2.1%					4.3%	29.8%		4.3%		2.1%	29.8%	100%

Combined totals for the whole of Springhead, the Ebbsfleet, and the areas to the east, the areas to the west, as well as selected individual site entities; therefore, individual numbers do not add up to make combined total

Table 53 Springhead metal finds: small finds per function group from features in Sanctuary complex

Function Group in Sanctuary complex	Personal	Toilet/ medical	Textile	House-hold	Metro-logy	Trans-port	Construc-tion	Tools	Fittings	Agri-cultural	Militaria	Votive	Metal-working	Unknown	Total
Pits 2925, 2954 & 5353	3								1					2	6
Trackway 300045	2								2					1	5
Enclosing ditch	15	2		1				3	8		1		1	14	45
Ritual shaft	5								3	2	1	1		11	23
Portico building	2													3	5
Pit align N of P Bld	4	2	1		1			1	7		1			14	31
Temple	4	4		1			1		3				3	8	24
Late deposits	12		1	1		1		6	7	3				10	41
Assoc features	1								2					3	6
Total	48	8	2	3	1	1	1	10	33	5	3	1	4	66	186
	25.8%	4.3%	1.1%	1.6%	0.5%	0.5%	0.5%	5.4%	17.7%	2.7%	1.6%	0.5%	2.2%	35.5%	100.0%

seven brooches found in road surface 300082 are probably all pre-Flavian, with Cat No 70 as the latest brooch. Other objects from the road include the small nail cleaner Cat No 175, the knife handle fragment Cat No 241, a lead spindle whorl (SF 9136), a chain fragment and link, as well as 1st century horse harness pendant Cat No 294. While it is possible that all these objects were lost during the use of the road, this situation presents a stark contrast to the western side of the Ebbsfleet where roadside ditches 1–3 contained 47 objects and the road surface of Watling Street only six. Nine objects are associated with graves 6104 and 6345, the latter including a casket with a lock-plate fixed with lion-headed studs and a chatelaine or suspension chain with ring.

Post-road – pre-sanctuary features 400027

The 32 objects from features associated with this phase include five mid–later 1st century AD brooches, three pins of which probably two date to the 2nd century, a probable *lorica* fitting, a small copper alloy ring or bead, and a slightly larger ring, as well as finger-ring Cat No 158 and a nail cleaner. A very corroded lead spindle whorl, two latchlifters, and a handle of a probable third as well as two studs and a circular fitting with suspension loop also belong to this group which consists of levelling deposits pre-dating the construction of the temple (400035).

Sanctuary complex

A breakdown of the metal small finds assemblages of the various structures associated with the Sanctuary complex is shown in Table 53. Of the three pits, which are earlier than the remainder of the Sanctuary complex, only pit 2925 contained datable objects; a very fragmented Nauheim-derivative and a two-piece Colchester brooch, suggesting a date in the 2nd half of the 1st century AD. This pit also yielded a ferrule (SF 665) with thread-like grooved decoration. The function of such objects remains as yet unexplained but, apart from Silchester, most have been found on sites with military associations (Williams 2005, 11).

Trackway 300045 yielded only five metal objects, but two of these are brooches found in different layers: mid-1st century Colchester brooch Cat No 17 belongs to the early Roman phase; a later two-piece Colchester brooch was found in a layer dated to the early 2nd century.

With a total of 45 objects, the ditch (400017) that encloses the Sanctuary to the east produced the largest number of metal finds from this complex. This figure includes a leg ring and a pair of shoes represented by 12 hobnails (counted as one in the table) from Grave 3142 and a knife blade from Grave 3428. The personal items are dominated by eight brooches, mainly developed forms of two-piece Colchester brooches of the later 1st century but including two 2nd century brooches (Cat Nos 100 and 119). Other personal items include a bracelet, a plain finger-ring, and at least two hobnailed shoe-soles. Two fragmented toilet instruments, one of only four metal vessel fragments from Springhead, as

well as two knives, a cleaver, and an iron staple that may belong to a sheath or scabbard are also among the identifiable finds from the ditch.

Ritual shaft 2856 (see Vol 1 Chap 2, Fig 2.55) contained 23 metal small finds which were not distributed evenly in the 15 fills. The five personal objects include four fragmented hobnailed shoes, one of which was found in a ceramic vessel. It was not possible to establish the nail pattern of the soles, but as two groups of hobnails were found in layers 6619 and 5285 – the 2nd and 3rd lowest from the bottom of the shaft – a pair of shoes may have been deposited in each instance. Layer 6619 also contained military fitting Cat No 298 and a possible hinge for a door or window pivot (SF 9411). A Hod Hill brooch of the second half of the 1st century AD was found in layer 2986. Among the 20 dog skeletons from the shaft, two were buried with their iron chains or leads still attached; interestingly, one was found in the lowest layer of the shaft while the other came from the uppermost layer containing articulated or semi-articulated animal bones (2855). The latter layer also contained the most intriguing votive object from Springhead: a circular copper alloy token folded around a nail (Cat No 307). As mentioned above, the placing of a single nail or a small number of nails has been considered in the context of ritual, magic, or the warding-off of evil (eg, Black 1986, 223; Dungworth 1998, 153), and it is difficult to imagine that such properties were not also invoked in this instance.

Only five objects were found in the portico building (400020–1), including a two-piece Colchester brooch and a hobnail, while the pit alignment to its north (400023) contained 31 metal finds. Pit 2214 is one of the few features in the Sanctuary complex which contained toiletry equipment: a *ligula* and a nail cleaner. Pit 2227 is the only of this group to contain brooches, and both Cat Nos 14 and 22 date to the middle decades of the 1st century AD; a slightly later pin (Cool G12) was found in the layer above, and the uppermost layer contained one of the only eight metal needles from Springhead. No datable metal finds were recovered from pit 2236 which contained a blade fragment, a possible small weight, a hobnail and a strip binding fragment. A possible sheath fitting strip (SF 626) is the only metal object from pit 2931.

The 24 metal objects from features associated with the temple (400033) include a fragmented Nauheim-derivative brooch, the hare brooch Cat No 128 (Pl 8), a pair of tweezers with an unusual pattern on its arms (Cat No 181) as well as a nail cleaner, a toilet set, and a fragment of a rectangular mirror. An S-bent hook (SF 9405) may have been a cauldron hanger, while a bent lead strip (SF 9453) with six iron nails may have had a constructional function, perhaps as a guttering. The three objects possibly associated with metalworking include two wire fragments and a folded lead sheet, and thus may simply be waste of some unknown process. With 41 records the amount of metal objects from later deposits overlying the temple is almost twice as large as that of the temple contexts. The 12 personal objects include seven brooches, predominantly two-piece Colchester and Hod Hill types dating to the later 1st century AD but also one headstud brooch (Cat No 95) of the late 1st/early 2nd century. Two pins are of 2nd century types. Of note are three agricultural objects: a spade shoe (Cat No 286), the fragment of a shackle (Cat No 285), and a reaping hook, as well as an iron wool comb (Cat No 188), two shears (Cat Nos 245–6), two knives, a hook (Cat No 258), and a lynch pin (Cat No 224). While the personal objects may have been deposited in the vicinity of the temple as votive offerings, the agricultural and other tools may be indicative of activities related to the keeping of animals and the processing of wool. The dating of the brooches and the pins suggests that these objects were residual in these layers, but whether or not this is also the case with the agricultural and other objects is difficult to ascertain as it is not inconceivable that they may relate to activities associated with the use of the temple; equally, they could well belong to a phase after the ritual use of the temple ceased and the area was used for more domestic/agricultural purposes.

The Ebbsfleet (spring and channel deposits) 300009, 400007–8, 400068

The second largest assemblage of metal small finds was recovered from the spring and channel deposits, yielding 217 objects. In absolute numbers, it contained the largest amount of personal objects, 83 accounting for 37.9% of the Ebbsfleet assemblage, which is the second highest percentage after the late Iron Age enclosure 400012. Of these 83 personal objects 68 are brooches, mainly dating to the latter half of the 1st century AD but including types ranging in date from the early/mid-1st to the later 2nd century. Among the early types are two Langton Down, two rosette, four early plate, six Aucissa, five Hod Hill, five Nauheim-derivative brooches, and one Maxey-type brooch. Very remarkable is the stark difference in the numbers of Colchester and two-piece Colchester brooches: there is only one of the former but 28 of the latter. Based on this evidence, it appears that the deposition of brooches in the Ebbsfleet was introduced only after the Roman Conquest as even the earliest of the above mentioned types would straddle the Conquest. By contrast, 2nd century brooches are already much less frequent with only nine examples, but these include a number of the more colourful enamelled types like Cat Nos 98, 103, and 124 as well as the unusual rhomboid plate brooch Cat No 133, a *tutulus*, a trumpet-headed, and one complete and two fragmented T-shaped brooches. No brooches of the full 3rd century or later were found in the Ebbsfleet but other personal items like the two bracelets Cat Nos 148 and 149 and finger-ring Cat No 163 belong to this later period, while the five pins or fragments of such may belong to the earlier phase and lunulate fitting Cat No 167 to the 2nd/3rd century.

The seven toiletry implements from the Ebbsfleet include three joining fragments of a round mirror (SF 9143), two nail cleaners, two tweezers, a fragmented

toilet set, and a pestle (SF 9154) of a cosmetic grinder set. Two perforated lead discs (SFs 1722 and 1874) are counted among textile equipment as they may have been spindle whorls but this identification is rather tentative. Among the six household items is the aforementioned boss as well as a vessel handle (SF 9001), a fragmented oval spoon bowl (SF 9265), and the bow tie-shaped pot-mend SF 9172. The six items of metrological use include a balance bar (Cat No 197), a lead weight (Cat No 200), and four lead discs which may initially either have been used as weights or tokens (SFs 9249 and 9275) or possibly seals (SFs 1893 and 9068) before being deposited in the Ebbsfleet. Writing is attested by a seal-box base and a lead seal (Cat No 209). The three military items include *armilla* Cat No 146 (a military award of the immediate post-Conquest period), buckle or *lorica* fitting Cat No 296, and a buckle (SF 1853) similar to examples from South Shields (Allason-Jones and Miket 1984, 193–4 no 3.628) and Corbridge.

The category fasteners and fittings is the second largest finds category from the Ebbsfleet, accounting for 50 objects. These include, amongst others, two slide keys, four sheet fragments which may have been part of boxes, as is likely for two lion-headed studs (SFs 1824 and 1832) similar to Cat No 265. A boss with a square back plate (Cat No 192) was certainly part of a box and is therefore listed under household items. Other fittings from the Ebbsfleet deposits include a T-clamp, six copper alloy, and not more than seven iron nails, a plain handle (SF 1899), and a decorated strap (SF 613) which may have been part of a box, perhaps as a handle, six copper alloy rings, and a ferrule (SF 1873) similar to SF 665 found in the Sanctuary complex but with only three ridges. Of particular interest is the stud, Cat No 263. Such studs have been used to fix the lead-sheathing of ships built in the Roman ship-building tradition as opposed to the indigenous Romano-Celtic tradition in which sheathing was not used. The stud was found in the western area of the Ebbsfleet near properties 2 and 3, which is where the landing places for boats and small ships sailing up the Ebbsfleet is supposed to be located.

The four items associated with religious practice include a bell (Cat No 304), a lead sheet in the shape of a miniature cheek piece of a helmet with the image of a dolphin on it (Cat No 306), a small rod (SF 9276) which may be a 'lot', ie, an implement used to 'draw straws', or – less likely – a weight or ruler, similar to such objects from the Netherlands and Northern Germany (*cf* Schuster 2006, 97–8), and a folded copper alloy sheet (SF 691) which may have been a curse tablet, but it was not possible to unfold it and check for writing.

Another 51 metal-detector finds (identified as from context 6682), recovered from the spoil heap of a pipe trench dug through the Ebbsfleet, have not been counted among the Ebbsfleet assemblage as their position within the depositional sequence could not be ascertained. However, it is likely that a large part of these 51 objects were deposited in the Ebbsfleet similar to the assemblage discussed above. The 51 objects include 12 brooches, ear-ring Cat No 151, two finger-rings (including Cat No 162), a ring-key (SF 9373), a pin (SF 9347), and a folded lead plaque (SF 9379) without writing but showing a curvilinear line, possibly an animal's tail, on one surface.

Roadside settlement property 2

Of the 142 metal small finds from this property, which includes a temple, only 15 are personal items, including eight brooches. The latter mainly belong to the 2nd half of the 1st century AD (Nauheim-derivative and two-piece Colchester brooches), while brooch Cat No 134 and finger-ring Cat No 156 found in the temple overburden which also contained all the Nauheim-derivatives, date to the 2nd century. Other finds from the temple overburden, which contained the majority of the finds from property 2 (87 items), include a silver toilet spoon, a pair of tweezers, two knives, a cleaver, an iron currency bar (Cat No 309), and an early Roman spear-head (Cat No 290). The only other weapon from this property was a 1st/early 2nd century dagger (Cat No 292) from pit 12666.

One of the post-holes defining the *temenos* contained one of only six seal-boxes (Cat No 208) from Springhead; a second one was found in the sub-soil within the area of this property. Other finds of note from this property include a late Roman bracelet (SF 15822), also from a *temenos* post-hole, of a type most common in Britain, a possible gouge (SF 20146) from a pit south-west of the temple, and three objects associated with transport comprising hipposandal (Cat No 216), terret (Cat No 219), and lynch pin (Cat No 223), all from features probably pre-dating the temple. Two studs or box nails (SFs 15753 and 18270) may have belonged to the same box but one comes from the temple overburden while the other is from a pre-temple layer. While most of the objects included in the metalworking category comprise lead waste and sheet cut-offs from the temple overburden, there are also two iron bars, one found in oven 12002 south-west of the temple and another from a *temenos* post-hole.

The small bell SF 15748 from grave 12222, a pot burial containing one or possibly two neonates, is the only votive find in property 2, although it is likely that a single nail found in this grave also had some apotropaic purpose in this context. Cat No 308, a sheet fragment, folded/rolled to form a small container, was found in the sub-soil above the temple. The object may have had a similar use to that of the small token wrapped around a nail (Cat No 307) found in ritual shaft 2856 in the Sanctuary complex.

Roadside settlement property 3

The largest individual assemblage of recorded metal small finds from any identifiable unit at Springhead was recovered from property 3, amounting to 362 objects, and most of these, 243, were found in channel fills (400175) in the waterfront area to the north-east of the bakery complex. As was the case in property 2, personal objects do not dominate the assemblage in a way seen in the area to the east of the Ebbsfleet (ARC SPH00)

where they rarely account for less than a quarter of individual assemblages. On the western side of the Ebbsfleet (the Roadside settlement) this quantity is never reached in any of the individual property assemblages. In property 3, the 36 personal objects only account for 9.9%, but in absolute numbers this still makes it the third largest assemblage from Springhead. Seventeen personal objects were retrieved from the channel fills (400175) in the waterfront area, including 12 brooches of types dating to the mid-1st and 2nd centuries. A probable belt fitting (Cat No 169) is slightly later, dating to the late 2nd/early 3rd century. Another eight personal objects were found in the layers to the north-east of the sunken-featured structure, possibly a bakery (see Vol 1, Chap 2). These layers contained 49 of the 362 metal small finds from this property, including only three brooches: a later 1st century two-piece Colchester brooch, toilet set brooch Cat No 117, and mid-2nd/3rd century brooch Cat No 129. Other personal items from this layer comprise finger-ring, Cat No 157, and an unfinished ring as well as two pins of probable 2nd century date. Apart from one of only eight metal needles from Springhead and a toilet spoon (Cat No 184), which is likely to belong to the toilet set brooch, most of the other finds from this layer are unidentifiable fragments of lead sheet or waste which may be related to an unidentified metalworking activity.

Other features within property 3 produced some of the more eye-catching brooches from Springhead, including the shoe-sole brooch, Cat No 127 (Pl 7), and the most unusual Cat No 99 (Pl 4), both dated to the earlier half of the 2nd century, as well as a small late rosette brooch and two two-piece Colchesters. Of the eight pins four belong to types in use throughout the Roman period and two are more specific to the early 2nd century. The quantity of toilet implements from this property is among the lower percentages from Springhead, but the absolute number of nine items is similar to that from the Sanctuary complex on the other side of the Ebbsfleet and the Ebbsfleet itself. Apart from the toilet spoon, a pair of tweezers (SF 18951), the fragments of at least two toilet sets with nail cleaners and tweezers were found, as well as a *ligula* (Cat No 186), a small single olive probe (SF 18001), two possible mirror fragments, and an unidentified tool (SF 20414). Knife, Cat No 229, may have been used for shaving, while the socketed knife, Cat No 240, will have served some heavier duty.

With 11 objects, property 3 produced the largest number of items in the category 'household', including eight lead pot-mends of which all but one come from the channel fills in the waterfront area. Pot-mends have the densest distribution in the area of property 3 (Fig 108), but the reason for this is not clear as is the exact purpose of these objects; rather than simply mending pots they may be related to a certain type of process or even have some ritual significance (see Pl 13 and earlier discussion under 'pot-mends'). Among the household items is a small animal leg-shaped fitting (SF 18294) which may have been part of a vessel or a vessel stand. With two keys and a latchlifter, property 3 yielded the largest number of such items from any property in Springhead. A small fitting with handle (Cat No 193) certainly belonged to a small box or etui. Six items are or may have been used for some metrological purpose, including two or possibly three weights and a folded disc (SF 18438). The latter is reminiscent of the token folded around a nail (Cat No 307) in ritual shaft 2856 but does not contain a nail.

Four military items were discovered in the channel fills (400175) in the east of property 3. Three of these are *armillae* (SFs 18725–6, 18868), making this the largest concentration of these post-Conquest military awards in any property at Springhead. The fourth item is a conically shaped stud, possibly from a helmet (SF 20002).

Property 3 is unusual in the context of Springhead in that it produced two votive figurines, a deliberately bent lead figurine of Fortuna (SF 20114, Pl 16, left) and a small figurine of a horse whose head had been broken off but both pieces were found together (Cat No 303). In both cases the mutilations appear deliberate and are likely to be associated with the act of deposition. Although not included in Table 52 because it was found by metal detector in the overburden below the access road to the modern nursery, the small votive silver shield Cat No 305 should be mentioned here as the area it was found in falls into property 3, close to the boundary of property 2 adjoining to the south.

Remarkable in the assemblage are the 123 items classed under 'metalworking'; 119 of these are lead and take the form of irregular off-cuts or folded bits of sheet, some have clearly been partly melted or are drops of molten metal. Of these waste items, 109 were found in the channel fills (400175), which makes it difficult to link these items to any specific feature identified in the property. Considering the prevalence of lead, the activity resulting in this waste probably did not require high temperatures, and any installation involved in this activity may not have left any discernible trace apart from its waste. It is possible that the large amount of lead waste is related to the dismantling of the lead guttering from pit 300570 and similar pits in properties 3 and 4.

Roadside settlement property 4

The eight personal objects from this property include the only golden finger-ring from Springhead (Cat No 154; Pl 10). Of the four brooches, three date to the 1st century AD and an unusual plate brooch made of a radiate coin of the later 3rd century. One of the two pins belongs to Cool's group 25 which may span the Roman period. Only one item in the 'household' category was found in a clay and timber lined tank (16831); it is a piece of sheet metal (SF 15970) with lines of small holes radiating from the centre, probably part of a late 1st/2nd-century strainer. At the bottom and towards one corner of the tank a large piece of lead guttering with a drain hole (Cat No 227) was found *in situ*.

Roadside settlement property 5

In contexts which can be assigned to property 5, only 22 metal small finds were found. Among the four personal items are three pins: two unidentifiable shanks and one of Cool's early Roman group 3 from a sunken-featured building. A length of wire bent in a continuous S-shape (SF 15994) was found in post-hole 17012; the wire may be the central part of an extendable armlet, possibly similar to one dredged from the Rhine near Nijmegen (Sas and Thoen 2002, 175, no 94). Of the three transport objects, one is a Roman hipposandal (Cat No 217) and two are horseshoes of which one comes from the same pit (17179) as the hipposandal; it is likely, however, that both horseshoes are related to the use of a later, medieval track which runs along the western side of the Ebbsfleet. The two agricultural objects from the property are a reaping hook (SF 20072) and a spade shoe (Cat No 288), both of forms which were in use by the Roman period.

Roadside settlement properties 6 to 9

Only 28 metal small finds were recorded from features associated with these four properties. Of note is a ferrule (Cat No 291) which is probably part of a spear, from property 6, as well as a zoomorphic spout (Cat No 194) and a lion-headed stud (Cat No 265) found under the floor of early Roman building 300522 in property 7. Of the ten objects from property 8, a silver finger-ring with a nicolo intaglio probably depicting a hare (SF -542; Pl 11, bottom) and an *armilla* fragment (SF -540) – part of a Conquest period military award – should be mentioned here, as well as the only two items from property 9, found in the same post-hole: a very corroded dolphin brooch and a Cool group 3 pin. These assemblages are too small to suggest any particular use for the properties in question.

Roadside settlement property 10

This property, where a smithy was located during the later 1st and early 2nd centuries, produced one of the smaller assemblages of metal small finds from the Roadside Settlement area, amounting to only 58 items. Interestingly, however, this is the second largest assemblage west of the Ebbsfleet in terms of the proportion – but not the absolute number – of personal objects with 20.7%. Of the nine brooches from this property, a mid-1st century Colchester brooch and a Hod Hill-derivative brooch (Cat No 63) were found in the build-up adjacent to Watling Street, and the unusual reversed fantail brooch Cat No 93 comes from a ditch pre-dating the smithy. One Nauheim-derivative and three two-piece Colchester brooches were found in layers associated with the first phase of the smithy and only one two-piece Colchester, a headstud brooch, and a simple twisted-wire ear-ring with the second. A pit (16464) pre-dating the first smithy phase contained cleaver Cat No 245 and an unidentified iron tool (Cat No 259) which may have been a pair of dividers, but its extremely corroded condition and a chain attached to it make this identification uncertain. Other metal small finds associated with the smithy include an iron stylus (Cat No 204), two knives (Cat No 237 and SF 18247), and an L-shaped lift key (Cat No 284) from the first phase, and a spoon probe (SF 15195), a lead spindle whorl (SF 15923), and two unidentifiable tools (SFs 15395 and 15860), one perhaps a punch or a chisel, from the second. While the 28 items classed as unknown include some sheet and other fragments, these appear not to be obvious off-cuts which would have required them to be classed as metalworking debris as was the case in other assemblages. Thus, together with the lack of tools to be expected in a smithy, the assemblage of metal small finds does not add anything towards the understanding of the processes carried out in the smithy. However, it should be mentioned that both crucible fragments and a considerable amount of metalworking slag have been retrieved from property 10 (see Andrews, Chap 5). None of the datable metal small finds was later than the early 2nd century, which is consistent with the evidence of the pottery.

Roadside settlement property 11

The assemblage of metal small finds from this property located at the junction of Watling Street and the branch road has the highest proportions of both personal and toilet/medical items recorded in any property west of the Ebbsfleet; with 7.1% the latter category is the highest for all of the Springhead entities. More than a third (31) of the 85 metal small finds was recovered from two extensive layers, 10405 and 10808, of which the former contained a dolphin brooch (Cat No 88) and two Hod Hill brooches (Cat Nos 54 and 62) as well as a deliberately bent and broken spoon probe (SF 15207), a fragmented, bent olivary probe (SF 20520), and a tinned mirror fragment (SF 20523); while 10808 yielded three two-piece Colchester brooches suggesting a possibly slightly later date of deposition in the 1st century AD. Most of the other finds come from or near to the area of the sequence of circular buildings in the south-eastern corner of property 11, near the junction of Watling Street and the branch road. Two probable dene holes contained one or more iron rings of varying sizes and one also contained a two-piece Colchester brooch (SF 15234) and an iron strap. The very ornate Hod Hill brooch Cat No 52 was recovered from the early gully parallel to the branch road. Of the pits in the vicinity of the circular buildings, ten contained one or more metal small finds. Of the seven personal items recovered from these pits six are pins and one a bent wire which may have been a bracelet (SF 15300); the latter was found together with a nail cleaner (SF 15299). Pit 10170 yielded a Cool group 3 pin and a discoid fitting with two perforations, of unknown use, but very similar to one found at Weißenburg and other forts on the Upper Germanic-Raetian *limes* (*cf* Oldenstein 1976, 176; Taf 51, 598). Pit 10338 contained three pins. The only metal find from pit 10324 was a sprung lock bolt (Cat No 277), very similar to the bolt belonging to the box from burial 6 at Baldock (Stead and Rigby 1986, 70, fig 31, 27), but apart from two worked bone fragments, one of

them probably a pin, and almost 1 kg of later 1st/2nd century pottery, no metal or bone fittings were recovered which would indicate the deposition of an entire box. While there is only one unidentifiable fragment associated with the earlier phase of the circular building, there is an L-shaped wall hook (Cat No 269), a chisel (Cat No 253), a hobnail, and the sheet fragments of a possible mirror from its second phase. A Colchester brooch comes from a layer pre-dating the earliest phase of the circular building. It is interesting to note that of the ten brooches found in this property, only two were found in a pit or gully and the other eight come from levelling layers while all the pins were found in pits associated with the circular building.

Roadside settlement property 12

With 138 objects this property produced one of the bigger assemblages of metal small finds, but a number of the features within it only produced one or two finds. Just over a third (49) was found in two big brickearth quarries predating the establishment of the boundary between properties 11 and 12. The fill of the larger quarry 300370 contained 32 objects, including four brooches, a pin, a fragmented implement from a toilet set (Cat No 185), and a mirror fragment (SF 15067). The date ranges of these objects fall into the later 1st and early 2nd centuries, covering the earlier period of the pottery date range which extends to the later 3rd century. Other objects worth noting include an iron swivel hook with chain still attached (SF 20552), perhaps used to suspend a cauldron, and a spindle whorl or perhaps weight (SF 15078), weighing 46 g, which is almost exactly 10 *sextulae*. The smaller quarry 300371 contained an assemblage of largely unidentifiable fragments of metal but including a pair of iron tweezers (Cat No 182) and a possible bow fragment of a Hod Hill-type brooch. Only two objects were found related to the aisled barn 400119, including a 190 mm long bladed tool (SF 15298), perhaps a drawknife which may be compared to one from Abbeville, France (Champion 1916, pl 3, 63645). The fill of SFB 400120 yielded 26 metal small finds, comprising one two-piece Colchester brooch (SF 15399), a pair of tweezers with cross decoration (Cat No 180), and a socketed knife (Cat No 235). Other than that the fill contained six nails, two studs, and 12 unidentified objects, mainly sheet or strip fragments. As is the case with the quarry fills, it cannot be determined whether the material deposited in the SFB relates to the use of the building or whether the feature simply provided a convenient location to dump material derived from levelling or construction work in this or another property.

The small later Roman cemetery 300363 (probably 3rd/4th century) on the edge of and beyond the north-western boundary of property 12 comprised five graves of which three contained metal small finds. Two nails only were found in grave 10046. Grave 10079 had 28 metal finds; there were at least 23 nails which, apart from one on the right, were found on the left side of the north-west-facing inhumation burial. The nails could have been part of a coffin, but their concentration along only one side of the burial may perhaps be due to the fact that the body was placed on a reused board which still contained nails along one side from its previous use. The body was buried with hobnailed boots, and the grave also contained half a snaffle bit (SF 15084), but it is not clear whether this was part of the fill of the grave or whether it was a placed grave good. Most of the finds from Grave 10150 are likely to be part of the backfill rather than being grave goods. They include a biconical lead weight (SF 15113), a nail, a piece of slag as well as the fragment of a bone pin with a globular head of Crummy's type 3 which is dated mainly to the 3rd/4th century (Crummy 1983, 22), the latter possibly a grave good though its position is unrecorded.

Roadside ditches 1–3

In contrast to the ditches alongside the road in the Sanctuary area on the eastern side of the Ebbsfleet which were devoid of metal small finds, the ditches along Watling Street and the north-western branch road contained 47 finds. Of these, 30 come from ditch 3 whose course could be followed in the areas of properties 3–5 for approximately 70 m. The excavated length of roadside ditch 1 is similar to ditch 3, but only 8 metal finds were retrieved from it. The frequency of finds in ditch 2, to the rear of the smithy property 10, is markedly higher: nine objects were found in the *c* 25 m exposed during excavation.

From the datable metal small finds it appears that the ditches had essentially been filled in by or during the first half of the 2nd century. Of the seven brooches from the ditches only one fragmented two-piece Colchester comes from ditch 2, the other six were all from ditch 3, mainly belonging to its later re-cuts and including at least three two-piece Colchesters and one probable Hod Hill brooch; the fourth, final phase of roadside ditch 3 contained a Langton Down brooch (Cat No 26). Ditch 1 only contained three fragments of a fine copper alloy chain (SF 20465) and a spherical-headed pin (SF 15116); a simple Cool group 1 pin was found in ditch 3. The only personal object which may be later is bracelet Cat No 147. While toiletry implements are among the less frequent finds at Springhead, it is interesting to note that one arm of a pair of tweezers and a toilet set were found in ditch 3, but considering the fact that the adjacent property 3 yielded seven toiletry implements this may provide an explanation of the origin of the ditch fill, and this may also apply to the early Roman spoon SF 15951 and one of the two *armillae* fragments (SF 20161). Another *armilla* fragment (SF 15192) comes from ditch 1, which also contained one of the eight latchlifters (Cat No 278) found at Springhead.

The six objects found in the road surfaces of Watling Street include one Hod Hill brooch (Cat No 55), a simple ear-ring (SF 18023) and the fragments of a toilet set. The scarcity of finds from the road surface suggests that it was regularly swept, but as it was metalled items that were lost on it could also be retrieved more easily.

Communication with the Gods of Springhead: Votive Objects – Objects used as Votives

In this section, an attempt shall be made to discuss the evidence for religious practices discernible through the study of the metal small finds assemblage from the HS1-excavations and to answer questions concerning the nature of the cult or cults practised at Springhead, the spheres of religious practices represented in the assemblage and the objects used in these practices.

Exchanges between human and deity

Rituals concerning exchanges of vows and votives to secure the help of the gods are a common feature of prehistoric and antique religion. At the sphere of the Roman state, the exact observance of rituals to ensure the favour of the gods for the state and its inhabitants is described with the term *religio*; it was the ritual adherence to the exact wording and actions of the cult that were of importance while a spiritual involvement was not required (Müller 2002, 16). The more private devotion of the population seeking religious fulfilment and personal devotion to a deity, aspects which according to Müller (*ibid*, 17) are rarely mentioned in antique literature, fall into the definition of *superstitio* which covers aspects such as popular belief, superstition, and magic. Henig (1984, 32) points out that 'magic is not religion but rather a debased offshoot from it which assumes that the gods can be controlled by man', contrasting it to religious prayer 'addressed to gods who are free agents, not obliged to answer it.' To promote the success of a request the devotee would vow to present a gift (the act is described by the Latin term *nuncupatio*) if the deity granted his or her wish. The fulfilment of the vow by the devotee is called *solutio*, and this stage of the process is often documented with the inscription VSLM (*votum solvit libens merito*) 'vow paid freely and deservedly' frequently found on altars or votive plaques (Müller 2002, 19, Abb 7; Bagnall Smith 2008, 153). *Nuncupatio* and *solutio* are constituent and consecutive parts of the ritual practice of a formal *votum* which would have reached Britain with the Roman army at the time of the Conquest (Bagnall Smith 1999, 48, 51), if not before.

In her discussion of the votive objects from Great Walsingham, Bagnall Smith (*ibid*, 49–50) explains the presence of the 22 seal-boxes there as evidence of the first stage of the *votum*. Based on a theory proposed by Derks (1995) who examined evidence for the ritual of the vow in Gallo-Roman religion, focusing on the Rhineland, the seal-boxes are interpreted as all that remains of a *nuncupatio* in the private sphere. This would not require permanent material but could be written on a wooden writing tablet, while those of a more private nature might need to be written on the inner surfaces of the tablet which would then be tied with a cord, sealed and the seal put in a seal-box for protection. Bagnall Smith (*ibid*, 50) claims that the large number of seal-boxes at Great Walsingham provide strong evidence for the formal practice of the *nuncupatio* but that the actual number of seal-boxes found at a shrine is in effect irrelevant, because these documents 'would not have remained in a sanctuary beyond the time stipulated in the legal wording of the vow.'

The theory laid out above could provide an explanation for all or at least some of the seven seal-boxes or seal-box fragments from Springhead, especially the two leaf-shaped boxes found in property 2 near the *temenos* boundary and in the temple overburden (Cat No 208 and SF 15618). The base of one seal-box (SF 1836) was found in the channel fills of the Ebbsfleet which could imply that it had become a votive gift as part of the *solutio* after the wish made in the first part of the vow had been granted. However, more mail-related uses of seal-boxes have been discussed for some of the 13 seal-boxes recovered at Castleford where six were found in a building which could have been the starting point or the destination of the packages protected by seals (Cool in Cool and Philo 1998, 101), and this use should not be discounted for some of the boxes from Springhead.

The Springhead Metalwork Assemblage in comparison to other 'Votive' Assemblages

This section compares selected metalwork categories with those from other Romano-British sanctuaries which have produced larger numbers of metal objects, in order to understand the nature of the cult or cults at Springhead as far as this can be discerned from quantitative variations in the assemblages.

As can be seen in Table 54, most of the sites are in southern and south-western England; Harlow, *c* 40 km north-west of Springhead, is the only south-eastern site. Most of the quantifications in the table were taken from Woodward and Leach (1993, 332 tab. 20); those for Lydney, Nettleton, Henley Wood, and Woodeaton were amended using the quantifications in Smith (2001); quantities for brooches from Harlow were slightly amended on the basis of a footnote in Haselgrove (2005, 411, note 118) where a brief summary has been given of more recent excavations carried out in the 1980s. This circumstance also serves to illustrate the scarcity of fully published assemblages from religious sites in the south-east of England with sufficient quantities to allow meaningful comparison.

The sites listed in Table 54 show clear variations in the amounts of objects across the various categories with distinctive peaks occurring in one to six specific categories. The peaks occur in the following categories, (peaks in non-metalwork categories are in *italics*. They are not included in Table 54 but were originally considered by Woodward and Leach (1993, 332)):

- Springhead: brooches, rings, pins and toilet articles;
- Uley: copper alloy rings, *miniature clay pots*, finger rings;
- Lydney: bracelets, pins, spoons;
- Nettleton: brooches, pins, bracelets, styli, spoons, finger-rings;
- Henley Wood: *counters*, brooches;

Table 54 Springhead metal finds: comparison of selected metal object types in votive assemblages

	Springhead	Uley (Woodward & Leach 1993)	Lydney (Wheeler & Wheeler 1932)	Nettleton (Wedlake 1982)	Henley Wood (Watts & Leach 1996)	Woodeaton (Kirk 1949)	Harlow (France & Gobel 1985)
Votive							
Figurines	3	18	10		1	7	
Rings	49	52			3		7
Leaves		11	1		1	2	2
Plaques	1	18	9	1		19	
Parts of body		3	2				
Letters			45			3	
Miniature tools/weapons		14	6	1	1	19	8
Total	53	116	73	2	6	42	17
Fittings							
Iron rings	22	6			3		
Metal vessels		15					
Candlesticks		2	3	2			1
Total	22	23	3	2	3	0	1
Jewellery							
Brooches	309	40	32	>112	33	132	96+56
Bracelets (+armillae)	10+8	33	*c* 300	57	5	28	4
Pins	80	8	320	63	14	54	15
Finger-rings	22	38	6	24	12	32	19
Total	429	119	*c* 658	>256	64	>246	190
Personal items							
Spoons	4	14	>40	29		7	
Toilet articles	54	6	3	21	5	29	19
Total	58	20	43	50	5	36	19
Writing/literacy							
Seal-boxes	6	1	?	1		27	
Styli	7	8	1	33	10	?	5
Total	13	9	1	34	10	27	5

Harlow with additions based on Haselgrove (2005, 411 note 118)

- Woodeaton: brooches, plaques, pins, toilet articles, miniature tools/weapons;
- Harlow: brooches.

In the cases of the smaller assemblages like Henley Wood and Harlow, Woodward and Leach (*ibid*) cautioned that the collection of objects may not be representative of the original assemblages in use on the sites, and it also true that the prevalence of brooches at sites like Harlow or Springhead might in part be due to chronological factors. This caveat is certainly worth bearing in mind but the distribution patterns of brooches and pins at Springhead caution against explaining the use of brooches in ritual circumstances purely on grounds of chronology. With only six out of 80 pins their distributions clearly avoids the Ebbsfleet pool (Fig 102) where brooches are the most numerous type of object (see below). On the other hand, rings are found in the pool, just like the brooches, and the distribution of all three types of objects is less discrete on land.

The main deity venerated at Uley was Mercury, and direct evidence of his cult there is provided by statues, altars, figurines, *caducei*, plaques, and inscriptions on lead tablets. Other categories of finds from the site suggested to be linked with the god include the rings, finger-rings, and coins, and possibly also votive legs and a plaque fragment with a leg (Woodward and Leach 1993, 333; Henig in *ibid*, 112 and 174). While the former allude to the god's role as a guardian of trade and commerce, the latter two may be ascribed to his role as a god of travellers effective in the cure of diseases impeding movement. The miniature weapons found at Uley were linked to Mars and considered to be substitutes for full size weapons found in deposits dated to the 1st century AD. Other deities represented at Uley include Sol, Jupiter, Cupid or Victory, and a naked child, possibly Bacchus (Woodward and Leach 1993, 333). The miniature clay pots found in considerable numbers at Uley where interpreted as containers for small votive

offerings of a few grains of cereal or small amounts of wine or beer (Henig in *ibid*, 112).

The temple at Lydney is known to have been dedicated to Nodens or Nodons, possibly a god of hunting and fishing, who was equated to Mars on two votive plaques from the site (Henig 1984, 51). Figurines and depictions of hounds have been interpreted as indicating a cult of healing at the site (*ibid*, 55; Wheeler and Wheeler 1932, 39–43, cited after Woodward and Leach 1993, 333), and similarly the large numbers of pins and bracelets have been taken as indicators to a healing cult comparable to those given to Greek temples by female worshippers in preparation to give birth (*ibid*, 41–2). It is possible that the more than 40 spoons from the site also played a role in the veneration of Nodens at Lydney.

Nettleton's principal deity was Apollo, once referred to as Cunomaglos (the hound-prince) on an altar (Toynbee in Wedlake 1982, 136, pl 34). The hunter connection for Apollo at Nettleton has been discussed by Woodward and Leach (1993, 334), who suggested that the large number of pins and spoons may point to his guise as archer and healer similar to Nodens at Lydney. Other pagan gods venerated at Nettleton include Diana and Silvanus, both also hunters, as well as Mercury and Rosmerta, and an unidentified, probably local goddess (Wedlake 1982, 104).

At Harlow, Henley Wood, and Woodeaton no inscriptions indicate a principle dedication of the cults. However, several depictions of deities at Woodeaton provide a glimpse at the pantheon worshipped at the site (Green 1976, 177–8). These include Venus, a kilted Celtic goddess, Mars, Minerva, Cupid, and possibly a Celtic Hercules. Six bronze eagles suggest an association with Jupiter. Votive chain mail and miniature weapons would appear to belong to the worship of Mars, whereas the two bronze snakes, a statuette of a nude female, the female toilet articles and miniature bracelets suggest a cult of healing at the site (*ibid*; Woodward and Leach 1993, 334). At Harlow, a limestone helmeted head of Minerva was found in excavations in the 1980s (Haselgrove 2005, 411, note 118), and the only figurine found at Henley Wood depicts a Celtic goddess wearing a peculiar head-dress and a torque, interpreted by Henig (in Watts and Leach 1996, 133) as a native counterpart to Greek Aphrodite or Roman Venus. Other aspects of the assemblage like the brooches, and perhaps the rings and an infant burial, could all be associated with a cult of fertility and fecundity of both humans and animals (Watts and Leach 1996, 145).

As summarised by Woodward and Leach (1993, 334) the three groups of *ex votos*, firstly miniature weapons and tools, secondly personal objects, and thirdly the combination of rings, discs, or tokens and money 'can be seen to represent three major cult forms present in the Romano-Celtic religion of Britain.' The first group belongs to a martial cult, the second denotes a cult devoted to fecundity and healing, while the third group is indicative of Mercury.

Which Deities were Venerated at Springhead?

Similar to Harlow, Henley Wood, or Woodeaton, this question is difficult to answer at Springhead where inscriptions, dedications or even explicit, inscribed curse tablets have so far not been forthcoming (*cf* list of Springhead temples in Green 1976, 228), and equally none of the graffiti found on sherds refers to deities (Seager Smith and Marter Brown, Chap 1). The only metal small finds which could be readily identified are the two lead figurines depicting Fortuna (Cat No 302 and SF 20114), both probably made at Springhead itself using the same model but not the same mould.

Considering the rather crude workmanship, a use in any form of official cult related to the fortune of the Emperor and the state seems less likely than a more personal sphere, for example relating to the wish for luck in gambling, protection from mischance in the bath-house, or a safe return home (Henig 1984, 77–9). The contexts in which the two figurines where found – the waterfront in property 4 and the watching brief trench south of the route of the A2 – unfortunately do not add any further clues. Especially in Gaul and the Rhineland Fortuna-Rosmerta is often coupled with Mercury, 'the most popular classical deity in Britain, as in Gaul, … the god of the shops and market-places, as his name indicates' (Webster 1986, 60).

Prior to the HS1-excavations the only figurines of deities recovered from Springhead were of pipeclay, depicting Venus (see Mepham, Chap 10; Jenkins 1958, pl 1), and Green (1976, 228) also mentions a bone *Genius Cucullatus*. Evidence for a possible statue of Jupiter at Springhead is provided by a gilded copper alloy thunderbolt from Site B (Penn 1958, 92, fig 9.4; Bagnall Smith 2008, 160, fig 8.5). A brooch in the shape of a three-dimensional duck (Hull T213) was found in a later 2nd century level in Building B.10 at Springhead (Penn 1968a, 184, no 2, pl 2b). Crummy (2007, 228) suggested that water birds 'may relate to local deities of rivers and springs', but their significance is not yet certain.

Apart from the two Fortuna figurines the only other figurative metal object from the HS1 excavations is the small horse figurine Cat No 303 whose head was broken off deliberately and both pieces deposited together in property 4. This horse is not the first from Springhead as fragments of a clay figurine, possibly of a horse, were found in the ditch surrounding Temple IV excavated in the 1960s (Penn 1964, 172). In Romano-Celtic iconography, horses are connected with Epona, the Celtic horse goddess, usually depicted seated on a horse or between two ponies (Green 1976, 14; Euskirchen 1993). However, it is possible that the Springhead horses are related to the cult of Mars who, in Britain and Gaul, is frequently depicted on horseback, eg, at Stragglethorpe, Lincolnshire, or Willingham Fen, Cambridgeshire, while this aspect is less pronounced in his classical Graeco-Roman guise, although not unknown (Henig 1984, 51; 53, figs 13–4; Green 1976,

11; 30). Perhaps this connection to a warrior god might also provide an explanation for the presence of the small silver shield Cat No 305 and the model cheek piece Cat No 306. A shield-shaped brooch was found at Lydney (Stead 1991, 25–6), a major temple dedicated to the worship of Mars Nodens or Nodons (Henig 1984, 51). Green (1975, 59) considers the possibility of model spears, swords, and shields to be 'offerings by a soldier to a soldier's deity – Mars or a local equivalent – or merely to a local multi-functional god.'

The probable model cheek piece of a helmet (Cat No 306) is decorated with a dolphin, an animal suggesting a connection with Neptune or Ocean (Henig 1974, 154; see also altar dedicated to Neptune dredged from the Tyne at Newcastle (Liversidge 1973, 389, fig 148)). Rather than a direct veneration of these gods, however, the depiction on the model of part of a defensive weapon may perhaps rather be a votive by a soldier or a soldier's relative asking for a safe journey into the afterlife, bearing in mind that other sea-creatures like hippocamps have been connected with the myth of the soul's wanderings to the Islands of the Blessed (Henig 1974, 154), and as such dolphins might be suitable animals to be shown on a tombstone; an example is the stone to T Valerius Pudens from Lincoln (Brailsford 1964, 59, fig 28, vi, b.3). The safe-journey aspect might also be what is implied by the depiction of a dolphin below a *dioscurus* on a real cheek piece of an auxiliary cavalry helmet dredged out of the Tyne near South Shields (Allason-Jones and Miket 1984, 213, pl 7, 3.723) or the dolphin on a leather panel, perhaps a wallet or bag, from the Blackfriar's Roman barge (Merrifield 1965, pl 32; Waterer 1967, pl 12). Considering the use of a model cheek piece as a votive object, the use of such pieces is known from the 4th century BC Samnite sanctuary at Pietrabbondante, Italy, where real pieces were nailed to the walls as votives (Müller 2002, 98–9 Abb 65). 'Shields and spears are symbols of protection from threats of a personal or general nature' (Webster 1986, 61), and the same can be expected of other pieces of armour. That a model was used in this instance, as are those mentioned above, concurs with the substitution of real weapons by models observed at other sanctuaries; a practice which according to Green (1975, 56–7) can be traced back to at least as early as the Bronze Age. Returning to the symbolism on the cheek piece, it should be remembered that the dolphin was also incorporated into late antique Christian art (Thomas 1981, 92–3 fig 8, 8–10). Apart from a possible Chi-Rho grafitto on a weight (Cat No 199), no other indications of Christianity were found at Springhead. Furthermore, while the cheek piece was found in the Ebbsfleet, and thus without context date, the weight was found in chalk quarry 300204 belonging to the early Roman phase, consequently rendering a Christian interpretation of the graffito even less likely.

The wheel-shaped plate brooch Cat No 108, found in layers pre-dating the sanctuary to the east of the Ebbsfleet, may be a votive offering of similar significance to model wheels found in Britain and Gaul. The wheel was a symbol of the Celtic sky-god, Taranis, identified with Jupiter (Green 1975, 58–9 and list p 62; Henig 1984, 59). However, the wheel has been a sun symbol since prehistory and was therefore probably already used as a talisman before becoming associated more specifically with a particular deity. Considering the two Fortuna figurines whose attributes include a wheel, it may equally have been a general 'good-luck' charm (*cf* Webster 1986, 61), and as such may add further support for a veneration of Fortuna at Springhead.

While the above examples might provide some insight as to identifiable deities venerated at Springhead, the distribution patterns of certain object types appear to be sufficiently discrete to suggest deliberate selection in the types of votive offerings dedicated to different deities. The most obvious case in point concerns the distribution of brooches and metal pins. The distribution map of metal pins (Fig 102) shows only six of the 80 pins (7.5%, or 7 = 8.6% if those from pipe trench 6682 were included) were found in the Ebbsfleet, which contrasts strongly with the 68 (21.9%, or 80 = 25.8% including context 6682) brooches found in the spring and channel fills, out of a total of 310 late Iron Age and Roman brooches. This strong discrepancy is further emphasised when bone pins are included in the consideration, as these were equally lacking from the Ebbsfleet but very common in the area of the temple in property 2 (Allen, Chap 14). That this selection is highly likely to represent a real discrimination is further emphasised by the fact that the distribution of non-ferrous metal finger-rings and other rings (Fig 104) is essentially similar to that of the pins, but includes many more rings in the Ebbsfleet and considerably fewer in the area to the west of the round structure in property 11.

Which Objects were Employed in a Religious Context?

What becomes immediately apparent from Table 52 is the stark contrast in the quantity of personal items between the eastern (Sanctuary) and western (Roadside Settlement) halves of Springhead. While one could argue that most personal items found in dry areas of the site were simply lost during everyday life activities, this explanation does not hold true for the large quantity of objects found in the spring and channel fills of the Ebbsfleet. There, a deliberate deposition rather than an accidental loss is much more likely. In many cultures water has been considered sacred, and the veneration of sacred springs in antiquity is a well documented phenomenon (Müller 2006, 111). A religious or ritual reason for deposition in watery contexts can therefore be assumed (Henig 1984, 17; Müller 2002, 56–92). The deposition of an object in water, and the same is true, for instance, of caves or rock crevasses, has the purpose of bringing it closer to the deity and at the same time taking it beyond human reach. The same reasons apply to the deliberate destruction of objects prior to deposition

(*ibid*, 31). In the case of the brooches from Springhead there are 68 broken and 17 bent examples of which at least 47 appear to be deliberately broken and 12 deliberately bent. As with deposition in the sacred areas of temples or shrines on dry land, where objects would be placed in the soil, proximity to a sacred place was what mattered because it provided the liminal context, the interface between the human and the divine (Crummy 2006, 56).

For the attribution of an object to a functional category in Table 52 this means that the use of an object originally created for one purpose – in the case of a brooch its use as a closing mechanism for garments – can differ from the use that can be deduced from the circumstances of its final deposition. Considering the above remarks about deposition in springs, the final use of an object would thus have to be described as votive. It is easy to accept personal or toiletry objects like brooches, pins, finger-rings, nail cleaners, or tweezers as votive gifts because such objects, representing the individual, might seem appropriate to establish a personal relation to the divine force (Cunliffe 1988, 360).

If this interpretation can be accepted for these categories of objects, what about objects listed in other categories? An example comes from the spring of Sulis Minerva at Bath, where Cunliffe (*ibid*) distinguished five categories: personal items, professional items, *paterae* and other vessels, coins, and curses. The scope and the reason for throwing personal items into the spring has been explained above, and due to its composition at Bath, Cunliffe suggested that these largely represented the female sphere, either because the devotees offering such items were predominantly female or because it was considered appropriate to present 'female' objects to a goddess. A small collection of items, including a model ballista washer, an ink well, lead and pewter ingots, a knife, a whetstone, and spindle whorls, on the other hand, was tentatively related to a professional, predominantly male sphere reflecting a range of trade and craft activities carried out at or near Bath (*ibid*, 360–1). The vessels of various date groups could have been gifts to the goddess, some perhaps deposited after a long use as implements for rituals such as libations. While no doubt offerings, Cunliffe considered various reasons for the deposition of coins: some probably being votives in the formal sense discussed above, ie, fulfilment of a vow, while others 'may have been motivated by little more than casual superstition—the desire to remain on the right side of the goddess … just in case' (*ibid*, 361). The deposition of the metal curse tablets in the spring of Sulis Minerva brought their contents to the attention of the goddess, the act of deposition may have been cathartic for the aggrieved and, if known to the person cursed in the formula, may have caused the perpetrator concern or despair.

Considering the symbolism behind the votive offering of brooches, bracelets, finger-rings, pins, etc, Webster (1986, 60) offers some explanations of what it was the persons offering such objects wanted to achieve. Thus, brooches can be seen as symbols of a bond, mirroring their functional purpose of holding together folds of a garment, and at the same time their pin pierces the cloth, which 'can be seen as an image of a union made effective by sexual penetration.' The image of rings and bracelets as symbols of union between the sexes still persist today in the form of the wedding ring, and 'pins have an obvious sexual shape and symbolize the need for satisfactory penetration' (*ibid*, 61). Webster goes on to suggest that apart from the sacrificial aspect of removing from human use objects by breaking them, the breaking of rings or bracelets, or making small rings from broken bracelets, 'could have symbolized wishes for existing unions to be ended, so that new ones could be established' (*ibid*).

With some restraints concerning the lack of curse tablets and complete vessels at Springhead, similar explanations can reasonably be assumed for the objects found in the Ebbsfleet and the Sanctuary area, and probably also for a great many more features at Springhead like the temple in property 2, the viewing platforms or the round structure in property 11 at the junction between Watling Street and the north-western branch road.

Another sphere of objects with possible religious connotations is that represented by priestly regalia, of which there may be at least two items from Springhead: the fragmented ivy leave-shaped fitting Cat No 266, found in the Sanctuary overburden, and the ring with four lengths of fragmented chain attached to it (SF 975), the latter found in grave 6345 which contained the cremated remains of a *c* 25–35 year old female individual. Whether the object lay just inside the south-western side of the casket or immediately outside it could not be decided during the excavation; it was certainly not exposed to the heat of the pyre and, therefore, it is unlikely that it found its way into the grave as part of the pyre debris. The fragmented ring-and-chains could have been deposited in the grave as a *pars pro toto*, a deliberately fragmented item put in the grave as a representation of the whole object. The interpretation of these two objects in a religious context has to remain uncertain due to their fragmentary preservation, which would also allow for other explanations, including box or strap fitting and suspension chain for a scale/balance pan or a lamp.

To conclude this section, a tentative explanation for the presence in the Ebbsfleet's spring and channel fills of some of the 50 objects in the category 'unknown' may be offered. This is a collection of – often very corroded – fragments of strips, sheet metal, lumps, bars, wires, etc. While some of these objects may have been complete at the time of their deposition and now are merely too corroded for further identification, others may simply have been pieces of scrap metal thrown into the pond by the poorer visitors of Springhead who could not afford to obtain nice, complete objects for sacrifice to a deity

but wanted to imitate their wealthier contemporaries who they observed throwing metal objects into the Ebbsfleet. It is known that certain materials were attributed specific amuletic properties, and writing about amulets and ex-votos Henig (1984, 187) notes that 'noble metals, especially incorruptible gold, suit the high purposes of personal protection, while base lead is the metal for retribution and cursing.' If this is the case, could it not be possible that for certain wishes or sacrifices the material of the votive object was of greater importance than its shape and even waste material would suffice?

Chapter 4
Northfleet Metalwork

by Jörn Schuster

This catalogue describes all illustrated Roman metal small finds from the HS1 2 excavations at Northfleet, but, as with Springhead, an attempt has been made to mention those finds only described in the finds database, which are referred to by their original small find number (SF…), in order to find them on the database available online at http://owarch.co.uk/hs1/springhead-northfleet/.

Table 55 gives an overview of the 521 recorded metal small finds from the various Northfleet sites, identified by their site codes. The figure of 521 includes finds from all periods, including the 22 recorded metal small finds from the early Saxon settlement area in Area 6 and a small number of medieval and later objects (catalogued in Vol 4, Chap 3). All recorded metal small finds in the database have been grouped according to functional categories following Crummy (1983, 5–6). Additional to the individually recorded metal small finds, 1042 metal finds were recorded as bulk finds, including approximately 1006 iron, 32 lead, and 4 copper alloy items from the entire site. The iron bulk finds are mainly nails or nail fragments (which is why their number is given as approximate), while the lead items are unidentifiable waste or sheet fragments. Table 56 provides a summary of the number of intrinsically datable finds found in Roman and undated contexts.

Personal Adornment or Dress

Brooches

Nine Roman or Roman-British brooches were recovered during the HS1 excavations, seven of which were well enough preserved for typological determination. The typologies referred to most frequently for the identification of the assemblage of brooches from Northfleet are those by E Riha (1979; 1994) and M Feugère (1985), and, where feasible, the sequence adapted for the Richborough assemblage by Bayley and Butcher (2004). The type numbers used there are an adaptation of Hull's typological sequence (*ibid*, 52 and appx 2), which is also occasionally used in this study where possible, the type definition given as 'T00'.

Kragenfibel

(Fig 123)

1. Incomplete. Spring and part of head only, fragments join together. Chord held by a thin, forward facing hook, only three coils of left side remain. Part of right wing survives. Top of bow is flat, rectangular sectioned and widens from the narrow neck. Copper alloy. SF 140003, Context 100226, gully 100229. Early Roman.

Because of the fragmentary condition of Cat No 1 the following identification has to remain tentative. The fragment was found in a dumped layer of ragstone, ceramic building material, and gravel, possibly a surface or a trackway, in the ARC 342W02-site (a watching brief immediately east of the east edge of the Wetlands area). It has a probable six-coil spring – only three coils of one side survive – with a chord held by a narrow hook and thin side wings. Of particular importance is the narrow neck which widens towards the flat bow. The combination of these features suggests that this fragment belongs to a *Kragenfibel* like Feugère 10a or 10a3 (Feugère 1985, pls 78–80). These types with chords held by a hook date to the 2nd half of the 1st century BC, although a more ornate example from Rodez, France, has a Claudian date (Feugère 1985, 246). The type of brooch is found in Gaul and Germany and later versions

Table 55 Northfleet metal finds: material type per site (all periods: Roman–modern)

Material Type	U/S	3971 TT	Area6Ex	AS-Mill	ESPORTS	NVGS	NVNE	WB	Wetlands	Total
Copper alloy	15	1	7	1	4	50	1	2	24	105
Iron	11		4		11	242	10		9	287
Lead	10	2	11		18	42			41	124
Other metal (prob lead/tin alloy)					1				4	5
Total	36	3	22	1	34	334	11	2	78	521

Table 56 Northfleet metal finds: no per site period

Site Period Object date	VP 1	VP 2	VP 2/3	VP 3	VP 4	VP 4/5	VP 5	VP 6	VP 7	*All* *RB*	ES 4	ES 6	ES 8	*All* *Sax*	Un- phas	Total
Roman		2			2	1	1	4	4	*14*		1	2	*3*	28	45
Undated	7	24	1	4	37	3	5	64	7	*152*	1	6	2	*9*	300	461
Total*	7	27	2	4	39	4	6	68	11	*168*	1	7	4	*12*	340	521

*Total includes Saxon, medieval, and modern finds

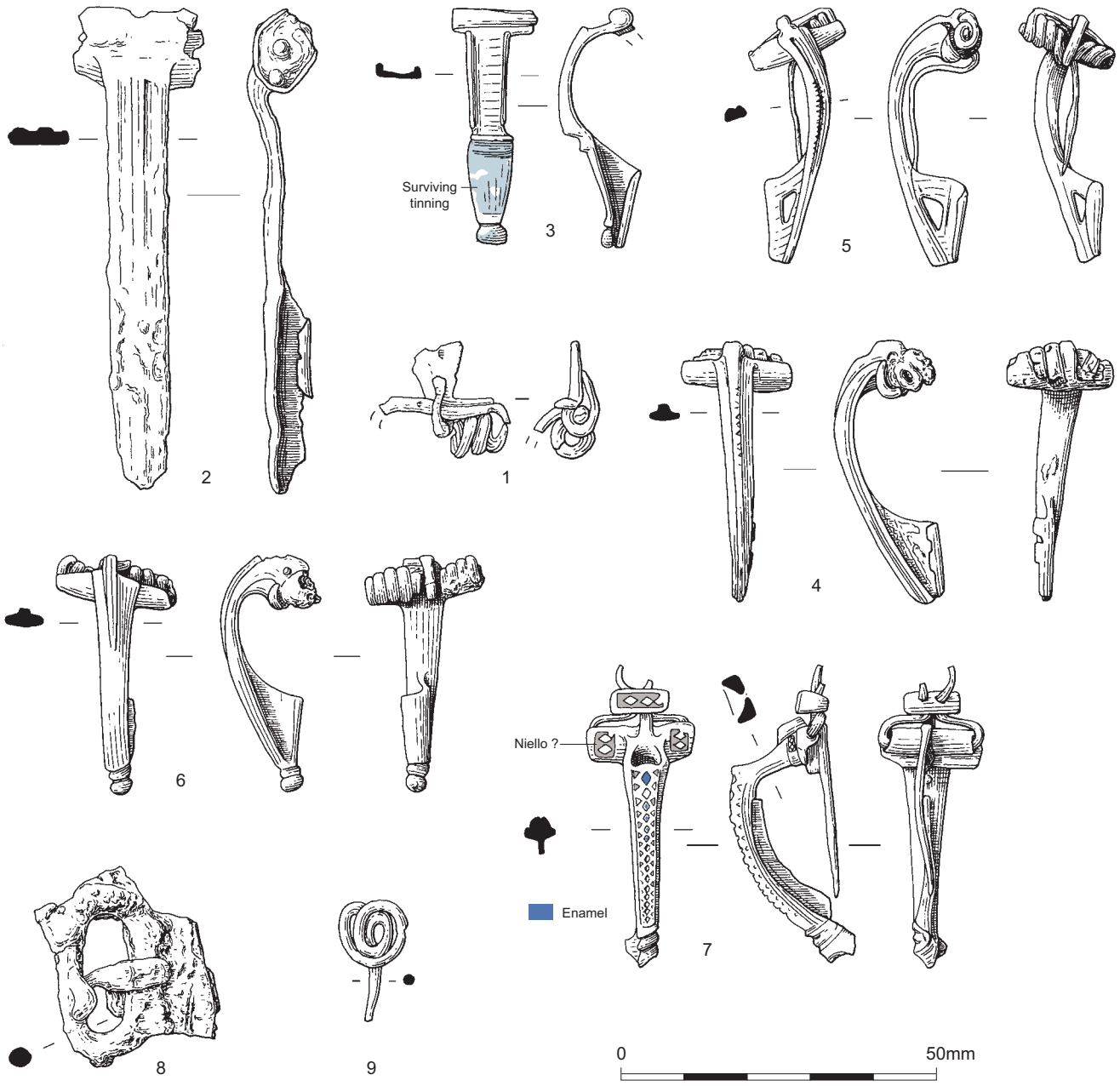


Figure 123 Northfleet: brooches, buckle, and ear-ring 1–9

have a cylindrical spring cover. A *Kragenfibel* Feugère 10a was found at Colchester and published by Hawkes and Hull (1947, pl 93, 67), but their reasoning for the possibility of a post-Conquest date is called into doubt by their reference to a brooch from Zugmantel which belongs to the later type 10c with cylindrical spring cover (*ibid*, 314; Böhme 1972, Taf 1, 3). A fragment similar to that from Northfleet was found in the forum basilica at Silchester where it was grouped among the Colchester brooches; this is almost certainly incorrect as these brooches do not have flat bows which taper towards the point where the side wings meet the neck of the brooch (Corney 2000, 328, fig 151, 40).

Brooches with spring in cylindrical cover

Langton Down brooches Riha 4.4.4

2. Incomplete. Part of cylinder at head broken, spring visible. Straight head, angle to bow not identifiable as bow is bent. Rectangular sectioned bow, tapers only slightly towards foot. Slightly bent. Longitudinal grooves decorate bow. Part of catchplate missing. Six spring turns. Copper alloy. SF 11785, Deposit 12588. Saxon.

Langton Down brooches developed in the Augustan period, and on the basis of the Augst evidence (Riha 1979, 99; 1998, 88, table 103), Feugère (1985, 266) suggested that the type with rounded head and waisted bow (Riha type 4.4.1) is earlier than that with straight heads and bows (Riha type 4.4.4), which starts in the late Augustan–Tiberian period and continues in use into the middle of the 1st century AD. Cat No 2, which is of the latter variant, has a slightly flared but straight head which finds good parallels in Augst (Riha 1979, Taf 19, 513; 1994, Taf 14, 2113), and its unperforated catchplate suggests a date rather late in the development. A similar brooch from *Camulodunum* comes from a Claudio-Neronian context (Hawkes and Hull 1947, pl 94, 89). Langton Down brooches are fairly widely distributed in Gaul, especially middle and eastern Gaul and western Switzerland, the Rhineland, and southern Britain (Feugère 1985, 265; Riha 1979, 98; 1994, 87; Bayley and Butcher 2004, 150).

Early hinged brooches

Hod Hill brooches

3. Incomplete. Axial rod in place, pin missing. Upper part of bow rectangular shape, raised ridges down either side creating a U-profile. Lower part of bow plain, tapers slightly to moulded footknob, triangular catchplate, tinning on foot. Copper alloy. SF 13397, Layer 10059. Late Roman.

This brooch belongs to Feugère's type 23c2 and more specifically the variant with a U-shaped profile of the bow (Feugère 1985, pl 141–2, nos 1769–75) which has been distinguished by Riha as type 5.12.5, a variant which she claims descended directly from Aucissa brooches with similar bow profile (Riha 1979, 143). At Augst, brooches Riha 5.12.5 are firmly dated to the 2nd half of the 1st century AD, which is supported by their occurrence for example at the Saalburg, Germany (Böhme 1972, Taf 2, 35–6). The type is mainly found in eastern Gaul, western Switzerland, and the Upper Rhine Valley (Riha 1979, 143; Feugère 1985, 333) and is rare in Britain where other types of Hod Hill brooches are relatively common (see Chap 3); the only example from this country known to the author is a brooch from Norfolk with added triangles aligned along the middle of the bow (Hattatt 2000, 321 fig 180, 869).

Two-piece Colchester brooches

a) Central rib (or groove) down whole length of bow

aii) Small brooches (less than 45 mm long)

4. Incomplete. Crest continues as pronounced ridge down centre of bow, beaded. Bow tapers slightly towards foot. Triangular catchplate. Pin missing. Five spring turns. Copper alloy. SF 11636, Colluvial deposit 10076. Saxon.
5. Complete. D-shaped sectioned bow, tapers slightly. Single groove down length of bow, notched decoration either side of groove. Triangular perforated catchplate. Pin severely bent but intact. Bow also slightly bent/twisted. Preservation very good, brassy colour all over. Six spring turns. Copper alloy. SF 11718, Deposit 11662. Saxon.

b) Crest or groove on the upper bow only

6. Incomplete. Pin missing. Oval sectioned bow, tapers slightly towards moulded footknob, crest extends slightly down top of bow. Triangular catchplate. Seven spring turns. Copper alloy. SF 20900, Colluvial deposit 20007. Undated.

The typology of the two-piece Colchester brooches has been discussed in the Springhead catalogue above. Of the Northfleet brooches in this category, Cat No 6 falls in between Bayley and Butcher group aiii (footknob) and b (crest only on top of bow). Both group aiii and b have been suggested to be slightly later than the longer and shorter variants of group a without a footknob (see Chap 3). The plainer treatment of the bow may be in line with the later range of AD 75–125, if not earlier, suggested by Mackreth (1995, 961) for brooches with footknobs and flanges along the whole length of the bow more like Richborough group dii. Unfortunately, the context data from Northfleet does not provide further dating evidence.

Headstud brooches

7. Hull Type 148C. Almost complete. Badly corroded and surface very abraded. Hinged pin still free moving, held by wire that protrudes from end of crossbar tube and continues into headloop whose top is missing. Rectangular block holds wire of headloop in place, top of block decorated with opposing ?niello/black enamel triangles. Sides of crossbar contain ?niello/black enamel inlay with small central lozenge in reserved copper alloy. Small crest at head below which is a cupped

recess with a central rivet hole for headstud, now empty. Lower part of bow tapers slightly and is decorated with small lozenge and triangle cells: lozenges are blue and triangles ?niello/black enamel. Apart from flange on the underside, most of catchplate is missing. Copper alloy. SF 20946, Context 20405, Pit 20404, SG 20786, Mid-Roman.

The combination of loose headloop, hinged pin, and enamelled bow with riveted headstud are characteristic of Hull's type T148C. A good parallel for the brooch comes from Richborough (Bayley and Butcher 2004, 96, fig 76) while a more elaborate variation of this type, with twisted silver wire on the long wings and white metal inlay on the bow, was found at Springhead (see Chap 3, Cat No 94). The separate, now missing stud of Cat No 7 suggests that this brooch belongs to the earlier run of the series, while the more developed stages usually have the headstuds cast as part of the bow (Crummy 1983, 13). At Richborough, a hinged brooch with an enamel-filled cupped stud was found in a pit dated AD 75–90, which Bayley and Butcher (2004, 165; Bushe-Fox 1949, pl 28, 35) take as indication that the variation with a riveted setting like Cat No 7 could have originated in the early Flavian period, if not before. A hinged specimen from Cottenham, Cambridgeshire, was dated before AD 100 (Mackreth 1985, 19–21, fig 9, 121), but it had a fixed headloop which typologically follows on from the construction seen in the Northfleet brooch for which, therefore, a date in the later 1st century can be assumed. A possible stud (SF 13327) for a headstud brooch was found in early Roman pit 10569.

Bracelets

Two fragmented bracelets were found, one in late Roman layers, the other comes from a Saxon colluvial layer. Four very corroded fragments of a bracelet with cogwheel decoration (SF 13445) come from late Roman pit 16562. The type is very popular in late Roman southern Britain (Swift 2000, 127–8, fig 151; 136, fig 163). SF 11579 was found in a colluvial layer (10091) attributed a Saxon date. An exact parallel is known from a 4th century level at Lullingstone villa (Meates 1987, 66, fig 25, 71). Both belong to Swift's group of 'strip bracelets with multiple motifs'. These late Roman bracelets are especially common in southern Britain but also found in northern France, Belgium and the Netherlands to the south and west of the Rhine (Swift 2000, 145; 155, fig 193). Although the Northfleet piece is only a fragment, it is likely to belong to the bracelets with motif G decoration which have been recorded in almost equal numbers from the areas described above, although in Britain they seem to follow a line between the mouth of the Severn and Colchester which has been interpreted as a indicating a trade route (*ibid*, 159, fig 201; 175–6).

Belt Fittings

8. Buckle. Oval-shaped frame with rectangular plate, outer edge missing. X-ray suggests the plate was cast in one with the frame. Tip of pin bent. Very corroded. Copper alloy. SF 11705, Context 10505, foundation cut 10506, bath-house room SG 10624, Mid-Roman (VP5).

Two lozenge-shaped plates (SFs 11558–9; front and back plate?) with a rectangular bar at one end were found in Saxon colluvial layers and may be a barbarised adaptation of a strap or belt end of late Roman/early Saxon type; however, no exact parallel is known to the author.

Ear-rings

9. Circular sectioned wire coiled clockwise to a flat spiral (2.5 coils), one end bends back under the coils and runs up the back to form a now missing hook. Copper alloy. SF 11624, Context 10043. Saxon.

Spirally wound ear-rings like Cat No 9 belong to Allason-Jones's type 9. The spiral design goes back to the Bronze Age and continued into the Saxon period. On ear-rings in Britain it enjoyed a rather brief period of popularity around the time of the Conquest and into the Neronian period (Allason-Jones 1989, 8, fig 3, 122; pl 33; Stead and Rigby 1986, 129, fig 54, 202–4). There are a couple of similar objects from Silchester which have been interpreted as pins rather than ear-rings because of their straight shafts ending in a point (Boon 2000, 341–2, fig 157, 26–7). However, their Claudio–Neronian and Flavian context dates do not contradict the date range suggested by the ear-rings. If Cat No 9 belongs with the group of objects discussed here, it was clearly a residual find as it was found in a colluvial layer that accumulated after the Roman period.

Household Utensils and Furniture

Apart from the swivel and loop Cat No 10, only two other probably Roman household items were found: an unstratified oval spoon bowl (SF 11036) which has an – equally residual – parallel at Canterbury, Marlowe Car Park (Garrard 1995, 1034, fig 441, 450) and, from sub-Roman, 5th/6th century layers, at Wroxeter baths basilica (Pretty 1997, 257, fig 334, 1). A lead pot-mend with textile impression (SF 12724) comes from late Roman Villa Phase 6.

(Fig 124)

10. Swivel with slightly concave sides, upper end curved, lower straight and approximately double the width of the sides. Loop with cone shaped head at other end (in x-ray outer end of loop appears to be open, joined by

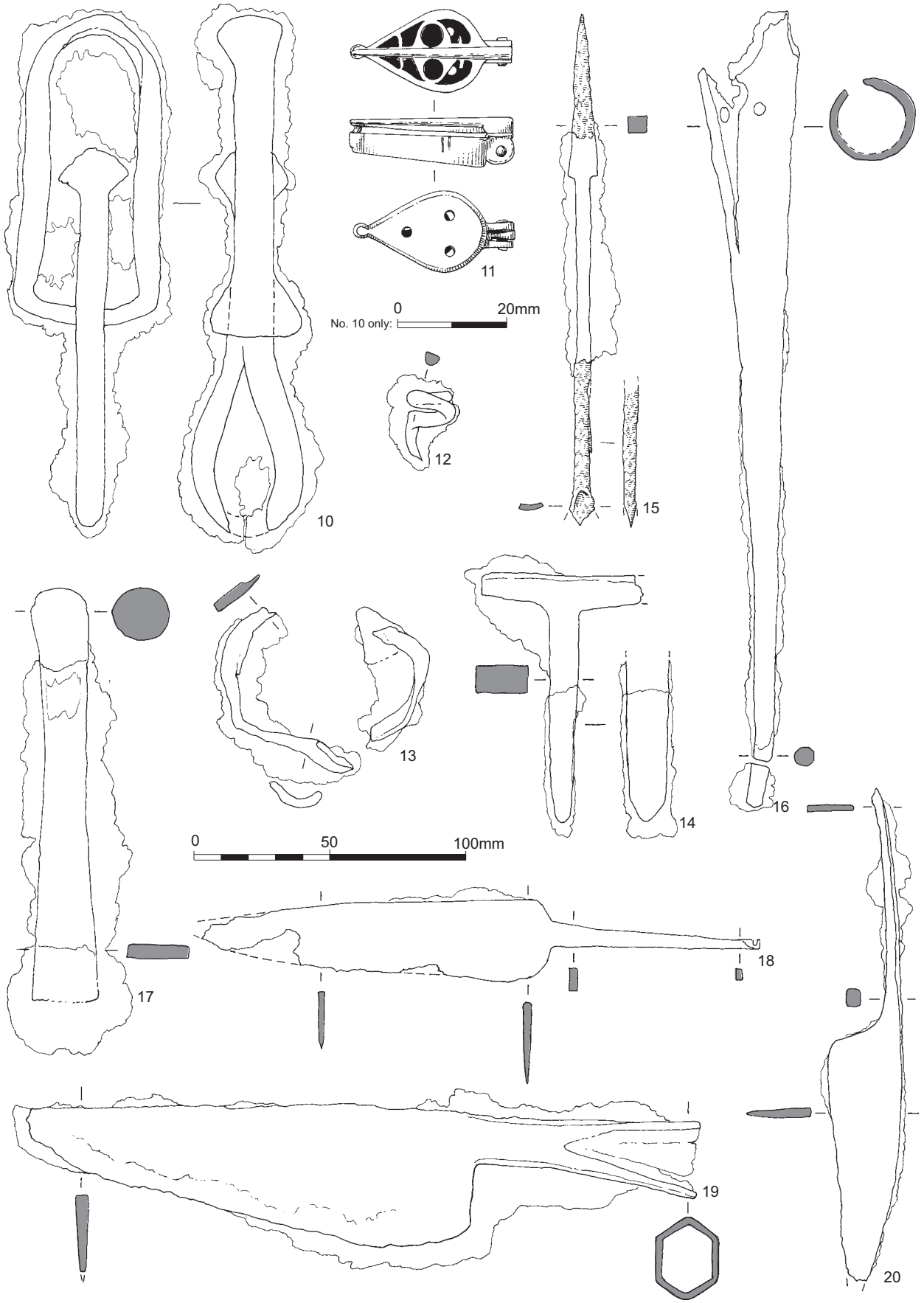


Figure 124 Northfleet: household utensils, objects related to writing, transport and buildings, and tools 10–20

corrosion rather than full metal. This may be due to weakness of metal in the area of strongest bending during making of the loop). Iron. SF 11018, Context 10073, quarry pit 10061, SG 16807, Early/mid-Roman (VP2).

Swivels and loops are usually assumed to have been used for the suspension of hanging kettles or cauldrons from a chain (cf Manning 1985a, 138, pl 64, S4), but a swivel and loop – with a much longer loop and twisted sides – from late 7th/early 8th century grave 1 at Eschwege-Niederhone, Germany, was interpreted as being part of a dog chain (Roth and Wamers 1984, 159; Koch et al 1996, 1019, no 10). At Springhead a swivel and loop was found together with a chain in mid-Roman quarry pit 10016 (see Chap 3, SF 20552).

Weighing and Measuring

Only five possible lead weights were recorded from contexts phased as Roman; they are discussed in conjunction with the Saxon weights in Vol 4.

Writing and Written Communication

Apart from seal-box Cat No 11, no other evidence for writing, like styli, was recognised in the metalwork assemblage from Northfleet, while at least one copper alloy and five iron styli have been recorded at Springhead (*ibid*, Cat No 204–5). The possible use of what at first glance appear to be ox goads as ink pen nibs is discussed under Cat No 12.

11. Seal-box (Pl 21). Complete. Tear/pear-shaped. Two perforated lugs and axial rod hold hinge. Lid: tinned/silvered, openwork decoration in the shape of a *beneficarius* lance head. Three circular perforations in base, two rectangular notches at opposing points in side at right-angles to hinged lid axis. Copper alloy. SF 11046, Colluvial layer 10031. Late Roman.

Plate 21 Seal-box (Cat No 11) L 30 mm. Photo: E Brook

While the tear- or pear shaped form of Cat No 11 is not unusual for seal-boxes (eg, Holmes 1995, 393, fig 2, 1–7; Tongue 2004, 27), the openwork decoration appears so far to be unique – an openwork fitting from Bancroft, described as a seal-box lid (Williams and Zeepvat 1994, 314, fig 147), seems rather to belong to a group of more or less identical fittings of as yet unknown function (Oldenstein 1976, 160, Taf 43, 425–6).

The peculiar lid decoration of Cat No 11 is reminiscent of a standard used for religious/cult purposes from Gauting, Germany (Wamser *et al* 2000, 419, no 207). However, the shape is better known from the *Benfiziarierlanzenspitzen*, a distinctive type of spearhead which has been identified on monuments erected for and by *beneficarii, frumentarii*, and *speculatores*. These *immunes* in the service of a provincial governor, who were responsible for policing, supply and special administrative duties, used these lance heads as rank insignia (Bishop and Coulston 2006, 152–3, fig 93, 13–14). Apart from the actual spearheads there is a growing corpus of small fittings and strap-ends of that shape, believed to be badges of office for the same group of officials (Oldenstein 1976, 152–5, Taf 39–40; nos 363 from Zugmantel and 385 from Buch are especially similar to the shape of the ornament on Cat No 11; another good example comes from the Vimose find in Denmark: Bishop and Coulston 2006, 32, fig 13, pl 7a). Together with another class of fittings, in the shape of ring pommel swords, these fittings are especially common in forts of the province of Germania superior, although spearhead fittings like Oldenstein 372/375 are also known from South Shields (Allason-Jones and Miket 1984, 205, fig 3.674) and Chesters (*ibid*, 204). Their date range covers the later 2nd and early 3rd centuries (Oldenstein 1976, 156–7).

The presence of a seal-box with an as yet unique decoration of a symbol used by state officials from another province poses the interesting question of whether the contact was established because Northfleet villa was the location of an unidentified official in communication with provincial or military officials in Upper Germany, or whether the villa estate may have supplied goods to that province on a commercial basis but was essentially a private enterprise. In this context it is interesting to note that three examples of a specific type of terret with croissant-like terminals were found at Springhead (see Chap 3, Cat Nos 220–2). The type is thus far confined to Raetia, the two Germanic provinces, with a focus in the Rhine–Main area and a possible manufacturing site in the legionary fort at Mainz, and eastern England, thus providing a further indication of links with a closely confined area of the empire.

Objects Associated with Transport

12. Ox goad. Roughly D-sectioned wire with a socket formed by one coil ending in a short point. Iron. SF 50514, Context 20307, ditch 20308, SG 20286, Mid-Roman.

While this object could certainly be used to drive oxen or other animals, it should seriously be considered whether such small ox goads (see also Gadebridge Park: Neal 1974, 164, fig 71, 404) may not in fact have been used as ink pen nibs or as lamp/candle holders. At *Vindolanda* three such 'ox-goad' pen nibs were found with a wooden shank still attached to the iron nib, some still with ink traces. A narrow hole bored down the

centre of the shank allowed a use similar to a fountain pen (Birley 2002, 35, fig 26). Larger examples, like that found at Springhead (Chap 3, Cat No 226) are, however, more likely to have been used for driving animals or as candle holders.

Building and Services

The quantity of at least 34 items recorded in this category is high compared to only three objects from Springhead. This is as a result of the excavation of a number of water pipe trenches. Apart from at least 27 pipe collars (plus further bulk-recorded fragments from three contexts) and four T-clamps, there is a possibly structural piece of lead with a deep grove along one edge (SF 11032) from colluvial layer 10090. An unidentified rounded piece of lead with a flange at right-angles (SF 12765) was found on the surface of the Roman foreshore and may be part of a lead fitting of a clay pipe; two such clay pipes (SFs 204019–20) were found joined by lead termini in pipe trench 200183, dated to mid-Roman Villa Phase 5.

13. Pipe collar with central ridge along entire perimeter, broken. Iron. SF 11681, Context 10772, ditch 10771, SG 15010, Mid-Roman (VP4).

See also SFs 10930, 10938, 11620–1, 11649, 11675–84, 13307, 13308, 13321–2, 13325, 13331–4, 13442, 204022–3, and probably 11632.

All individually recorded pipe collars were found in contexts belonging to mid-Roman Villa Phase 4. Such collars were used to join bored wooden pipes, completely preserved examples of which were found in London, eg, near the Bank of England (Wheeler 1930, pl 12; Merrifield 1965, 148; 239, no 170; pl 109). In 16 of the 27 collars from Northfleet a central ridge along the entire perimeter was discernible, this assured an equal penetration when the wooden pipes were joined (Manning 1985a, 128). Ten collars were sufficiently well preserved to measure their diameters which clustered around 110 mm, the narrowest being 84 mm, the widest 169 mm. The latter suggests that there was a third diameter group additional to those of 85 mm and 110 mm commonly observed elsewhere in Britain (*ibid*, 129). An equally large pipe collar with a diameter of 165 mm was found at Gadebridge Park villa (Manning 1974, 160, fig 70, 375).

14. T-clamp. Rectangular sectioned stem and arms. Mortar attached to arms. Iron. SF 204006, deposit 200020. Late Roman.

See also SFs 13444, 50505, 204008.

T-clamps could have served a wide variety of functions, although they are most commonly associated with the fixture of tiles, eg, box flue tiles to the walls of bath-houses (Manning 1985a, 132). Cat No 14 and SF 204008 were both found in the demolition material to the east of the bath-house.

Tools

Of the 17 tools, five (Cat No 19 and SFs 10995, 11709, 50504, 50508) were found in Saxon colluvial layers or secondary pit fills, and a further two are unstratified (SFs 13414 and 50521). As these objects are not intrinsically datable, some of them may well be residual Roman objects. Among the crafts represented by these tools only carpentry can be identified with certainty through drill bit Cat No 15 and the possible mortise chisel Cat No 16, which has a good comparison in a chisel with rectangular point from Camerton (Jackson 1990, pl. 23, 241). The conditions of the other chisels make it impossible to distinguish between tools for carpenters and masons (Manning 1985, 21). SF 50508 has a square sectioned shaft and a worked head; it probably is a smith's punch or chisel (*cf* Manning 1985a, pl 5, A23–6), and SF 50506 could have had a similar use. Other smith's tools are the forging die Cat No 43 and folding stake Cat No 44, discussed below under 'objects and waste material associated with metalworking'. Knives and shears will have served a variety of crafts, while cleavers probably have been used for butchering meat. Knives are exceptionally rare at Northfleet, only represented with one item in the assemblage (an additional, probably modern knife was found unstratified), compared to seven knives from Lullingstone villa (Meates 1987, 98) and at least 43 knives from Gadebridge Park villa (Manning 1974, 167–71).

15. Drill bit, flattens to point but tip missing, Uncertain whether spoon or diamond shaped bit. Iron. SF 11623, Context 10717, ditch 10716, SG 15750, Mid-Roman (VP4).
16. ?Mortise chisel. Socketed, conical subcircular sectioned chisel with worked blunt flat point (now broken off, but pieces join). A fire shovel with triangular blade from Compiègne, France, has a very similar socket and shaft (Champion 1916, pl 11, 28987). Iron. SF 11633, Context 10660, room 16632, Late Roman (VP6).
17. Possible chisel. Iron. SF 20929, Context 20074, ditch 20073, SG 20286, Mid-Roman.

See also SFs 50504, 50509 and possibly 13458.

18. Knife Manning type 16. Triangular blade with uneven shoulder, tang on the mid-line of blade. Tip missing. Iron. SF 13374, structural collapse 15372, SG 16754, Late Roman (VP7).

See also SF 13414 (but too corroded for identification).

19. Cleaver Manning type 3. Large socketed knife with triangular blade, tip missing. Opening of socket hexagonal. Straight back continues line of handle. Edge of blade at shoulder rounded. Iron. SF 10965, colluvial deposit 10028. Saxon.

Table 57 Northfleet metal finds: overview of identifiable nail types

Manning Type	1a	1b	2	5	6	7	10	Inchtut-hill A	Total
Bulk recorded	7	95	1	1	0	1	3	0	108
Indiv recorded	6	80	0	0	1	1	48	1	137
Total	13	175	1	1	1	2	51	1	245

Such cleavers have been found in Roman contexts at, for instance, Woodcutts, Baginton, Silchester, and Alchester; the hexagonal socket finds an exact parallel at London (Manning 1985a, 122, pl 57, Q100).

20. One blade and arm of U-shaped spring shears. Blade with curved back and straight cutting edge. Arm widening towards the missing U-bend. Iron. SF 13435, structural collapse 15037. Late Roman.

With a length of more than 178 mm these shears belong to Manning's common type 2 which would have been used for sheep shearing, cloth cutting etc (*ibid*, 34).

Fasteners and Fittings

This category includes a great variety of fixtures and fittings for which it is not normally possibly to assign a definite function. On Roman period sites, this finds category is usually the largest as it includes nails. Like the nails, the other objects grouped here will have had many uses which, if known would place them in a number of other categories, eg, 'buildings and services' for nails used in joinery and roof construction, while others will have been part of boxes or other furniture.

Nails, Bolts, Studs, and Bosses

Approximately 857 iron nail fragments were bulk recorded, a further 154 entries comprise individually recorded nails. The nails are generally in a poor state of preservation. Where possible, identification according to Manning (1985a, 133–5, fig 32) has been attempted from the radiographs; an overview is given in Table 57. With a length of at least 220 mm, Cat No 22 is the longest nail; its dimensions place it among group A from Inchtuthil (Manning 1985b, 289), and it was almost certainly used in the joining of substantial timbers. None of the remaining nails is longer than 113 mm. The typological identification is heavily influenced by preservation, making it more difficult to reach certainty about forms like Manning types 2–5 which all have very distinctive heads easily affected by corrosion; eg, an L-shaped type 4 nail could be a T-shaped type 3 nail with half the head missing. As most of the nails were found in colluvial and/or destruction layers no attempt has been undertaken to map their distribution in order to reconstruct structural details as has for example been attempted at Uley. There, it has been suggested the position of roof timbers fallen during a fire may be reflected in the distribution of nails (Woodward and Leach 1993, 60–1, fig 53).

Hobnails (Manning type 10) have been included in this table, but as part of shoes they are grouped under 'personal adornment and dress' in the database.

(Fig 125)

21. Nail, with ceramic sherd attached by corrosion (Manning type 6). Iron. SF 20947, Context 20405, pit 20404, SG 20786, Mid-Roman.
22. Long nail (Inchtuthil A), sub-square shaft with slightly ?pyramidal head. Iron. SF 50500, clay layer 16421, SG 16755, Late Roman (VP7).
23. Bolt with conical/pyramidal head (L 68 mm). Iron. SF 50510 a), Context 10289.
24. Bolt with domed head (L 51 mm). Iron. SF 50510 b), Context 10289.
25. Boss. Human head on front: two snakes intertwined in hair above forehead. Hollow on reverse, corrosion products from iron shaft fragments adhere. Copper alloy. SF 10985, Colluvial deposit 10042. Late Roman.

The snakes in the hair identify the head as that of Medusa. Similar bosses but with wings rather than snakes in the hair are known from Canterbury, Marlow Car Park (Henig in Blockley *et al* 1995, 1031–2, fig 439, 437) and Beeston with Bittering, Norfolk (Worrell 2006, 449, fig 18). *Gorgoneia* were also frequently worn as jewellery, presumably for their apotropaic properties, exemplified by jet pendants showing Medusa's head with snakes from Strood near Rochester, Kent (Henig 1984, 185, fig 91) or London Eastern Cemetery (Barber and Bowsher 2000, 227, fig B709, 4).

Studs, Hinges, and Hooks

Seven studs of differing types include a possible setting for a headstud brooch (SF 13327; *cf* Crummy 1983, 118, fig 121, 3217), a riveted stud (SF 20919) like Oldenstein 561 (Oldenstein 1976, Taf 49; *cf* Crummy 1983, 117, fig 120, 3215), and two dome-headed studs (SFs 13326 and 13351; *cf* Crummy 1983, 117, fig 120, 3173) which could be used in upholstery or on a box. A spindle-shaped stud with a sub-rectangular hole for an iron shaft (SF 140002, *cf* Crummy 1983, 125, fig 137, 4143, but with cast shaft) was found in an early Roman possible trackway surface (100229). From Saxon colluvial deposits come a flat-headed riveted stud (SF 11061) similar to Oldenstein 494–8 (Oldenstein 1976, Taf 47) and an example (SF 11720) with a flat head, three concentric rings, and a rectangular shaft like Oldenstein 530 (*ibid*, Taf 48).

Only three hinges were identified. Cat No 26 is one arm of a strap-hinge which would have fitted into a double-looped counter piece (*cf* Manning 1985a, 127, pl 59, R13), perhaps used for the lid of a small box. The

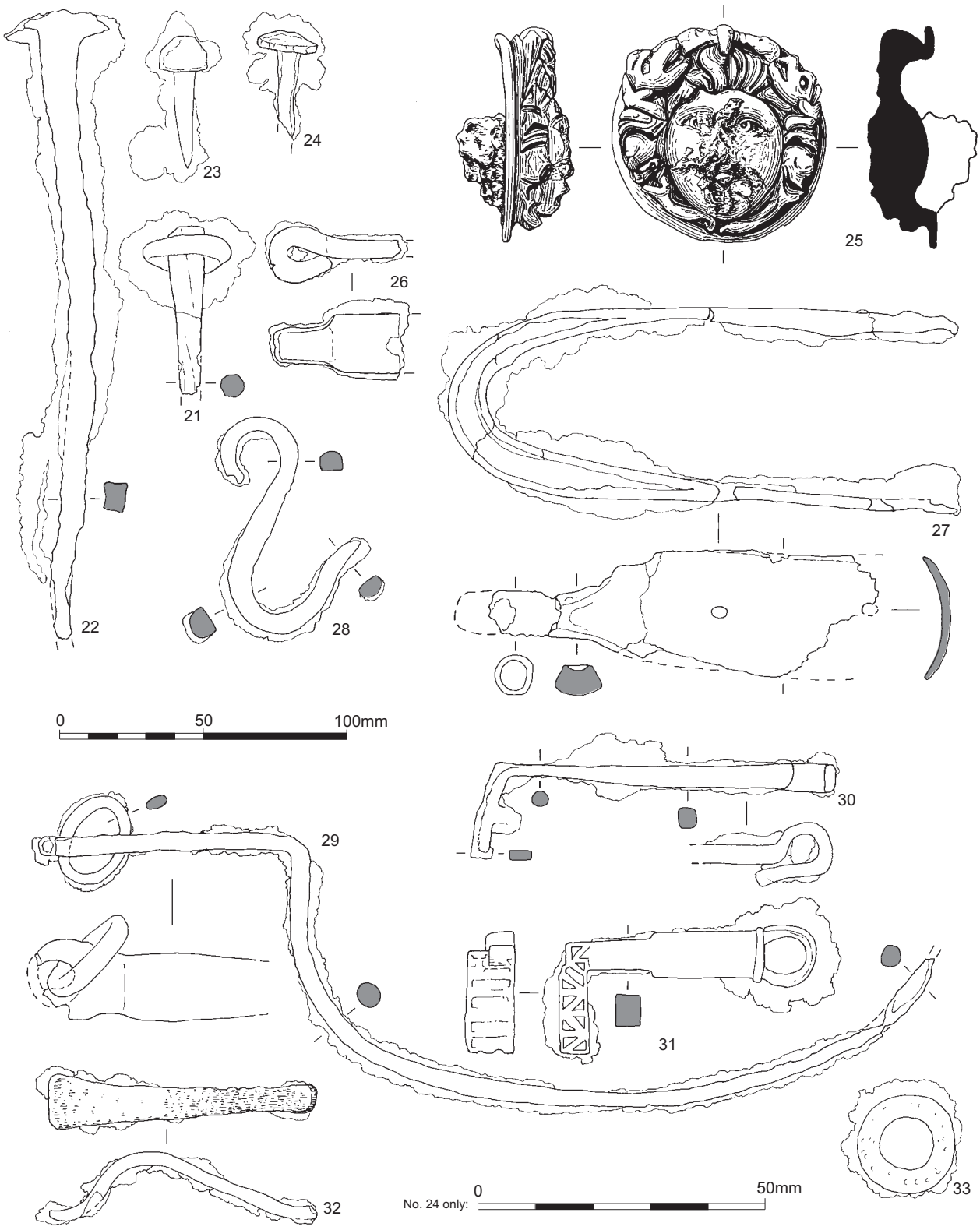


Figure 125 Northfleet: fasteners and fittings 21–33

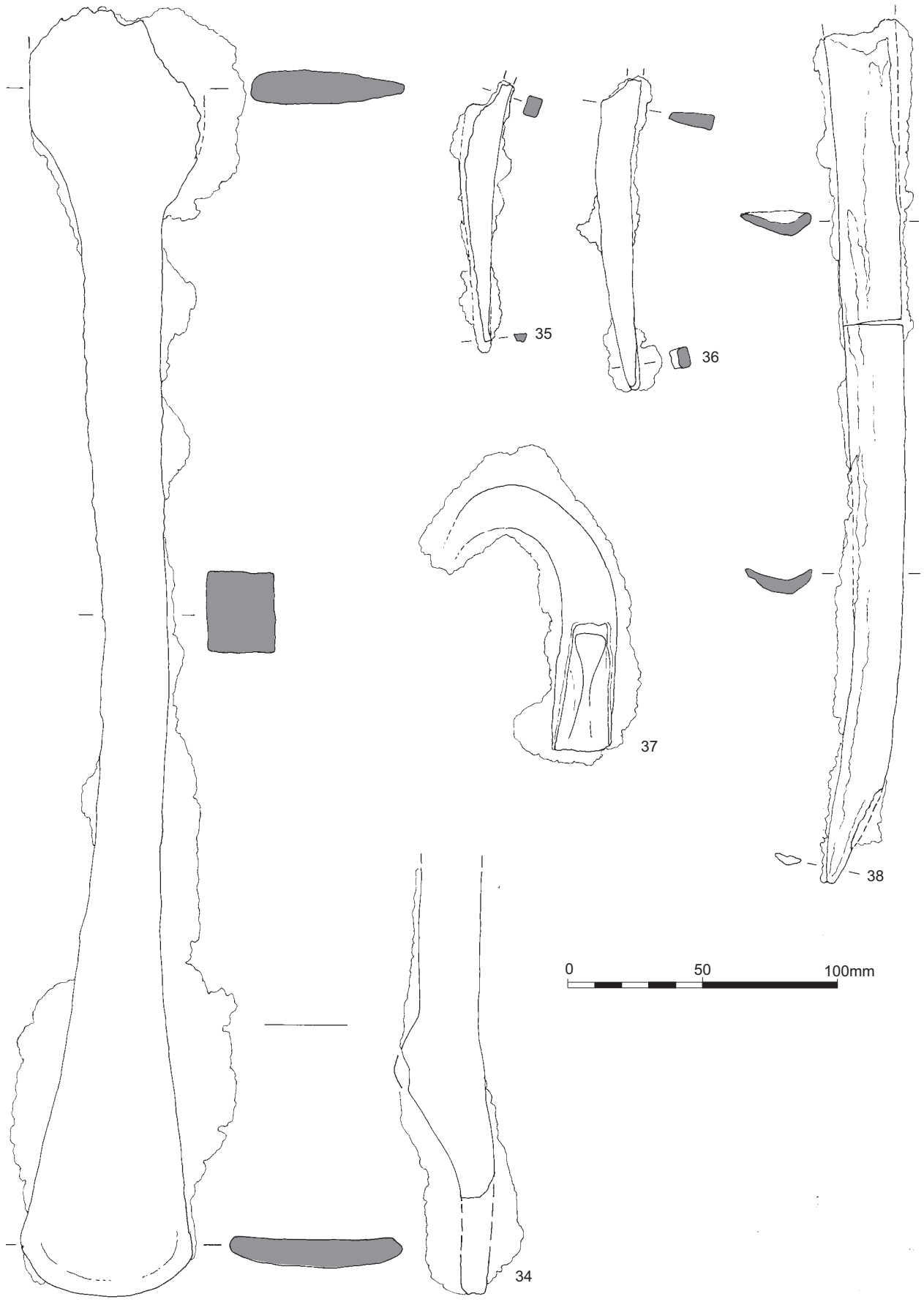


Figure 126 Northfleet: agricultural implements 34–8

pair of drop-hinges Cat No 27 and SF 13477 was found in an early silting deposit of a wood-lined well (16731) and could have been used for a door or lid of that installation; a similar hinge from Lullingstone villa was interpreted as indicating the position of a door (Meates 1987, 94, fig 41, 231).

26. Strap-hinge. Inner loop and part of arm with half of nail-hole remaining. Arm possibly with slightly tapering sides. Iron. SF 13472, Context 15187, ditch 15186, SG 15010. Mid-Roman (VP4).
27. Drop-hinge. Parallel-sided arms of equal length. U-curve narrower and thicker than arms. Iron. SF 13485, Context 16597, foundation cut 16170, well 16731. Early/mid-Roman (VP1/2).

See also SF 13477 from the same context.

28. S-shaped hook, subrectangular section tapering towards ends. One end bent to form open loop, the other parallel with middle part of hook, tip everted. Iron. SF 11595, Context 10570, pit 10569. Mid-Roman.

Latchlifters and Keys

Only one latchlifter but four keys were found, two of the latter in Saxon layers: Cat No 30 in colluvial layers and a *fleur-de-lys* shaped copper alloy handle (SF 12766) in the backfill of the Saxon mill. A similar key is known from the Merovingian settlement of Gennep, Netherlands (Theuws in Koch *et al* 1996, 827, no 21.h), and a socketed key handle comes from grave 9 in the early Saxon cemetery at Mitcham (Wheeler 1935, 123, fig 11, 3) where it was interpreted as being a re-used Roman object. Such keys were certainly in use by the late 1st century AD, eg, at Richborough (Bushe-Fox 1949, pl 34, 86), and at Lullingstone villa one was found in a 2nd century level (Meates 1987, 76, fig 32, 186). Considering the vicinity of the mill to Northfleet villa it is, therefore, not inconceivable that SF 12766 was a re-used or residual object. A T-shaped lift key (SF 13375) was found in later 4th century rubble layer 16754. The slide key Cat No 31 comes from the same well context as the drop hinges (see Cat No 27).

29. Latchlifter. Circular sectioned shank, tip missing. Flat handle with convex sides, loop at end with complete ring. Iron. SF 11634, Context 10660, room 16632. Late Roman (VP6).
30. L-shaped lift key. Rolled bow and shank tapering towards bit (what appears to be a rearward tooth is corrosion). Iron. SF 11591, Context 10091. Saxon.
31. Slide-key. Rectangular flat handle with eye at end wider, set off from handle by transverse moulding. Straight bit with transverse teeth linked by diagonal ridges (Manning type 2, *cf* Manning 1985a, 93, pl 41, O48.50). Iron. SF 13486, Context 16597, foundation cut 16170, well 16731. Early/mid-Roman (VP1/2).

Other Fittings

32. Possible handle. Tapering, S-bent strip, narrower end almost straight. Iron. SF 11552, Context 10290. Saxon.
33. Annular disc (washer). Iron. SF 204002, Context 200041. Late Roman surface.

Nine rings (copper alloy: SFs 10936, 10993, 11082, 11541, 11669, 13385; iron: SF 10954; lead: SF 11686; ?pewter: SF 20933) were recorded, but none was found in a functional association that would allow an identification of its purpose. Only two joiner's dogs were identified in the assemblage (SF 50517 and one from context 10275).

Objects Associated with Agriculture, Horticulture, and Animal Husbandry

The 13 objects in this category indicate a variety of activities, including weeding, harvesting, and (possibly) ploughing and fishing. The latter is only indicated by seven pieces of rolled lead strips (SFs 11723, 11724, 11745, 12717, 12719, 12733, 4018209) which may be net sinkers. Apart from one, they were all found on the interface between alluvial layers and the flint and gravel surface on the Wetlands site at Northfleet. It is therefore not certain whether these net sinkers date to the Roman or later periods.

(Fig 126)

34. Possible plough share. Thick square sectioned bar, one splayed end, one slightly bent end with wood preserved by corrosion products; not clear whether just fused to bar by corrosion or whether originally deliberately jointed/fitted there. Iron. SF 204017, Context 200043, bath-house room 200055. Mid-Roman (VP4).

The identification of Cat No 34 is uncertain. Rees (1979, 171, fig 66) illustrates three tanged iron tools with oval or spatula-shaped ends which are classed as her type 2c and only tentatively identified as plough shares, but she also discusses their possible use as pokers (*ibid*, 57; 154, fig 49). With a weight of 2.2 kg the Northfleet piece would certainly be too heavy to be used as a poker, but the fact that both its ends widen set it apart from the examples quoted above. Perhaps its uses are more closely related to the furnishings of the bath-house where it was found in the primary fill of the caldarium (200055).

Rakes

According to Rees (1979, 484–5) iron rake prongs appear to be a Roman introduction into Britain and will primarily have been used for gathering corn stalks and hay. Rake prongs are difficult to identify when corroded as they become virtually indistinguishable from the

ubiquitous nail shafts. A complete rake head was found at Newstead in a 1st century AD context (*ibid*, 615, fig 256).

35. Rake prong. Tine and beginning of tang. Iron. SF 10994, Context 10033. Saxon.
36. Probable rake prong. Tang missing, slightly curved tapering tine remains. Iron. SF 13353, Context 15145. Mid-Roman.

SF 50519 may be a possible third rake prong.

Cutting Tools

37. Small 'reaping' hook with hooked blade, flanged socket, (Rees type 1a, Manning type 2). Iron. SF 50503, Context 10046, boundary ditch 10205, SG 16698. Late Roman (VP6).
38. Straight scythe, base of blade on the left. Iron. SF 50501, Context 11508, SG 19652 (other). Saxon.

Whether this is a residual Roman or later scythe remains uncertain; it was found in the Wetlands site in a layer with a thick deposit of heavy, compact reed peat. Similar blade shapes and profiles are, however, certainly known by the Roman period (Rees 1979, 473–80; 593–9, figs 237–43; Manning 1985a, pl 21).

Military Equipment

It is not unusual to find small numbers of weapons on civilian sites, see for instance a spearhead and two barbed arrowheads (medieval?) from Lullingstone villa (Meates 1987, 103, fig 47, 287–9) or the spear, ballista, and arrowheads from Fishbourne (Cunliffe 1971, 135, fig 60, 47–50). But while ballista heads are most likely military items and as such of little civilian use, spear and arrowheads could be hunting weapons.

Unfortunately, the five items in this category are all residual finds: the two spearheads were found in the modern backfill of the earlier excavations, the button-and-loop fastener comes from the dumping overlying the Roman quay, the *armilla* derives from the demolition material to the east of the bath-house, and a possible spearhead blade (SF 11522) was found in the backfill of Saxon SFB 10271, thus possibly of Saxon rather than Roman date.

(Fig 127)

39. Spearhead. Leaf-shaped blade without middle ridge (but x-ray photo shows more contrast in centre) socket of similar length to blade. Base almost as wide as blade. Iron. SF 10907, Context 10003, cut of modern excavation 10167, SG 16002 (well). Modern.

Socketed spearheads with flat blades without ridges are not very common, and the stronger contrast in the centre of the blade visible in the radiograph suggests that the profile may originally have been ribbed. However, comparisons without midrib can be found, eg, at Borough Hill near Daventry, Northamptonshire, or Worth in Kent (Manning 1985a, pl 76, V28.37), but these are both fragmented and may once have had raised centres. If Cat No 39 originally had a raised profile it would belong to Manning's group IIA of socketed, leaf-shaped spearheads for which he lists many examples from Hod Hill, thus dated to the mid-1st century AD (*ibid*, 165–6, pl 78, esp V84). Similar spearheads have, however, also been found in 3rd century contexts at Caerleon (Bishop and Coulston 2006, 152, fig 93, 3–5).

40. Spearhead. Leaf-shaped blade with wide rounded shoulders and midrib, Two-thirds of blade bent at an angle of *c* 100°. Tip missing. Socket with narrow neck and with nail hole near base (L 70 mm). Overall L of spearhead at least 212 mm. Iron. SF 13323, Context 10570, Intervention 10569 (pit). Mid-Roman.

The pronounced shoulders and narrow neck of Cat No 40 link it to an Antonine spearhead from Inveresk and a mid-1st century example from Hod Hill (Bishop and Coulston 2006, 131, fig 75, 4; Manning 1985a, pl 81, V139). Manning points out that the narrow neck, which in the Hod Hill spearhead is even more extreme than in Cat No 40, would have made bending on impact almost inevitable; possibly a desired effect. Other narrow-necked spearheads are known from Newstead (*ibid*, 170).

41. Button-and-loop fastener (Wild 1970, class VIb). Square plate at one end, groove around edge. Triangular shank, attached to the base at the back, with triangular perforation towards end, worn out at base. Copper alloy. SF 12712, Context 12618, SG 19651 (deposits associated with Roman quay). Late Roman (VP6).

Although the exact function of button-and-loop fasteners still remains open to debate, they are predominantly found on military sites, suggesting they were part of military equipment (Wild 1970, 146; for a discussion of the origin and distribution see also MacGregor 1976, 129–33). Suggested uses include such as dress fasteners, harness fittings (Wild 1970, 145) or belt fittings employed for the suspension of swords or daggers (Oldenstein 1976, 186). Plain fasteners with rectangular heads like Cat No 41 belong to Wild's class VIb which is predominantly found in northern Britain. Apart from one unstratified example from a late Flavian bath-house at Red House near Corbridge, the majority comes from 2nd century contexts. One from Traprain Law was associated with mid–late 4th century coins. The similarly late context date for the Northfleet specimen is explained by its occurrence as a residual find in the dump layers overlying the Roman quay.

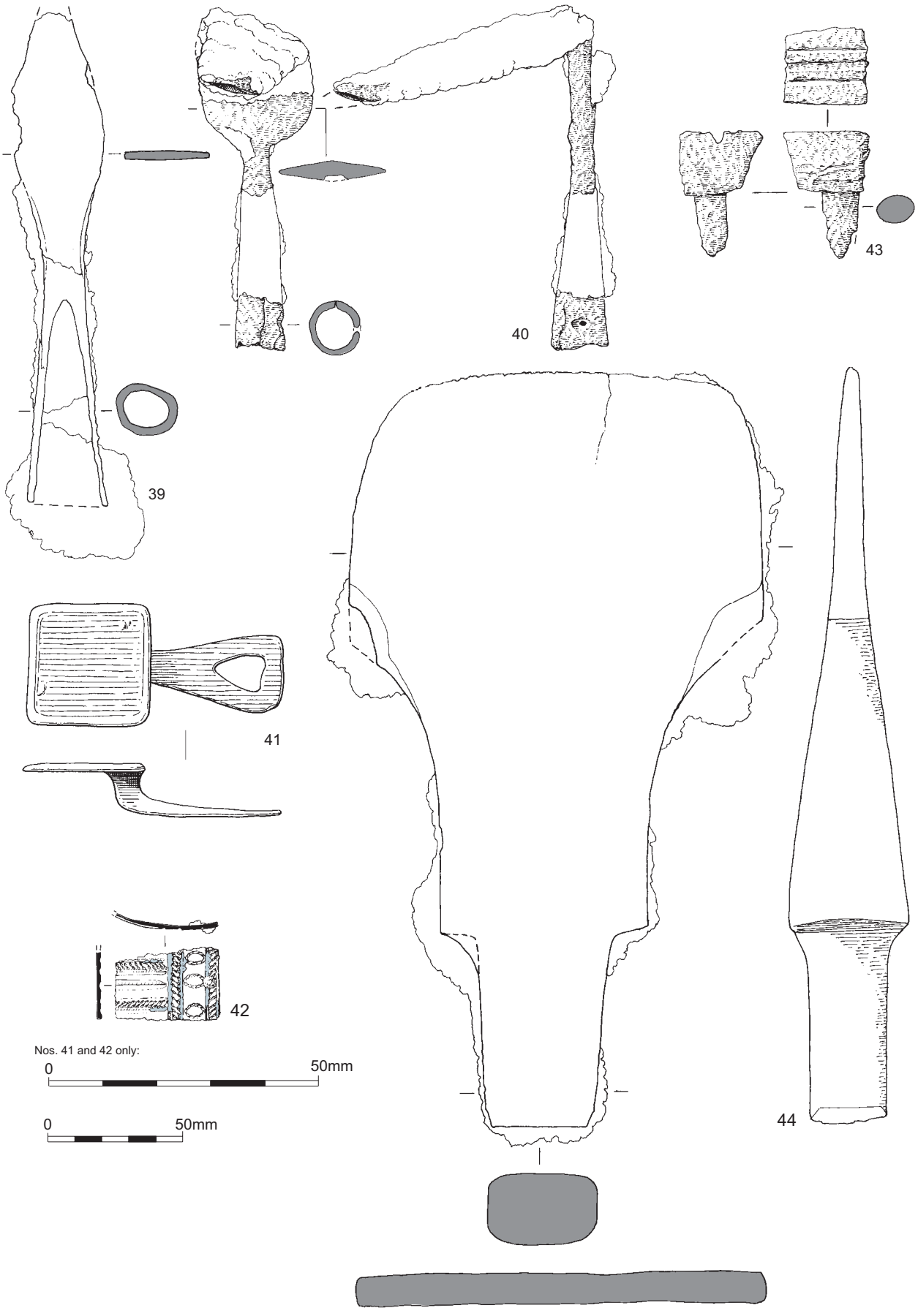


Figure 127 Northfleet: military equipment and objects associated with metalworking 39–44

Plate 22 Terminal of bronze *armilla* (Cat No 42) with remains of silver plating on ornamental bands
L 19 mm. Photo: E Wakefield

42. *Armilla* (Pl 22). End fragment of slightly curved metal strip, one side broken off at oblique angle. Of rectangular cross-section. Decoration of two parallel bands punched with S-shapes set nearer the sides, a wider moulding runs along the centre. The terminal is distinguished by three tear/petal shapes incised set between two transverse S-punched bands. There appear to be remains of silver (rather than whitemetal) plating on all bands and probably also on the tear/petal shapes. Copper alloy. SF 204007, Context 200020 (layer). Late Roman.

Cat No 42 is a terminal fragment of a flat, 14 mm wide metal band. Rather than being a bracelet, it has recently been suggested that such pieces are fragments of *armillae*, ie, military awards given to soldiers taking part in the campaigns during the Roman Conquest of Britain (Crummy 2005a, 98). If this interpretation is correct, the Northfleet example is likely to have been long lost before its final deposition as it was found in late Roman demolition layers to the east of the bath-house. *Armillae* have thus far been confined to the East of England, with only one from Kent found at Richborough (*ibid*, 94, fig 2; 98). A further 11 examples have recently been identified from Springhead, making it the largest collection from a single site (Chap 3, Cat Nos 145–6). Crummy (2005a, 95–6, fig 3) distinguished four groups (A–D) of *armillae*, depending on the number of wreaths or textured bands: group A has two bands, usually set towards the middle. This is the most common group, also borne out at Springhead where five examples belong to this group. With its two more laterally placed bands Cat No 42 may be a variation of the same group. A second metal strip fragment (SF 10905) appears superficially similar to this group of objects, but the detail of its decoration cannot be matched in the canon of known *armillae*; it was found in the modern backfill of earlier excavations of well 16002.

Objects and Waste Material associated with Metalworking

Of the 17 items in this category, the four iron objects can reasonably be associated with smithing: the anvil accessories Cat Nos 43–4 for specialist tasks during smithing and the two bars (SFs 50507 and 50520) as raw material. A small copper alloy bar (SF 11747) with deliberately broken ends could equally have been used as raw material. None of the iron objects was found in a context indicative of a smithy, although all were residual finds from Roman layers. The 12 objects (plus 32 bulk recorded) of lead sheet offcuts, trimmings, and waste were predominantly found in colluvial or alluvial layers. The offcuts and trimmings are probably indicators of the installation of lead fittings in Roman buildings in the vicinity, while the waste is most likely related to their destruction (*cf* Mould 1998, 125).

43. Swage block. Inverted pyramidal shape (but uneven angles) with flat base and top. Oval sectioned stem to one side of base, tip missing. Transverse grove in middle of top. Iron. SF 11631, Context 10696. Middle Roman.

Such implements, still in use nowadays, are employed in the production of bars of a section defined by the groove. The operation of this tool usually requires two craftsmen: a smith and a hammer man. While a block like Cat No 43 is set into the hardy or pritchel hole of the anvil, a similarly shaped swage hammer is held by the smith who also holds the work piece and a hammer man hits the swage hammer (Mutz 1976, 19, Abb 14). Evidence for the use of such tools is very rare, but a swage sledge-hammer with a 6 mm wide U-shaped groove was found as part of the Walthamstow Abbey hoard, dated to the late 1st century BC/early 1st century AD (Manning 1985a, 5, pl 1, A4). A possible small anvil, but with cylindrical head and apparently no groove, comes from Gadebridge Park villa (Neal 1974, 170, fig 73, 480. Neal also mentions one with rectangular head from Woodcuts); a plain block is known from one of the villas in the Forêt de Compiègne in France (Champion 1916, pl 5, 28996). A swage block found in Viking period Hedeby in Germany has a similar groove to Cat No 43, but the block itself is much taller (Armbruster 2004, 111, fig 1, 5; Armbruster with Eilbracht 2006, 38, fig 26, 5).

44. ?Fluting stake. Substantial sub-square blade with working edge slightly rounded near the corners. The short rectangular sectioned neck sits above a square-sectioned shaft. Iron. SF 204027, Context 200104 (layer), SG 200185 (wall), VP5. Roman (though with possibility of modern intrusion).

The identification of Cat No 44 is only tentative, but it would certainly be possible to use the object to raise ridges by hammering a metal sheet along the upper face of the object. If correct, it would be a very substantial tool compared to modern fluting stakes. These come in a variety of forms depending on the use, but usually the head does not have a rectangular base like Cat No 44.

Comparison of the Metalwork Assemblages from Springhead and Northfleet

A comparison of the assemblages from Springhead and Northfleet is impeded by the fact that the metal finds from the Northfleet villa represent only part of the assemblage from the site. Unfortunately, the finds from earlier excavations, as well as their analysis in a recent Durham thesis (R Jarrett), were not available for consultation in the scope of the present study. Thus, a meaningful comparison based on the quantitative variations between the two assemblages will have to be postponed for the time being. Nevertheless, it is possible to make some more general statements comparing the variations and/or similarities in chronology, origin and activities indicated by the metalwork assemblages from both sites.

At both sites, there are brooches that could date as early as the last decades of the 1st century BC (possible: Springhead Cat No 12, probable: Northfleet Cat No 1), and both indicate Continental links. However, the majority of brooches belongs to the period from around the Roman Conquest to the 1st half of the 2nd century. Commensurate with the generally observable pattern in the north-western provinces indicating a decline in the use of brooches towards the later Roman period the number of 3rd and 4th century brooches is small at Springhead, and at Northfleet none needs to be dated younger than the 1st half of the 2nd century. At Northfleet, the only personal objects belonging to the later Roman period are bracelets, whereas at Springhead the range of object types remains wider, including brooches, bracelets, finger-rings, and possibly pins and ear-rings.

Considering the small number of identifiable object types from Northfleet, the range of implements indicating different trades and activities is relatively extensive and includes specialist black smithing tools, agricultural implements like scythe, reaping hook, rake, and possibly a plough share, but with only two the number of knives and cleavers is peculiarly small, both compared to Springhead but also other Roman villas like Lullingstone *c* 13 km to the south-west. An added complication in the Northfleet assemblage is the fact that objects recovered from the colluvial layers are not necessarily Roman, although many will have been incorporated in these as part of the debris from the villa, but could be younger, like the sythe.

An interesting glimpse at the possible status of the Northfleet villa is provided by the seal-box from Northfleet whose unusual open-work decoration is in the shape of a *beneficarius* lancehead, a symbol used by state officials in the service of provincial or military officials in Upper Germany and Raetia. Perhaps the villa was the location of an unidentified official in communication with officials in Upper Germany, or the villa estate may have supplied goods to that province on a commercial basis but was essentially a private enterprise. Along similar lines, Henig (in Timby 1998, 187) discusses the possibility of Kingscote, Gloucestershire, as the centre of an imperial estate based on the discovery of a cube seal of the second half of the 3rd century and a steelyard weight probably portraying Constantine's wife Fausta (ob 326; *ibid*, 185).

Despite the small size of the Northfleet metalwork assemblage, identification of the likely provenance – mainly the personal objects and seal-box – indicates that the objects are not confined to the immediate region but suggest connections to other provinces of the Empire, notably the Rhineland and eastern Gaul.

At Springhead, the regional aspect of the assemblage is clearly dominant, not least because of the large numbers of brooches and other personal objects with predominantly south-east English distribution like, for example, the one- and two-piece Colchester brooches or most of the pins. Certain variants, like the Nauheim-derivative brooches with wavy-line decoration or the ring-in-triangle 'eye' motif found in a number of two-piece Colchester brooches, have distributions centring on Springhead. On the other hand, types like the Aucissa, Hod Hill, and many of the plate brooches bear clear witness to the fact that Britain, and especially the south-east, had close links with the adjoining north-western Roman provinces on the Continent, commensurate and to be expected of a site located at two trade and traffic routes of transregional significance for the British province, namely Watling Street and the lower Thames

However, not least due to its size, the Springhead assemblage also shows influences, or visitors to the shrines and temples, from areas of Britain not represented – or not visible – in the assemblage from Northfleet. Among them are a number of T-shaped and trumpet-headed brooches with a more southern or south-western British focus. This general pattern appears to continue throughout the Roman period, but the quantities of closely identifiable, chronologically and typologically distinctive metal finds decreases significantly during the later 2nd and 3rd centuries, with just over a dozen objects certainly belonging to the late 3rd and 4th centuries.

Chapter 5

Slag

by Phil Andrews

The slag derives from six fieldwork events: Springhead (ARC SPH00; the Sanctuary), Springhead Nursery (ARC SHN02; the Roadside settlement), Ebbsfleet Valley Detailed Mitigation (ARC EBB01; Northfleet villa), Ebbsfleet River Crossing (ARC ERC01), 342 Watching Brief East (ARC 342E02) and non-HS1 site Springhead Nursery (W51724; part of the Roadside settlement). Together, these assemblages amount to approximately 223.25 kg, with just under 75% of this total weight coming from Springhead Nursery (ARC SHN02/W51724). All of the material derives from ironworking, with virtually all reflecting forging/smithing, and a small assemblage (from ARC ERC01) indicating iron smelting. With the exception of a tiny quantity from early Saxon contexts (which may be residual) all of the material derives from Roman contexts and represents a significant amount of evidence for iron smithing in this period. At Springhead Nursery (ARC SHN02) – the Roadside settlement – the location of at least one probable smithy has been identified, on the basis of slag concentrations, and another smithy has been tentatively identified at ARC SPH00 to the east, pre-dating the Sanctuary complex.

Methods

Most of the slag was recovered as bulk finds during the hand excavation of archaeological features and deposits (none was discarded), although the assemblage also includes pieces from the >5.6 mm fraction of sieved environmental and artefact samples. Assessment of the material involved visual scanning and quantification by slag type (eg, smelting, smithing, fuel-ash slag, etc) within each context (McDonnell 1983; 1995; Tylecote 1986, table 7). Smithing hearth bottoms have been counted, weighed, and measured (full details of weights and measurements in archive). Some smaller fractions from bulk environmental samples have been tested (by magnet) for the presence of hammerscale.

Results

The total assemblage collected from Springhead and Northfleet amounts to approximately 223.25 kg (see Table 58). This comprises 39.12 kg from Springhead Sanctuary, 152.59 kg from the Roadside settlement, 15.78 kg from the Northfleet Villa site, 13.22 kg from Ebbsfleet River Crossing (ARC ERC01), 1.13 kg from 342 Watching Brief East (ARC 342E02) and 1.41 kg from non-HS1 site Springhead Nursery (W51724).

Virtually all of the material derives from ironworking, with most reflecting forging/smithing and only a small assemblage (from ARC ERC01) indicating iron smelting. Debris deriving from smithing includes a large number of whole or fragmentary smithing hearth bottoms (SHBs), the hemispherical-shaped buns of slag which are likely to have formed in the base of smithing hearths. The remainder of what has been classified as smithing slag comprises mostly small, irregular pieces – some at least likely to be fragments of SHBs – occasionally slightly glassy in appearance, often vesicular, and with no clear flow structure. A few pieces were noticeably denser than the rest but there was no indication that any of this represented smelting slag. Although traces of hearth lining were sometimes present there were, surprisingly, no fragments with any clear

Table 58 Slag Quantification by site (kg)

Event Name	Smelting	Smithing/ (SHBs)	Fuel ash slag (FAS)	Hearth / furnace lining	Concretion	Other*	Total
ARC SPH00		39.12/(58)	(√)	(√)			39.12
ARC SHN02		152.59/ (187)	(√)	(√)			152.59
ARC EBB01		11.32/(18)	0.24	0.20	0.75	3.27	15.78
ARC ERC01	10.34	0.80/(2)		2.08			13.22
ARC 342E02		1.11/(1)			0.02		1.13
WA 51724		1.41/(–)					1.41
TOTAL	10.34	206.35/(266)	0.24+	2.28+	0.77	3.27	223.25

* Includes ceramic building material, fired clay, & corrosion products; (√) = present;
(no in brackets) = smithing hearth bottoms [SHBs; includes complete/near-complete/large frags]

evidence for tuyère or blow holes. Quantities of other debris, for example fuel-ash slag, hearth lining, etc, are extremely low. Because the hearth lining, where it occurs, is often attached to smithing hearth bottoms, it has not always been separately quantified though its presence has been noted. Fuel-ash slag, like hearth lining, is indicative of a high temperature process, not necessarily ironworking though this is most likely here. Hammerscale, in so far as it has been examined, comprises overwhelmingly plate hammerscale (indicating forging), with only very sparse quantities of spheroidal hammerscale (indicating welding). There is also a very small amount of material (virtually all from the villa site) which was initially classified as slag but which has no association with metalworking. Further details are presented in Table 58.

Springhead

A small concentration of slag was recovered from the Ebbsfleet River Crossing site, over 500 m downstream from the smithies on the Roman Roadside settlement and the Sanctuary site (see below). This comprised a small but discrete dump of debris at the edge of the river channel which included two SHBs but was particularly noteworthy in that it contained the only smelting slag recovered from any of the sites. This slag was unabraded and characterised by being relatively dense, plate-like (though broken-up), with a clear flow structure on the upper surface indicative of tap slag. It was accompanied by over 2 kg of vitrified hearth or furnace lining. Although the quantity of tap slag is small (10.34 kg) in terms of what might be expected from smelting operations, it is nevertheless likely to reflect iron production nearby. The scale of such an operation is unknown though it possibly represents a single smelt, perhaps exploiting localised deposits of iron pan in the vicinity. Close dating is not possible, but a small assemblage of pottery and coins and the stratigraphic sequence point to a late Roman date.

To the south, approximately 193.12 kg of certain or probable smithing slag was collected from the Roadside settlement (ARC SHN02/W51724) and the Sanctuary area, including as many as 245 whole or fragmentary smithing hearth bottoms (SHBs). The SHBs are of various sizes with complete or near-complete examples (104, with 80 from the Roadside settlement and 24 from the Sanctuary site) ranging in weight from 0.13 kg up to 1.40 kg.

The location of at least one probable smithy has been identified within the Roadside settlement (property 10), on the basis of large slag and charcoal concentrations, lying immediately to the south of the junction of Watling Street and the branch road to the north-west (Vol 1, Chap 2). Although the entirety of property 10 could not be excavated, around 45% (c 70 kg) of the total weight of slag recovered from the Roadside settlement came from here, including 34 complete or near complete SHBs representing a slightly smaller percentage (42%) of the overall total. The extent of the property appears quite clear from the extent of the slag deposits and a contemporary structure – probably an open-fronted shelter – was also identified. A hearth close to Watling Street may have been related to the smithing activity (though there was no associated concentration of hammerscale) and a large pottery vessel set into a pit adjacent to this perhaps held water used for quenching. No whetstones were recovered but there was a notable concentration of lava quern or millstone fragments in this property (see below). These could not have functioned as anvils and may have served as sharpening stones though there is no clear evidence for their use as such. Surprisingly, perhaps, no tools were present and only a few possible offcuts of rod or bar were identified among the iron finds from this property. However, several sherds of crucibles used for copper alloy working were recovered (see Poole, Chap 6), indicating that small-scale casting may have been undertaken in addition to iron smithing.

The smithy in property 10 may not have been there during the very earliest phase of use of the property in the 3rd quarter of the 1st century AD but some slag was recovered from the upper fills of the roadside ditch in this area and associated pottery indicates that the smithy was established in the final quarter of that century. It probably continued in use throughout the majority of the 1st half of the 2nd century, after which it was abandoned, with no evidence for any subsequent use. No SHBs came from property 9 immediately to the south-east of property 10. In contrast to this, a further 18 complete or near complete SHBs came from property 11 on the north side of Watling Street, opposite property 10, but the general absence of spreads of smithing slag and charcoal suggests that the SHBs were dumped in that property rather than originating there, and it is perhaps most likely that they came from the smithy across the road. However, two whetstones and a large boulder used as a whetstone on one edge also came from property 11.

One other property in the Roadside settlement is a candidate for the site of a smithy though the evidence is somewhat ambiguous. Approximately 25 kg of smithing slag, including 16 complete or near complete SHBs, came from property 3 on the north side of Watling Street, 50 m or so to the south-east of the smithy in property 10. A further four SHBs came from property 2 and six from property 4 on either side of property 3, and one from property 5. This concentration is suggestive of smithing activity focused on property 3, though spreads of slag and charcoal characteristic of property 10 were not present. At least 50% of the slag came from deposits overlying the sunken-featured structure interpreted as a possible bakery and is likely to date to the 1st half of the 2nd century and most of the remainder came from features or deposits probably of similar date. It is possible that the debris represents a dump of material from the smithy in property 10, though the distribution suggests that it might have originated in property 3 which remained in use until perhaps the end of the 2nd

or early 3rd century. Two whetstones came from property 3, with a further two, along with the remains of a millstone possibly re-used as a rotating whetstone, from property 4.

Another smithy has been more certainly identified on the Sanctuary site, pre-dating the Sanctuary complex there and overlying a clay-floored circular structure, itself built over an early Roman road. A date in the late 1st or early 2nd centuries seems likely for this probably short-lived smithy, broadly similar to that in property 10 in the Roadside settlement. Only part of the smithy was exposed in the excavation area, represented by approximately half of a rectangular timber building lying close to the springs and at 90° to a trackway to the south. Part of an internal hearth was exposed and associated with the building was a spread of slag and charcoal, the slag recovered amounting to 9.4 kg and including six complete or near complete SHBs. Only two other contexts on the Sanctuary site contained more than a kilogram of slag, both close to but post-dating the smithy, with the slag probably residual in these deposits. Much if not all of the remainder from the site was probably also residual, and there was certainly no evidence to suggest the presence of another smithy within the excavated area.

Discussion

Although there may have been some small-scale localised production of iron (suggested by the debris from ARC ERC01), it is likely that the vast majority was imported to Springhead and the Northfleet Villa from further afield. Perhaps the most likely source was the Weald of Kent and Sussex, 30 km to the south, where at least 76 Roman bloomery sites have been identified (up to 1995; see Cleere and Crossley 1995, 57–86, gazetteer B), though Essex and the North Downs could have contributed, and possibly more long-distance sources. These are likely to have supplied Springhead and the villa site with stock iron bar or possibly semi-finished billets, rather than raw blooms which, as Salter (1998, 26) has noted, would have produced larger SHBs because of the large quantity of slag inclusions often present. Unfortunately, no fragments of stock iron, billets, or blooms were certainly identified amongst the large assemblage of ironwork from the recent excavations, and so the form(s) in which the iron was brought to the site remains uncertain.

Evidence for ironworking, specifically smithing, is ubiquitous in Roman small towns and roadside settlements (Burnham and Wacher 1990, 12–13, 322), with the (mainly) 1st–3rd century site at Westhawk Farm, Ashford (Paynter 2008) providing a particularly good example, in this case with both smelting and smithing represented. The two or possibly three smithies identified during the recent excavations at Springhead reflect this picture and add to previous discoveries made in the settlement. The presence of one smithy at what would have been an important street junction on Watling Street is of particular note, with another, less certainly identified, also adjacent to Watling Street. The location of the other in terms of its surroundings is not clear though it lay adjacent to a trackway and also close to an early landing place at the head of the Ebbsfleet. The use of the smithies spans the later 1st and probably the 1st half of the 2nd centuries, and it is likely that the blacksmiths were undertaking the manufacture as well as the repair of a variety of items, for the local inhabitants as well as travellers and pilgrims. In this respect it is interesting to note the presence of crucible fragments amongst the debris from the smithy at the street junction on Watling Street, for it suggests that the smith who was operating here also had small-scale copper alloy casting within his repertoire of skills.

Earlier excavations at Springhead have produced direct or indirect evidence for at least three further smithies, the most recently recorded example in a service trench in the southern part of the settlement, with material from a late 1st–2nd century pit including smithing slag, SHBs, and hammerscale, what appear to have been offcuts of bars, as well as a pair of blacksmith's tongs (Salter 1998, 26–7). Closer to the recent excavations was what has been interpreted as a blacksmith's shelter, in use from the end of the 3rd century to perhaps the end of the 4th, occupying part of an earlier a building adjacent to Watling Street (Penn 1968a, 164–71 and 187; Building B10), while a blacksmith also appears to have occupied part of Temple 1 in the central temple complex during the mid-4th century after it fell into disuse (Penn 1959, 11).

Northfleet

The quantity of smithing slag recovered from Northfleet villa (11.32 kg) was relatively small in comparison with that from Springhead, representing only 5.5% of the combined total. However, this assemblage includes 18 complete or fragmentary SHBs (6.8% of the overall total) and provides fairly clear evidence for small-scale smithing activity at the villa site.

Only two contexts produced more than a kilogram of smithing slag, with 4.39 kg (including one complete and four fragmentary SHBs) coming from 20015 (boundary ditch 20016) and 1.98 kg (including two complete and one fragmentary SHB) coming from 20590 (ditch 20591), both fills of early Roman features. No hearths or other features associated with ironworking survived or were identified, though the full extent of the villa complex was not investigated, and little more can be adduced from the available evidence.

Nevertheless, it might be remarked that evidence for iron smithing is ubiquitous from villa sites, reflecting the structural and agricultural requirements of these complexes, and the occurrence of smithing slag at the Northfleet Villa is entirely in keeping with what might be expected. Whether the iron was obtained directly from sources perhaps in the Weald (see above) or via Springhead, and whether some of the iron required at Springhead came via the villa is unknown.

Chapter 6

Ceramic Building Material and Fired Clay

by Cynthia Poole

Ceramic Building Material from Springhead

Approximately 1244 kg (nearly 8000 fragments) of ceramic building material (CBM) were recovered from the two principal areas excavated at Springhead. The Sanctuary site (ARC SPH00) accounts for about a third of the assemblage and the Roadside settlement (ARC SHN02) accounts for about two-thirds. The two assemblages come from a variety of contexts and were associated with a range of structures, including the Sanctuary and associated buildings, the temple within the Roadside settlement, and a number of small structures largely comprising crop drying or malting kilns, ovens, and hearths. A summary of quantities by form and phase can be found in Tables 59 and 60. More than half the assemblage (53%) could not be assigned to form, whilst roofing material accounted for the majority of identifiable fragments.

The assemblage, though large, is not very well preserved, with few complete tiles or bricks recovered; the only measurable dimension was normally thickness. There is strong evidence that a high proportion has been recycled from a primary use in buildings to re-use in kilns, ovens, or hearths.

Fabric

The fabric series held at Oxford Archaeology for earlier investigations at Springhead (Mitchell 1998) was used as the basis for the fabrics recorded in this assemblage. No new fabrics were added to the original series. However, the fabrics were re-assessed to allow comparison with the assemblage from Northfleet Villa (ARC EBB01). Descriptions of the individual fabrics may be found in the archive together with those of the Northfleet fabrics. The fabrics are summarised here and their equivalents from Northfleet indicated.

Fabrics 1, 3, 5, and 6 are similar, with considerable overlap in characteristics, and it is evident that none was clearly distinguishable from the others. They were broadly equivalent to ARC EBB01 fabric group B, especially fabric 10 there, though some pieces were close to groups D and G. A similar blurring of characteristics was observed in examples of these fabric groups at Northfleet. Fabric 6 bears the greatest similarity to the fabric of the medieval tile recovered from the tile kiln recorded during the watching brief (see Vol 4, Chap 3), suggesting that this and probably all the group B fabrics were produced from local brickearth deposits.

Fabric 4 is probably equivalent to ARC EBB01 fabric group F (of which fabric 6 = Museum of London 3050), but it occurs in such small quantities that it may in fact be a coarser variant of one of the local products. Fabric 7 is a cream-coloured clay fabric broadly equivalent to ARC EBB01 fabric group A mainly fabric Y, but also includes some of the other varieties. It was also noted during re-assessment of the fabrics that assigned under this category were paler examples of fabric group E (fabric Z/4) and Eccles (fabric 17). Fabric 8 is equivalent to ARC EBB01 fabric 17, thought to be produced in the area of Eccles.

The general picture gained from the fabrics is that the vast majority of the tile was produced locally, with the slight variations representing spatial differences in the clay sources exploited. Fabric 4 occurs in very small quantities scattered across the site. Fabrics 7 and 8 are distinctive types, which can be equated with known fabrics from other sites and production areas, and show certain spatial differences, with fabric 7 more common than 8 on the Sanctuary site with the reverse pattern in the Roadside settlement. In the latter area the fabric is particularly associated with property 2, suggesting this was used in the roofing of the temple. On the Sanctuary site fabric 7 is not associated with any particular structure, but in common with the other fabrics is scattered across the area.

Form

Tegula

No complete *tegulae* or any with either a full width or length were recovered. Tile thickness ranged from 10 mm to 38 mm with two-thirds measuring 18–25 mm thick. The overall range in thickness as well as the variation within an individual tile is a feature in common with the tile in fabric groups B and C from Northfleet (see above).

Flange shape and cutaways were categorised using standard forms drawn up within Oxford Archaeology and are illustrated by examples from Northfleet (see Fig 130 below). The most common varieties of flange are types A (rectangular profile) and D and E (rounded).

Table 59 Ceramic building material: summary of quantities by form and phase – Springhead Sanctuary Site

Type	Phase	LIA	RB	ERB	MRB	LRB	Sax	Med	Mod/ unphased	Total
Brick	No		4	108	172	1	1		1	287
	Wt (g)		1244	26,884	46,056	427	396		500	75,507
Flue	No		5	18	30			5		58
	Wt (g)		271	1616	2089			352		4328
Imbrex	No	1	2	84	152	7	3	4	2	255
	Wt (g)	7	144	8161	17,275	581	230	126	105	26,629
Mod brick	No				1					1
	Wt (g)				15					15
Ridge	No				7					7
	Wt (g)				1489					1489
Tegula	No		1	140	222		2	5	1	371
	Wt (g)		214	23,502	39,882		287	1118	333	65,336
Teg mammata?	No			1						1
	Wt (g)			1037						1037
Tessera	No				3					3
	Wt (g)				56					56
Tile	No	1	14	412	705	2	5	32	13	1184
	Wt (g)	186	689	52,237	94,581	361	391	2597	1958	153,000
Unidentified	No	1	3	158	251	1	13	18	3	448
	Wt (g)	2	224	8630	10,368	47	156	338	136	19,901
Voussoir?	No				1					1
	Wt (g)				127					127
Total No		3	29	921	1544	11	24	64	20	2616
Total Wt (g)		195	2786	122,067	211,938	1416	1460	4531	3032	347,425

Type A measures 16–30 mm wide by 35–58 mm high, though most are over 45 mm high. Type D range 15 mm to 32 mm wide by 38–60 mm high, with the greater proportion at the higher end of the range. Type E measure 18–40 mm wide and 40–60 mm high, with a thick lower profile being common. Many of the flanges of type A and D are distinctly tapered. Types C and F are relatively rare.

Both upper and lower cutaways were identified. Upper cutaways are most commonly of type A2, where a rectangular section of flange has been removed for the full height of the flange, or more rarely type A4, where it was removed for half the flange height. Less frequent types are B2 and B3, where a wedge-shaped section of flange or flange and tile has been removed. Most appear to be knife cut, but in a few cases it is clear that they have been originally formed by the tile mould and subsequently knife trimmed. Some cutaways have been extended by chipping, on occasions almost entirely obscuring the original cutaway. Most measure *c* 60–70 mm long, though one only 32 mm long has been extended to *c* 80 mm by chipping off the flange.

Lower cutaways are predominately of types A3, A3a, and C1. Types A3 and C1 normally occur together as a composite type, sometimes in conjunction with a small B2 type chamfer removing the remaining end of the flange. It is unclear whether some of the C1 type are invariably part of a composite form or may also occur on their own. Cutaway type A3a which forms a chamfer, widening from top to base, is usually cut, modifying a moulded type A3.

Six nail-holes, including one square, were found in the *tegulae*, most occurring in tile from the temple on the Roadside settlement. While *tegulae* are found in all fabric types, fabric 1 and 5 account for nearly 80% at the Sanctuary site and 70% at the Roadside settlement, whilst at the latter 27% of *tegulae* are made in fabric 8. A high proportion have broken flanges and the large quantity of plain tile suggests that *tegulae* were deliberately de-flanged to be used as a flat brick in hearth, oven, and crop dryer construction. The overall proportion of *tegulae* is somewhat lower than might be expected, whilst the plain tile category is higher than normal compared with other assemblages. It is likely, however, that not all de-flanged *tegula* fragments have been recognised as such and the type may, therefore, appear under-represented.

Imbrex

One complete tile, very heavily burnt, was reconstructed from broken fragments found in one of the post-pits associated with the Sanctuary. It measures 403 mm long by 135–190 mm wide by 62–95 mm high. The walls range from 8 mm to 17 mm thick. For the remainder, thickness is the only measurable dimension at 9–32 mm. This range of thickness is comparable to that of *imbrices*

Table 60 Ceramic building material: summary of quantities by form and phase – Springhead Roadside Settlement

Type	Phase	RB	ERB	MRB	LRB	Medieval	Modern/ unphased	Total
Brick	No	2	31	37	44		30	144
	Wt (g)	1638	13,325	27,104	32,536		24,263	98,866
Flue	No	2	11	20	51		6	90
	Wt (g)	604	1221	3557	5946		1265	12,593
Imbrex	No	54	65	186	620	2	42	969
	Wt (g)	6896	8633	22,501	99,304	132	6129	143,595
Tegula	No	48	73	201	493	2	46	863
	Wt (g)	11,606	12,886	44,593	145,552	54	10,444	225,135
Tile	No	139	329	723	1158	5	172	2526
	Wt (g)	27,449	35,176	111,535	184,226	278	38,243	396,907
Unidentified	No	46	100	291	262	2	73	774
	Wt (g)	1290	1823	5234	6014	53	5457	19,871
Total No		291	609	1458	2628	11	369	5366
Total Wt (g)		49,483	73,064	214,524	473,578	517	85,801	896,967

from Northfleet in fabric groups B and C. It is tentatively suggested that a small number of pieces with thicknesses between 20 mm and 36 mm may be ridge tile rather than *imbrex*. Their curvature suggests that their diameters ranged from 260 mm to 450 mm. Ridge tiles are a rare occurrence in Britain, where *imbrices* were more commonly used for the roof ridge (Brodribb 1987, 27), and the identification here is by no means certain.

Imbrex was mainly produced in group B fabrics (fabrics 1, 5), accounting for 72% at the Sanctuary site and 78% on the Roadside settlement, with a lesser amount (17%) in the fabric from Eccles (8) largely confined to the destruction levels of the temple on the Roadside settlement site and 12% in fabric 7 from the Sanctuary site. Other fabrics are used only in insignificant quantities. The same pattern holds for the ridge tiles, which are made in group B fabrics 1 and 5, with one possible ridge tile in fabric 8.

Flue tile

Flue tile was identified largely by the presence of keying on the tile face. All examples are fragmentary with no complete dimensions apart from thickness and are assumed to be standard box flue tile, though a single fragment with combing on the surface with a vent may be *voussoir*. Vent holes are poorly represented with only those of rectangular shape found. Thicknesses range from 12 mm to 20 mm with most concentrated at 16–20 mm. These tiles tend to be made from the finer fabric, type 5, a characteristic also noted at Northfleet.

Bricks

A small number of complete or near-complete bricks was found. Nearly all are *pedales* measuring *c* 300 mm square. Two were associated with the temple (property 2, contexts 12224 and 12234) and two came from the floor of a possible bath-house (property 1, context 19573), all on the Roadside settlement. Two or more broken *pedales*, one with a width of 305 mm, came from a small pit (2335) with an associated pot base lying to the west of the Sanctuary complex. A *lydion* or partial *sesquipedalis* measuring 430 x 284 mm was sampled from the temple porch floor (property 2, context 12358). Flooring found (and preserved) *in situ* in the temple porch consisted mainly of *pedales* with a single line of *sesquipedales* at the entrance. Of the broken material, only pieces with a thickness greater than 40 mm were recorded as brick. However, it is clear from the more complete bricks that thickness in fact ranged from 30 mm up to 57 mm, and it is probable that much of the plain tile over 30 mm thick is in fact brick.

An occasional feature of the bricks is a shallow recessed margin 15–30 mm wide on the upper surface alongside one edge. A few have finger-tip impressions from handling. A high proportion have evidence of burning to various degrees ranging from a pale grey discoloration on the surface or sooting to heavy vitrification and bloating.

It is possible that one fragment was from a *tegula mammata*: an oval hollow scar 50 x 40 mm on the surface may have been the position of the blob of clay forming the '*mamma*', and an irregular groove in the side may have resulted from the cramp which held this type of wall tile in place.

Tesserae

Three *tesserae* were identified, all *c* 20–25 mm size; two are ceramic, made in fabrics 7 and 8, and one red–orange in fabric 5 has a heavily worn surface.

Flat/plain tile

This category, amounting to nearly 550 kg, accounts for fragments showing no distinguishing features, except for plain surfaces. Thickness ranges from 8 mm to 38 mm with two main peaks at 20 mm and 35 mm, which probably indicates that the material is predominantly derived from *tegulae* and bricks.

Markings

The range of markings is limited in character and sparse in quantity. Apart from keying in the form of combing, the majority of markings are signature marks. Tally marks and animal imprints occur very infrequently.

Signatures
These take the form of 1–3 simple finger grooves, usually forming curvilinear arcs. Almost all form type 1 signature marks and include both shallow and large varieties. However, there is one on a brick, which may be a type 7, consisting of two linear grooves. Apart from the latter and one other brick from the Nursery site, all the signature marks occur on *tegulae* from the Sanctuary site.

Combing
A total of 1344 pieces retain evidence of keying, all in the form of combing. Comb sizes are variable with both medium and coarse present and up to a maximum of 11 teeth. The combing patterns are the same as found at Northfleet (see Fig 136 below), but the range is more limited comprising predominantly type 3 (wavy combined with straight vertical bands) and type 4 (two straight diagonal bands crossing). Less common are types 1 (vertical linear), 5 (saltire), 7 (zigzag), and 19 (semi-circles and straight vertical band).

Tally marks
A small number of scored lines may possibly be tally marks. One on the tile surface may be equivalent to type S3 found on the Northfleet tile (see below).

Impressions
Apart from occasional fingerprints from handling the tile, five animal imprints were found on four plain tiles and one brick fragment. One is probably cat (12411), three dog (2185, 6523, 16263: though one of these may be fox), and the last a cloven hoof print, probably roe deer (6447). Possible hobnail impressions (5215) are also seen on one tile fragment.

Discussion

Though the assemblage from Springhead is large by the standards of many excavations, it provides little evidence for the primary use of brick and tile in building construction. Only two buildings provided *in situ* evidence – the temple and probable bath-house in properties 2 and 1 respectively in the Roadside settlement. The former admittedly accounts for nearly half the total tile assemblage, but the fact that only two buildings incorporated brick and tile in such an extensive area suggests that these materials were expensive and only used in the more significant buildings. Elsewhere the tile had been discarded in pits, ditches, quarry hollows, or in layers of make-up or consolidation. A constant characteristic, particularly from the Sanctuary site, is burning or sooting on the surface of all types of tile which suggests that most of the material was re-used in kilns, ovens, hearths, or crop drying/malting ovens. In such circumstances there is invariably a preponderance of flat slabs of tile, with brick and de-flanged *tegulae* usually the preferred varieties, though *imbrices* and flue tiles might also be broken in such a way as to provide flat tile slabs. However, *imbrices* may have been used as supports for the rear shelves of crop dryers or to channel hot air under drying floors.

A typical example is the group from the early 'bakery' sequence (400037, 400041–2), which is very mixed but dominated by brick, *tegulae*, and flat tile which, combined, form 78% of this group. Much of it is burnt or sooted. This pattern is repeated throughout the Sanctuary site and has more in common with assemblages found on minor rural settlements where tile is recycled in the construction of ovens, hearths, and crop dryers. There is no evidence that any individual building exposed within the excavated area of the Sanctuary itself utilised brick or tile in its construction. It is arguable that some buildings had tiled roofs and that any material that could be recycled was assiduously recovered if a building was demolished or fell into disuse but there is nothing to suggest such activity in relation to the excavated buildings.

However, it is clear from the large quantities of brick and tile being utilised in the area that there was no difficulty encountered in obtaining such material indicating that a sufficient number of buildings in the town originally roofed with tile were refurbished, providing tile for re-use in minor structures. A range of substantial buildings is known from previous excavations at Springhead, including at least one bath-house, which are likely to have been the prime sources, especially for brick and flue tile. The latter occurs in minimal quantities, probably because it was not an ideal form for re-use.

The excavation of the Roadside settlement area provides a clear example of one building that could also have formed such a source. The largest group of tile from this site, and accounting for 35% of the whole assemblage, was directly associated with the temple on property 2 (whilst the total from property 2 formed nearly half of the whole assemblage). The temple was constructed in the late 2nd century with a tiled roof and tiled floors. Part of the floors survived in the entrance porch or vestibule and inside the doorway of the adjacent room to the south-west. It is thought the entire building had tiled floors, most of which had been robbed. The floors were mainly constructed of *pedales* with a single line of larger bricks, possibly re-used *lydions* or *sesquipedales* trimmed to size. The most prolific contexts from this area relate to the abandonment or destruction phase of this temple (400103) and are dominated by roofing material. The ratio of *imbrex* to *tegula* of 1:1.5 is not typical of roofing, based on the figures of Brodribb (1987, 11–12) which give a ratio based on weight of 1:3.24. However, if the plain tile is added to the *tegulae* the ratio becomes 1:3.5 and

excluding the thicker pieces of plain tile more likely to be brick the ratio is closer still at 1:3.13.

Compared to all other areas of the excavations the tile fabrics from property 2 are notable for the high proportion of fabric 8, which is equated with the fabric produced in the kilns at Eccles (Museum of London fabric 2454). This forms 21% of the tile assemblage on this property (nearly 127 kg, representing 80% of all tile in this fabric). It suggests that though the majority of the tile from the building was sourced locally (fabric group B), a significant quantity was imported from the Eccles tileries. The proposed dates for the construction and use of the temple coincide with those suggested for production at one of the kilns excavated at Eccles (Detsicas 1967, 170–4) of *c* AD 180–290.

Of the other properties in the Roadside settlement, most produced little or no tile, apart from properties 1, 3, 4, and 11, which each produced 28–60 kg (ie, 3–6.5% of the settlement assemblage). The material from property 1 includes *pedalis* brick from a floor surface, which may form part of a bath-house. Other identifiable forms are *tegula*, *imbrex*, and flue tile, which occur in small and equal quantities, whilst the non-diagnostic material probably includes a high proportion of brick. However there is insufficient tile of any form to confirm the building as a bath-house.

The tile assemblages on all these properties are dominated by plain tile with *tegula* and *imbrex* as the most common of the recognisable forms, with brick and flue tile present in small numbers. The largest quantity of flue tile was recovered from property 4 but with no evidence for a heated building and from the small amount involved, it can only be taken as indicative of re-use in a secondary structure. Ovens and hearths were present on many of the properties and it is likely that the tile was commonly used in the superstructure or base of such features.

Structural Fired Clay and Daub from Springhead

Structural fired clay and daub were recovered from both of the principal areas of excavation at Springhead (Figs 128–9), amounting to 6126 fragments weighing 226.221 kg from the Sanctuary site and 4314 fragments weighing 64.285 kg from the Roadside settlement. The fired clay was found in a wide variety of contexts including pits, post-holes, ditches, gullies, and spreads. A small but significant proportion was found in primary situations in ovens, hearths, kilns, and crop dryers. The majority was found in late Iron Age and early and mid-Roman contexts, together with four undiagnostic fragments (15 g) from middle Bronze Age layers and 204 fragments (40.883 g) from Saxon contexts. The Saxon material is described separately below.

All percentages quoted are by weight. The assemblage has been recorded in detail in archive. The term ‘oven’ is used as a generic term for enclosed structures with a fixed superstructure, where a variety of functional types (domestic ovens, kilns, crop dryers, malting kilns, etc) is under consideration.

Fabrics

Three broad fabrics were identified (*Table 61*) all with a similar basic matrix differentiated by their coarser constituents but frequently with intermediate characteristics suggesting they derive from closely related sources. All fabrics show a wide variation in colour depending on the degree of heating and the presence of oxidising or reducing conditions. Colours ranged through red, orange, yellowish–red, reddish–yellow, brown, pinkish- or yellowish–brown when oxidised and light brown, brownish–grey, light–dark grey, or black, when reduced, most commonly in the core of fragments.

Fabric A: Fine silty clay matrix (very powdery) or silty-fine sandy micaceous clay (mica silt/fine sand size) containing moderate–low density of medium quartz sand (rounded) 0.2–0.6 mm and moderate density of medium–coarse quartz sand (rounded) <1 mm. Rare flint grit (angular) 11–12 mm and red clay pellets (rounded) *c* 1 mm. Sometimes the clay matrix is laminated, fired orange–brown with occasional grey streaks.

Fabric A2: Basic matrix essentially the same as A, but very porous from organic admix of high density of chaff or chopped straw temper <10 mm long (surviving as impressions).

Fabric Ac and A2c: As for A and A2 but additionally contains occasional small chalk grit.

Fabric A3: Fine silty micaceous powdery clay, containing a high density of medium–coarse sand, comprising medium quartz sand (rounded) 0.2–0.7 mm, frequent coarse quartz sand (sub-angular–sub-rounded), moderate–frequent red iron oxide rich clay/silt pellets (rounded) 0.3–5 mm and rare–occasional grits of chert (rounded), quartz 3 mm and calcite or limestone (angular) <8 mm.

Fabric C: pink–buff with grey–black core, slightly silty clay with no inclusions.

Fabric E: silty calcareous clay containing rounded chalk 1–3 mm and coarse rounded–sub-angular chalk grit <22 mm.

The fabrics are all likely to derive from clay sources available on or close to the site. The Fabric A group, which accounts for 95% of the assemblage, probably derives from local brickearth deposits. It is similar to fabrics found throughout north Kent, reflecting the ubiquity and similarity of the brickearths in this region, rather than implying any form of centralised production. Fabric E, which accounts for only 2.3% of the assemblage, could represent either a clay deposit where chalk has been incorporated by natural processes or a deliberately added component. The organic additions to fabric A2 are the only clear examples of deliberate temper.

The briquetage was divided into four fabric categories (*Table 61*). Fabric X1 contained a high density of coarse organic temper represented by the voids of chaff impressions. Fabric X2 was a more silty clay fabric with a low density of finer chaff temper. Fabric X3 was a sandy clay and X4 contained shell fragments *c* 1–2 mm in size. The organic tempered fabrics accounted for 99% of the briquetage.

Forms and Function

The structural fired clay has been divided into broad functional categories: wall daub, oven, hearth or kiln structure, portable furniture from such structures, material from high temperature industrial activity, and material from salt production. There is some overlap between these categories such as the wall daub which may divide into material from buildings and that from oven or kiln superstructures, and oven or hearth furniture which could have been used for both domestic and artisan activities. Forms are quantified by phase for the two areas of excavation in *Tables 62* and *63*.

Wall daub

Wall daub and render accounts for slightly over 50% of the assemblage and formed several large deposits (Figs 128, 1; 129, 12–19). All the material is similar in its form and implies similar types of construction across the site. The general arrangement consists of wall core in the form of thicker pieces of daub, on average 20–50 mm thick, with an outer surface, roughly flat but undulating and of variable quality. On the internal surface are interwoven wattle impressions most frequently having only the rod impressions preserved, but some with one or more sail impressions and more rarely larger timbers, both curved and squared. These wattle and timber impressions represent the core studwork of the wall and one can postulate an equal thickness of daub on the other side of the wattles: commonly up to 90 mm and in one case 200 mm.

Fragments with more than one surface are also encountered, generally two at right-angles forming the edge of the daub or more rarely three forming a corner angle. In one group there is a clear difference in the quality of the two surfaces, one being considerably more even and smooth suggesting this was an exposed face. Some wattles pierce the smooth face and these may have held wooden dowelling to enable fixtures to be attached to the wall surface.

The pattern of wattle impressions most commonly represents rods woven around roundwood sails or, more rarely, small squared timbers (Fig 129, 12–15). The wattles range in diameter from 5 m to 55 mm. When these can be identified as rods the average size is 5–35 mm while sails are generally larger, *c* 20–55 mm. However there is a distinct difference in range between the late Iron Age–early Roman and the mid-Roman phases in terms of size. In the earlier phases the wattles

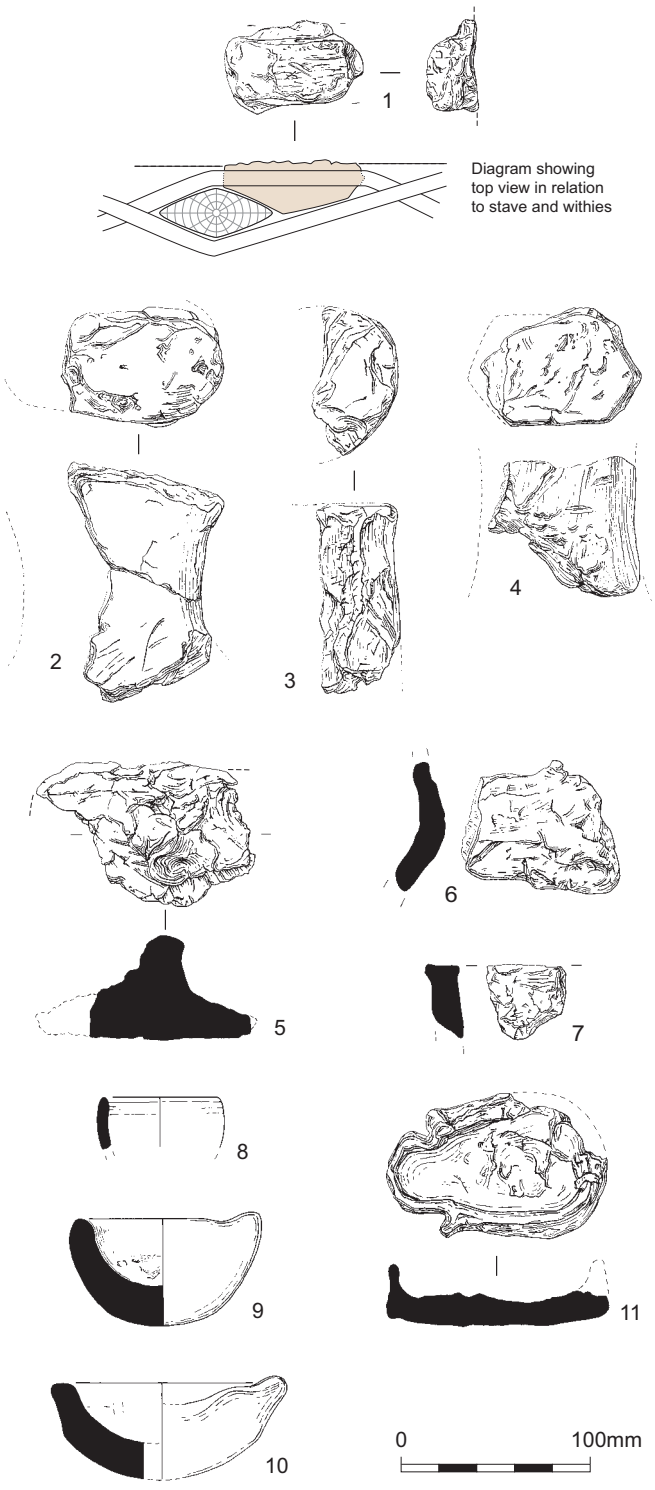


Figure 128 Springhead: fired clay 1–11

are smaller in diameter, generally being less than 26 mm, with the main peak for rods at 14–16 mm and sails falling in the upper half of the range. In contrast the mid-Roman wattles are larger with rods ranging in diameter from 15 mm to 50 mm and sails from over 20 mm to 60 mm. These later samples also produce evidence of larger timbers 60–190 mm wide, including both squared and round timbers and evidence of laths (Fig 129, 16, 19; Fig 128, 1) and split poles, mostly used as sails rather than rods. This variation in sizes could be interpreted as

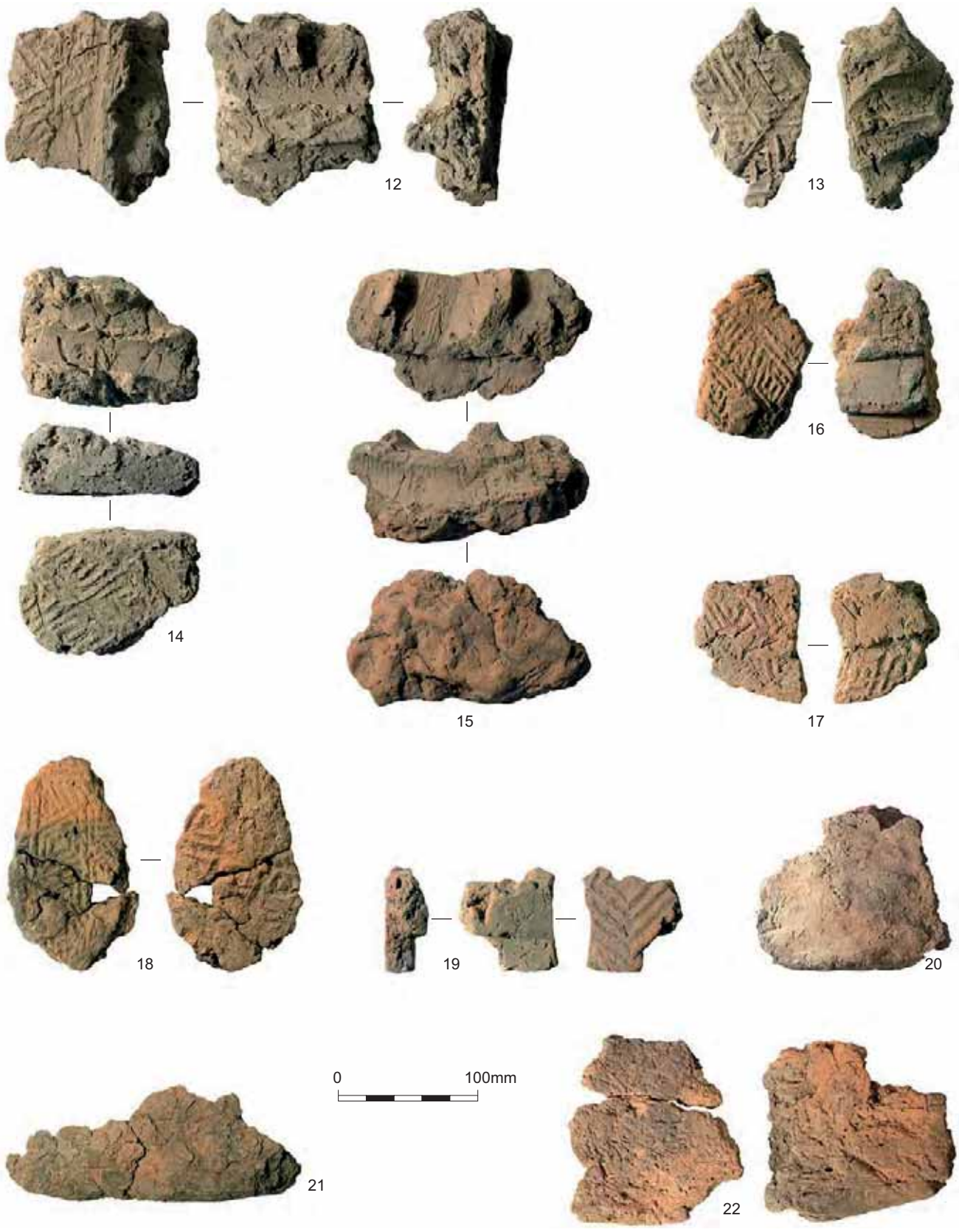


Figure 129 Springhead: wall daub and other fired clay 12–22

reflecting availability of timber and coppice, however it is more likely to represent differences in structure and design and the smaller wattle sizes may be an indication of oven structure, whilst the larger sizes and laths reflect building daub. The earlier sizes are more comparable to the Saxon wattle sizes from oven 3979. A few pieces have remnants of iron nails or iron staining on the interior of the core in association with some wattle impressions, indicating that nails were used in the timber framework.

In addition to the wall core, there are also pieces of daub that can be regarded as render. These have two parallel surfaces and are thinner than the core with a range of 15–40 mm thickness. In some cases there appears to have been a thicker rough render (*c* 20–40 mm thick), which was coated with a thinner final render (5–15 mm thick). The surfaces can be either plain, fairly even and flat, or covered with a distinctive roller stamped keying in diamond and chevron patterns (Fig 129, 12–19). The dies used appear to be exclusive to daub, though similar to ones used on tile such as die 69 (Betts *et al* 1997). One design has been previously found at Springhead (Russell 1997, 47–50, fig 26a). It would be unusual if all the keyed daub in Springhead was produced using an identical die, and though, superficially, all the keying appears to be of the same pattern, careful examination suggests that two or perhaps more variants can be recognised. These have been designated as Springhead type 1: the original identified from the site of diamonds and chevrons (Russell 1997, 48), type 2: which has inset diamonds with the central diamond infilled with three parallel lines, and type 3: which has three inset diamonds with a plain centre. Both the latter form a repeated pattern of interlocking diamonds. There is one possible example of type 1 (Fig 129, 18) and a small number can be separated into the other two types, which appear to be more common from the current excavations: type 2 (Fig 129, 13, 14, 16) and type 3 (Fig 129, 19). Type 3 is similar to the pattern found at Lullingstone (*ibid*). There may be a fourth type (Fig 129, 15), with a network pattern of criss-crossing ridges; though the fragment is very worn it bears some similarity to an example from Silchester (*ibid*)

The roller stamping occurs most commonly on the outer surface of the rough render, but it is occasionally observed on the outer surface of wall core fragments (2449; Fig 129, 13–14). A small number of pieces have roller stamp keying on both inner and outer surfaces of the render (5786; Fig 129, 17–18). It was at first thought that one of the surfaces had been laid over roller stamped tiles, but it was realised (especially in the absence of any tiles of this type from the site) that this was the impression of keying on the wall core showing in relief and accounted for the difference in quality, being more rounded and less sharp compared with that on the outer surface that had been made directly with the roller. The significance of this was only appreciated during analysis and, therefore, identification as an inner or outer face was not recorded.

Some pieces of the final finish render have a thin skim or finishing coat and wash of fine orange daub 5–8 mm thick (Fig 133, 16) which, in some cases, has worn away so the pattern of the roller stamping is visible through it. It is possible that the finishing coat was deliberately left thin on occasions so that the pattern showed through as decoration, though there is no firm evidence for this. In some cases the wall surface is finished with a thin whitewash or thick lime mortar veneer 1–2 mm thick, sometimes, but not invariably, burnt grey. Not all pieces have a layer of render, but just a final skim of daub or plaster wash over the surface of the wall core face. This may reflect different treatments of interior and exterior wall faces. No wall daub has any evidence for painted plaster as a finishing skim, suggesting that all the wall daub derives from utilitarian structures.

Hearths, ovens, kilns, and corn dryers: structural elements

A large number of hearths, ovens, kilns, and corn drying or malting ovens were recorded in the course of the excavation. Fired clay was largely recovered from their fills and little sampling of *in situ* structural elements was undertaken to allow comparison with material from secondary situations. Hearths are taken to be an open structure forming a base on which to set a fire. Enclosed structures include ovens, kilns, and corn drying or malting ovens and are characterised by having some form of superstructure. Pot ovens were also found on the site (Chap 1).

The only fixed structural element of a hearth will be the floor though this need not be deliberately constructed. Where the hearth floor was deliberately laid, clay is most frequently used, though other materials such as puddled chalk are suitable if available. The use of brick or tile to construct hearth floors is discussed above. Most clay floor surfaces are characterised by a single well-smoothed surface and irregular underside reflecting either the underlying ground surface or a deliberately laid foundation. Pieces from context 2292 have a wedge shaped profile curving up at the side and thinning to the edge as though lining a shallow hollow. Fragments from 5081 varied in colour reflecting the decreasing temperature from the centre to periphery of the hearth floor. These also have an irregular underside with stone impressions up to 30 mm in size suggesting that the clay surface was laid over a packed stone/gravel foundation. Most pieces of hearth floor are 9–19 mm thick, though those from 3121 are thicker at 30–55 mm.

The floors and linings of ovens have similar characteristics to hearth floors, though some curvature may be apparent from ovens and at least some of the clay surface may be more intensely fired, often being fired yellowish–brown in the main firing chamber with a very hard surface grading to red and yellowish–red further from the heat source. In some structures such as corn drying/malting kilns, where areas only required a low degree of heat, much of the

superstructure will have remain unfired unless an accidental conflagration occurred.

Much of the fired clay recovered from the fills of ovens retains little more than a single smooth surface, either flat or curving and generally oxidised, fired red or yellowish–red. In some cases there are stone impressions on the underside suggesting the presence of a rubble foundation for the base. The only material directly associated with *in situ* oven bases was recovered from sieved samples and, as a result, the fragments are small. It is interpreted as being the lining of walls or floor and, in some cases, it has the appearance of unprepared natural clay, suggesting that these pieces derive from natural substrate into which the oven base was set as a partially sub-surface structure.

Few examples can be positively identified as oven wall or dome, though some curved surfaces may hint at the stoke-hole arch. The best preserved examples come from pit 11818 (11820, 11822), which produced large blocks of demolished oven wall and dome with both sides of the stoke-hole arch represented. The surfaces are roughly smoothed with evidence of finger grooves from moulding the clay. The walls were 0.10–0.12 m thick and the stoke-hole is estimated to have been *c* 0.12 m wide and approximately the same high, though narrowing to the interior. The front of the oven has a flattened face *c* 0.35 m wide, though the sides were starting to curve suggesting a circular form overall. A minimum diameter of *c* 0.60 m may be conjectured. The base of the oven walls was flat, possibly made as a prefabricated structure, though this may merely be the effect of being constructed on a very flat smooth surface. The pieces are far too heavy to have been used as a portable oven. The estimated height of the stoke-hole arch is very low and it may imply that these blocks were the superstructure over a partially sub-surface oven cut into the contemporary ground surface. No oven furniture was found in association with these pieces and it was probably a simple domed structure that would be suitable for domestic baking.

Oven, hearth, or kiln furniture

Portable furniture in the form of flat plates (Figs 128, 5; 129, 20–2), firebars, pedestals (Fig 128, 2–4), and miscellaneous items could have been used in association with ovens or hearths. Ovens with more than one chamber would utilise such items, whilst hearths could be converted to a semi-enclosed space by using a plate supported on pedestals over the fire.

Very few fragments could be identified as oven plate. The majority of plates are made in the briquetage fabric X1 and they have the white or purplish veneer often found on briquetage. One is made in the organic-tempered fabric A2, which suggests a close relationship with the others associated with salt production. Plates are formed of slabs, flat on one side, domed or convex on the other, measuring 20–25 mm and 27–45 mm thick in two cases. They were probably sub-rectangular and circular/oval in form. Fragments have straight or bowed sides, usually with a convex edge in section. The largest fragment measures over 200 mm long, while two with curving edges are estimated to have diameters of *c* 130–140 mm and 300 mm respectively.

A corner fragment of briquetage plate (Fig 128, 5) has a flat, partly cut base surface and on the upper surface is a roughly moulded irregular knob measuring *c* 32 mm high by 25 mm wide at the base, narrowing to *c* 12 mm at the top. It is uncertain whether this is the top or base surface of the plate. The knob may have been a small foot to stand the plate on or a support to hold vessels such as evaporating troughs secure.

Seven pedestals were identified, all from early Roman contexts except for one, which is probably late Iron Age. The latter (3910) was found in a pit and is atypical in form. The fragments appear to form a hemispherical object with flat base and convex top. The base diameter measures *c* 100–120 mm and the height is estimated at *c* 80–100 mm. The early Roman examples are all more typical oblong objects with cross-sections of circular/oval (2422, 3547, 5753, 6286; Fig 128, 2–3), sub-rectangular (6163), and hexagonal (6022) form (Fig 128, 4). Some clearly taper whilst others have a biconical dumb-bell form. No complete examples were recovered and breadth or diameter is the most commonly surviving complete dimension. Heights are in excess of 75–110 mm. Breadth/widths range from 50 mm to 80 mm and more; one may have been as much as 190 mm in diameter. One is pierced by a vertical perforation 13 mm in diameter (6286). Most are well finished with a smooth even surface, hard and well fired, both oxidised and reduced. One, with a D-shaped cross-section (Fig 128, 2) may have been designed to be placed against the oven wall to form a support at the edge on which an oven plate could be rested. A small area of textile imprint of a fine weave occurs on the surface of one pedestal (2422).

Triangular bricks with perforations piercing the corners are a well known Iron Age-early Roman form, traditionally regarded as loomweights, but more likely to be associated with ovens or kilns as lining or pedestals (Lowther 1935; Poole 1995). Three definite and four possible examples were found at Springhead. All were fragmentary, either corner fragments or pieces with perforations measuring between 9 and 15 mm diameter piercing the side surface at an angle, though one may have been pierced through the triangular face. The only complete dimension was thickness, measuring 55 and 85 mm on two examples. Three were found in late Iron Age pits and the remainder in early Roman contexts.

A small number of fragments can be interpreted as firebars. Two have circular cross-sections 23 mm and 32 mm in diameter (10412, 16407) and one is sub-rectangular 25 x 32 mm (3191); the maximum surviving length is 50 mm. The most complete (10621) is roughly shaped, formed by wrapping the clay around a stick *c* 20 x 30 mm wide and pressed into shape leaving deep finger depressions and prints. Firing does not appear to have been intense with the core little affected by heat. The wall of the bar is 15–50 mm thick and the whole object

measures 95 x 75 mm wide by 140 mm long. Similar objects have been found associated with pottery kilns (Swan 1984, 62).

A small number of sub-oval discs with lentoidal cross-sections were recovered from three early Roman contexts and one mid-Roman context. They measure up to 17 mm thick, 40 mm to over 65 mm wide and up to 80 mm or more long. The mid-Roman example has dense straw impressions on one side but otherwise surfaces are smooth and flat. One has been burnt black. These are similar to some forms of spacers or setters used in pottery kilns (Swan 1984, 40–1) and similar small straw impressed discs have been found in association with oven daub of Iron Age date (Cunliffe and Poole 1991, 149).

Industrial Material

Industrial material was scattered over a wide area, including pits such as the early Roman group 300130 close to the springs, as well as occasionally being associated with hearth bases (eg, 5047, 5048). One concentration was associated with the two early Roman structures, including a smithy (400028–9), which overlay the early Roman road to the waterfront on the Sanctuary site. This concentration included crucible fragments as well as furnace lining, which may derive from the smithy. However, the most significant deposit, also early Roman in date, occurred on the Roadside settlement, in layer 16144 in property 10, and consisted of demolished furnace structure and several crucibles.

Furnace wall and lining

Fired clay interpreted as furnace structure has typically a grey/black, or sometimes greenish, heavily vitrified surface, with an underlying vesicular cinder layer which is usually *c* 1–8 mm thick, but may be up to 20 mm thick. This merges to a purplish (*c* 5–10 mm thick), then oxidised, orange–red fired clay core. Fragments can have a total thickness of up to 32 mm, but the full thicknesses of walls are rarely preserved. The surface occasionally has a metallic sheen. Surfaces range from undulating, even to very irregular, billowing, or bulbous. Some vitrified pieces seem to be waste lumps that have formed from debris separate to the furnace structure. Associated non-vitrified fragments 32–5 mm thick, one with curving outer surface, may be parts of the furnace wall more distant from the heat core. Hearth lining from smithing hearths can be very similar in character (Durham and Poole 2008) and would only be differentiated by associated slag and metalworking waste, as is the case here, in property 10. All material of this type has been recorded as furnace lining to avoid confusion with domestic hearth debris.

Four fragments of furnace wall were pierced by circular perforations (tuyère/blowing holes) measuring 25 mm, 26 mm, *c* 30 mm, and 35 mm in diameter. These would allow access for a bellows nozzle. The largest single group of furnace structure came from an early Roman layer 16144 on property 10 and was associated with a group of crucibles. The furnace structure had smooth flat surfaces with vitrification or cinder on some pieces. There are some larger pieces where the surface has been fired grey but the underlying clay was not intensely fired, whilst some pieces are oxidised, possibly coming from the exterior wall surface. Some of these have bubbly vitrified material dribbled or fallen onto the surface during the manufacturing process but the clay fabric itself is not vitrified, suggesting that these pieces came from the exterior of the furnace. Pieces with a straight flat edge probably derive either from the top vent or an opening in the side of the furnace. Some irregularly moulded lumps, one with finger-tip depressions were probably used as props and supports: one measures 40 x 38 x 35 mm and another 45 x 40 x 30 mm, whilst a flat disc measures *c* 80–90mm in diameter by 15 mm thick.

Crucible

Two fragments of small cup crucibles (Fig 128, 8) were recovered from early Roman deposits (5414, 5348) associated with Temple 2 or the bakery buildings. Size is hard to determine from the small sherds, but appears to be in the region of 40–70 mm diameter. They are thin walled (4–6 mm) with cindering or vitrification around the rim and a slaggy deposit on the interior surface of one.

A second group (Fig 128, 9–10), representing at least four crucibles, was found in deposit 16144 associated with the furnace structure described above. These are hemispherical with a simple lip pulled out at the rim. Sizes range from 90 mm to 120 mm in diameter and 58–c 65 mm high. The walls measure 10–22 mm thick, being thinnest at the rim and thickest on the base. The more complete examples are grey in colour and have vitrification or cindering especially around the rim and lip with black slaggy debris and copper alloy deposits adhering to the inner surface. The fragmentary sherds include both oxidised and reduced pieces, suggesting that some of these had not been used or had broken before use.

Tuyère and bellows guard

An irregular cylindrical object was found in the fill (2319) of a mid-Roman pit (2318), and may have been the nozzle of a bellows guard. The clay fabric has a highly vesicular cindered texture, very light and porous. It has a bulbous rounded rim and parts of the exterior surface are very smooth but some areas have been cut flat, possibly indicating that it had been re-used like tufa in roof vaulting. It has a diameter of *c* 70 mm and is over 60 mm long. The walls measure 18 mm thick. A small fragment from a mid-Roman pit, 2236 (2718), near the portico structure has a central cylindrical perforation 20 mm diameter piercing a flat end, which may be the end of tuyère nozzle.

Salt Production

Briquetage

Briquetage occurred in deposits from late Iron Age to mid-Roman date with the largest concentration of both vessels and hearth furniture occurring in the area of Viewing platform 2 (400045). Moderate densities of vessel sherds also occurred in the area of circular structures 400039–41 and the portico structure (400020) on the Sanctuary site, as well as on properties 9, 11, and 12 on the Roadside settlement. The briquetage included both structural objects – the plates (Figs 128, 5; 129, 20–2; discussed above with the oven furniture) and vessels. Some of the pedestals may also have been used in salt processing. A high proportion of the briquetage consists of small shattered fragments, often with just one surface, which cannot be identified to form.

Vessels can be divided into transporting containers and evaporating troughs or bowls (Fig 128, 6–7). The transporting containers were probably either of the half-cylinder form (Fig 128, 7) or had a slightly flared profile akin to a flower pot shape (Fig 128, 6). Vessel walls measure 7–15 mm thick with diameters of 50–90 mm; one base is *c* 90 mm in diameter. Some vessels with thicker walls of 17–25 mm and sometimes thickening at the rim may have come from evaporating troughs: one piece has a blackened burnt surface and another sherd a straight rim. One of these has an estimated diameter/width of *c* 180 mm and walls 10–14 mm thick.

The Sanctuary Site

The late Iron Age assemblage

Material from late Iron Age contexts amounted to 469 fragments (6551 g). Nearly two-thirds of this was found in pit fills, the remainder in ditches and miscellaneous features, with the greatest concentration in the small enclosure (400015) and a more diffuse scatter in enclosure 400012, where the only identifiable material was briquetage sherds. Diagnostic fragments are dominated by wall daub and oven structure, with lesser quantities of pedestal and triangular brick fragments, a small quantity of furnace lining, and briquetage vessels. Ditches associated with the 'processional way' (400010) produced briquetage, pedestal, triangular brick, wall daub, and the inevitable non-diagnostic fragments. The largest group came from pit 3909 and consists of oven wall, a pedestal, and two briquetage sherds. The wall daub is fairly thin, 15–50 mm thick and the wattle impressions on the reverse fell into a size range (7–26 mm diameter) more typical of oven wall structure. The exterior of the wall daub has a thin veneer of cream chalky daub wash. Another large group from pit 3015 comprises oven base and wall daub together with a triangular brick or pedestal.

The early–mid-Roman assemblage

The fired clay was found predominantly in pits (42%), ditches (18%), layers (14%), and post-holes (8%), with the remainder scattered through a wide range of other feature types, including a corn dryer, hearths, and a beam-slot. Although the Sanctuary area is dominated by the temple and ritual activity associated with the spring, the fired clay assemblage appears to reflect more prosaic activities (in some contexts pre-dating the Sanctuary complex). In this area the fired clay falls into two broad categories: the wall daub that derives from the buildings and fired clay from hearth or oven structures representing a range of activity. The latter material does not differ significantly in character from that present on the Roadside settlement.

The assemblages relating to individual or groups of structures are each described and their significance considered. All groups produced a background of non-diagnostic fragments which has either most commonly only a single plain surface or is entirely amorphous. A general background scatter of fired clay occurred in minor features across the area typified by the material found in association with the early road (400009).

Two early Roman structures (400028 and 400029), the latter thought to be a smithy, produced very similar assemblages in terms of quantity (both produced *c* 1.3 kg of fired clay) and character: fragments of vitrified hearth or furnace lining, hearth floor or oven superstructure (walls or base), and pedestal. A pedestal from the earlier building had a perforation and an oval cross-section while from the later building (the smithy) came a tapering pedestal with hexagonal cross-section.

An early crop-dryer (400061) produced fragments of daub with wattle impressions and vitrification on some of the surfaces. This may represent part of the superstructure, possibly part of the drying floor, though it is possible the wall daub derived from a light structure enclosing the dryer. The only other diagnostic material from associated deposits is two briquetage sherds.

A second crop-dryer (300172) was associated with one of the 'viewing platforms' (400044). Most of the fired clay is undiagnostic with just a single surface, probably the lining of the flue and firing chamber of the dryer. The wall daub has wattle impressions of a size to suggest that this derives from a building rather than the corn drying oven. although it might be part of the drying floor constructed of clay over wattles. A small fragment of vitrified furnace lining together with a fragment of firebar and oven plate suggest that some other oven or furnace structure may also have been in use in the area.

Four structures were identified as possible 'bakeries' on the basis of oven and hearth bases and pot ovens in their interior. Structure 400034 had a central hearth but the only associated fired clay fragments came from a pit. Only a little more fired clay came from the nearby sequence of three circular structures which, like 400034, pre-dated the Sanctuary complex. 'Bakery 1' (400037–9) produced less than 300 g including wall render, furnace lining, and briquetage. 'Bakery 2'

(400040) produced 560 g of fragments of oven wall, furnace lining, a possible pedestal, a triangular perforated brick, and briquetage vessel. The largest quantity (1308 g) came from 'Bakery 3' (400041–2) in the form of wall daub and render, furnace lining, and crucible, and possibly some briquetage.

The Sanctuary temple (400033/400035) and associated features produced moderate quantities of fired clay. Wall daub including render with roller stamped impression, together with fragments of floor surface or superstructure, came from hearth or oven base 5989 within the temple. Part of a pedestal with a circular cross-section (Fig 128, 3) was found in a separate feature. It is possible that some of the wall daub may be oven superstructure rather than building wall. Much of the fired clay came from associated ditches, post-holes, and other features, but there is a possibility that at least some may represent residual debris from the earlier smithy (400029).

A very large quantity of wall daub and render with roller stamped keying (5753, 5786–8, 5790, 6070, 6079) was associated with post-holes forming fence or screen 300110, much of it dumped in ditch 300012 and tank 5917 to the north and east of the Sanctuary temple. Pit group 400024, further to the east of the temple, also contained almost exclusively wall daub, with a large group from pit 2389 (2448–9). Dating of the features is mainly mid-Roman, and it is possible all of the wall daub and render essentially derived from one demolished building that must have burnt down. A beam-slot building (300157) to the north-east of the temple would be the most likely candidate for this type of material, though the structure itself only produced a few fragments of wall daub from the associated slots. Other debris includes a pedestal and other oven furniture, oven wall, and briquetage vessel.

A second beam-slot structure (400054) produced 1.7 kg of fired clay from mainly mid-Roman pits broadly associated with it. Pit 2258 and feature 2456 contained only wall daub and render with roller stamped keying, whilst pit 2420 additionally contained fragments of pedestal and briquetage vessel and pit 2318 briquetage vessel and a possible bellows guard.

The evidence suggests that these beam-slot buildings were constructed as timber-framed structures with wattle and daub set into the main timber framework. They were possibly used for activities such as metalworking or salt processing, though the evidence could be interpreted as indicating domestic ovens or cooking structures.

The portico building (400020–400023) had a light scatter of fired clay in associated deposits and features, most of this undiagnostic together with a little wall daub, a triangular brick, and briquetage.

A possible structure (400059) and associated drainage gullies produced one small fragment of furnace lining and a moderate amount of wall daub with a plain plaster wash surface, but the few wattles impressions are more typical of oven wall. Much of the fired clay was concentrated in 'tree-throw' 3652, suggesting this was, in fact, one or probably more intercutting Roman oven bases associated with the building.

A second 'viewing platform' (400044–7) and a later but associated rectangular building (400048) produced wall daub, render, briquetage, and furnace lining from its primary (late Iron Age/early Roman) use. From the subsequent early Roman phases came structural oven daub possibly with evidence of flue or stoke-hole opening, briquetage plates and vessels, wall daub, and render. One of three hearths/ovens (5080) produced hearth or oven floor or base lining, as well as oven plate, and firebar or pedestal. The second oven (5118) was a pot oven and produced three fragments of wall daub, which raises the question of whether this could be from a structure enclosing the pot to insulate it. From hearth 5047 came a little fired clay, which included furnace lining and possible furnace wall. The evidence suggests different functions and constructions may be represented by these features – possibly for baking, salt processing, and cooking.

The final use of this 'viewing platform', in the mid-Roman period, is represented by the rectangular building (400048) with an oven in the interior. This produced the largest group of fired clay and daub from the site, from contexts 2703 (layer of structural debris), 2712–3 (oven fill), and 3578 (oven flue). All produced large quantities of wall daub and render with roller stamped keying. These included some of the most substantial blocks of daub and evidence of the largest timbers, suggesting that this material derived from a building, not the oven superstructure. It suggests that the walls of this building were constructed of wattle and daub panels set into a timber framework. The oven is likely to have been the source of the conflagration, which burnt and fired the wall structure.

The Roadside Settlement

At this site the fired clay comes predominantly from the early and mid-Roman phases, with smaller quantities from the late Roman phase. No obvious changes over time were perceived and no detailed analysis in this respect has been undertaken. However, the spatial pattern suggests some significant differences in activity in relation to the properties. Those which fronted onto Watling Street produced larger quantities of fired clay indicative of artisan activity compared with plots on the north-east side of the branch road. The general picture is of small-scale metalworking, including iron- and bronzeworking, salt processing, as well as perhaps minor cooking or baking activities. There was very little wall daub of the type found in quantity in the Sanctuary area, suggesting that the activities were undertaken in the open or in lightly constructed shelters, perhaps partly or wholly open. The evidence is summarised in Table 64. A scatter of similar material occurred in the roadside ditches.

Table 64 Comparison of fired clay forms and function in the properties in the Roadside Settlement

Property	Phase	Weight (kg)	Forms	Associated structures	Activity
1					none
2	Early–late Roman	8.8	Mostly non-diagnostic with briquetage, pedestal, furnace lining, wall	oven 12002, 'kiln' (or ?base for pot oven) 12068; hearths 12035, 12446; hearth/oven base ('tree throw') 12566	workshop (pre-temple): ?salt processing, ?metal-working, ?domestic/baking
3	Early–mid-Roman	2	mostly non-diagnostic with wall & briquetage vessel		?domestic
4	Early–late Roman	1.15	mostly non-diagnostic with wall		?domestic
5	Early–mid-Roman	1.4	mostly non-diagnostic with wall, hearth floor, object/vessel		?domestic
6	Early–mid-Roman	0.13	non-diagnostic		none
7					none
8					none
9	Mid-Roman	8.2	hearth floor, briquetage plates, & vessels	all pit 16175	workshop: salt processing
10	Early Roman mostly	4.8	furnace lining/walls & crucible; platelet; ?briquetage plate	metalworking debris concentrated in layer 16144	workshop: iron smithing & bronze-working
11	Early–Mid-Roman	12.9	Briquetage vessels & plates; furnace lining/wall; fire bar; oven structure/walls	oven bases 10999 & 11477; hearths 10708, 10943, 10959, 11613	workshop: metal-working; salt processing; ?cooking
12	Early–Mid-Roman	12.1	Briquetage vessels & plates; furnace lining/wall; oven structure/walls; oven furniture	hearth floor 11940; SFB 11982	workshop: salt processing, metal working

Discussion

The general pattern in both the Sanctuary area and the Roadside settlement suggests that small-scale cottage industries including metalworking and salt processing were commonplace, often probably being undertaken on the same premises. The salt processing does not represent the primary stage of evaporation (it is very unlikely that saline water every reached this far up the Ebbsfleet), but a secondary stage of completing the drying and packaging of the salt ready for redistribution. The situation of the settlement on Watling Street would be ideally suited for this. However, it is possible that salt played a part in the religious rituals associated with the shrines at Springhead and may have been required in greater quantity than at a more typical urban settlement.

Evidence for crop processing and baking was widespread on the Sanctuary site and may reflect the straightforward provision of food to visitors or pilgrims to Springhead, but it may also imply that larger quantities were required for use in religious rituals within the Sanctuary complex. In the Roadside settlement evidence for ovens for baking or cooking is less tangible and may indicate only domestic production or small-scale commercial production serving the local neighbourhood.

There is also a clear distinction in the evidence for buildings between the two areas. Wall daub is almost entirely lacking from the Roadside settlement, whilst large quantities were recovered from the Sanctuary site. This may merely reflect the fortuitous occurrence of house fires but it may also indicate a difference in building construction. The character of the daub is typical of that found at sites such as Chelmsford (Drury 1988), Colchester (Crummy 1984), and *Verulamium* (Frere 1972), where it has been linked to timber-framed buildings constructed using sill-beams set in a beam-slot for the base of the wall plate. At Springhead structures 400042 and 400054 are of this sort and it seems likely that the considerable quantities of wall daub found in the latter derive from that building's superstructure.

The wall daub in the Sanctuary area occurs as demolition or destruction debris, though one problem is that no evidence of burnt foundations or structure was found *in situ*. An explanation may be that the burnt daub derived from an upper storey. This may not be an unreasonable supposition, especially for the large quantities of material found in the vicinity of the Sanctuary temple (400035). It is possible that structure 300122 described as a fence or screen was in fact a colonnade supporting an upper storey related to beam-slot building 400042. If an upper storey over an open colonnaded portico burnt down, *in situ* burning at ground level would not necessarily occur. This structure overlies the final phase of the sequence of three circular structures interpreted as bakeries and it may represent a rebuilding of the bakeries in more Romanised form. It is possible that, in line with this change, ovens were now constructed on a podium above ground level, an arrangement known from Ostia (Bakker 2001) and elsewhere in Italy and would not therefore have left any structural trace at ground level. Accidental fires must have been a constant danger in the buildings housing the bakeries and crop-dryers.

Table 65 Northfleet fired clay: quantification of Roman tile, types by fragment count and weight

Material	Count	% Count	Wt (g)	% Wt
Tegula	7422	27.46	1,842,796	42.24
Imbrex	4117	15.23	585,779	13.43
Ridge tile	23	0.09	5484	0.13
Chimney	1	0	240	0.01
Box flue	536	1.98	86,796	1.99
Voussoir	55	0.2	18470	0.42
Water pipe	4	0.01	5035	0.12
Brick	2527	9.35	1,270,789	29.13
Segmental brick	7	0.03	3695	0.08
Tessera	959	3.55	29,210	0.67
Plain tile	7742	28.65	454,374	10.42
Misc	3632	13.44	59630	1.37
Total	27,025		4,362,298	

The roller stamped keying that occurs so prolifically on the daub appears, superficially at least, to be of the same or very similar pattern of diamonds and chevrons previously identified from Springhead. However, in spite of the difficulty in comparing patterns because of the quality of preservation on the daub, disruption by fragments of straw and organic matter, and the absence of any extensive areas being preserved, there is an indication that up to four different patterns were in use. It is inherently unlikely that only a single roller die was in use at any settlement and the slight variations that can be detected in surviving patterns confirm this. The similarity of patterns to those at Silchester and Lullingstone may indicate that tradesmen moved around working at different locations and the roller was a personal item belonging to individual tradesman.

Ceramic Building Material from Northfleet

Ceramic building material comprising 27,035 fragments weighing 4365.48 kg was recovered from the excavations at the Northfleet Villa site (EBB01). Of this 18,071 fragments weighing 3395.44 kg was recorded for the assessment by Sue Pringle (Pringle 2005) and *c* 85% was discarded at this stage. Material was retained in accordance with Museum of London guidelines (*cf* guidelines of the Society of Museum Archaeologists: SMA 1993) and included samples of the provisional tile fabrics. A further 8964 fragments (970.04 kg) were recorded by Leigh Allen and Cynthia Poole. The more informative pieces of identifiable forms were retained and all non-diagnostic material discarded, together with poorly preserved pieces of identifiable forms. In this second phase of recording no fabrics were assigned to the non-diagnostic material and the identified forms were assigned either to the broader fabric groups or to the more distinctive individual fabrics. A very small quantity (<1%) of post-Roman building material is included within the total.

The general character of the whole assemblage is typified by a large quantity of broken, small fragments, some heavily abraded, some shattered and angular. In view of the overall size of the assemblage, the numbers of complete or fairly complete tiles is surprisingly small. Some contexts produced very large quantities of building materials: 37 contexts contained over 20 kg and a further 12 contexts (10158, 12619 12272, 15037, 15216, 15275, 15372, 19107, 200022, 200083, 200084) 50–269 kg, which includes material from the bath-house, the gravel spur, and the Western Roman Complex. A Saxon soil accumulation (10090) produced 555 kg. Where material survived *in situ* such as the bath-house, in general only a single brick was retained as a representative sample of any single structure. No *tegulae* were apparently sampled from structures, though it is not unusual for these to be utilised to construct flue walls and arches in hypocausts and corn dryers, both of which were present on site. The broken and shattered character of the assemblage must reflect not only the demolition of the structures, but the re-use of the material as hard-core and make-up in subsequent activity. Details of the assemblage are set out in Table 65.

Fabric

A series of provisional tile fabrics and fabric groups was assigned by Pringle during the assessment, though no detailed descriptions were made at that stage. Some of these were equated to types known from the Greater London area and cross-referenced where applicable to the appropriate Museum of London (MoL) tile fabric code in the MoL type series. The fabrics are referred to in this report by the original fabric numbers (or more rarely letters), assigned provisionally by Pringle, whilst the fabric groups are referred to by letters to avoid confusion with the majority of the individual fabrics. The fabrics were divided at the assessment stage into broad groups defined by their colour and range of inclusions. It was thought that the groupings reflected clays with different geological origins and, therefore, from different geographical locations. However, there are tiles with characteristics intermediate between groups and many of the distinctions are not clear cut, suggesting that the variations occurred within a related geological resource.

Following full analysis the fabrics have been assigned to eight fabric groups A–G and Eccles (detailed descriptions in archive). However, many of the sub-divisions are not considered significant and only the broader characteristics of each group are described here. *Table 66* shows the relationship of the groupings and individual fabrics together with MoL fabric equivalents, as assigned by Pringle.

The fabric groups

Group A (fabrics 3 (MoL 3024), 12 (MoL 2457), 13 (MoL 3074), 14 (MoL 3024) and Y)

This group accounted for 2.65% of fabrics (362 frags, 115, 550 g). The common characteristic is a high calcareous content and most include fossilised shell fragments. They sub-divide into two sub-groups. Fabric Y has a uniform calcareous clay matrix, cream, pale brown, sometimes tinged pink, containing medium sub-rounded quartz sand, occasional shell, and infrequent coarser grits including maroon ferruginous sandstone, which appears to be similar to the maroon moulding sand commonly associated with this fabric. All but one of the pieces derives from *tegulae*, which were well made with smooth even surfaces, with a regular thickness of 23–6 mm and flange types A, D, and F.

The second sub-group comprises the remaining fabrics (3/14, 12, and 13), which are orange or reddish in colour containing quartz sand, silty clay pellets (buff or red), fine red or black iron oxide grits, and occasional coarse stone grits of burnt flint and red ferruginous sandstone. Fabric 12 is distinguished by its spherical clay pellets and fabrics 13 and 14 are both strongly laminated with cream streaks and contain frequent small chalk grit. Fabric 14 generally has a fine white speckled moulding sand, whilst fabrics 12 and 13 both have a rusty red moulding sand, which appears to be clear quartz with a fine ferruginous coating. Fabrics 13 and 14 are not dissimilar to Group E fabrics and could represent an overlap with this category. Fabric 12 has been equated with a distinctive group of fabrics containing grey or white shell and with dark red moulding sand (MoL fabrics 2453 and 2457). The source is unknown but tiles of this type are widely distributed in coastal areas in south and south-east England (Betts and Foot 1994, 32–3).

Group B (fabrics 5, 7, and 10)

This group accounts for 15.85% of fabrics (2374 frags, 691,729 g). It comprises orange–red or orange–brown very uniform, fine sandy clay fabrics characterised by common–abundant fine specks of black iron oxide. Some of the clays are poorly mixed containing variable quantities of sand and yellowish rounded silty clay pellets 3–7 mm, angular unwedged clay, occasional red maroon iron oxide inclusions or ferruginous sandstone grits up to 4 mm, occasional chalk and chert grits up to 8 mm.

Pringle (2005) noted that this group resembles the products of the Radlett kilns close to Watling Street in Hertfordshire (MoL fabrics 3023 and 3060). However, similar clays also occur south of the Thames and the Ebbsfleet fabrics probably derive from a more local source, as some tiles had characteristics intermediate between fabrics 10 and 2 suggesting groups B and C came from a closely related clay source.

Group C (fabric 2)

This group accounts for 48.5% of fabrics (9415 frags, 2,117,449 g). Fabric 2 is the commonest fabric and is likely to have come from kilns close to the site. It is characterised by common, frequent medium and coarse quartz sand (white or rose), with a scatter of small ferruginous grits and clay pellets and coarser chalk, and burnt flint grits. The moulding sand is the same as used in the fabric mix.

Group D (fabrics 1, 8, 9, 15, and 18)

This group accounts for 6.17% of fabrics (1076 frags, 269,393 g). These fabrics are very fine sandy clays, red or brown, with very few (usually quartz) or no inclusions. They are broadly similar to those of the MoL 2815 group which are made from the London Clay (MoL fabrics 2452, 2459A–B, 3004, 3006). The similarities in the matrices and inclusions suggest that Group D is also likely to have been made from the London Clay, which outcrops at various points in the vicinity of Northfleet.

Group E (fabrics 4 (Z), 16, 19–21)

This group accounts for 3.66% of fabrics (1080 frags, 159, 971 g). This is a group of mainly orange fabrics with cream silty streaks and siltstone inclusions. The fabrics consist of laminated sandy clays, orange, yellowish–red, red, or brown with cream or pale brown silty streaks containing frequent sand including quartz and fine iron oxide inclusions, and common coarser inclusions of ferruginous dark red clay pellets or iron oxide, light brown silty clay pellets up to 17 mm, and occasional stone grits including chert, chalk, or ironstone up to 15 mm. Most have coarse moulding sand. Fabric 4 contains the same basic constituents, but is clearly distinguished by the very coarse moulding sand of quartz and rounded grits of ferruginous siltstone or fine sandstone, which have been incorporated into the matrix. The fabrics have features in common with MoL fabrics 3018, 3025, 3069, and 3226.

Group F (fabric 6)

This group accounts for 4% of fabrics (342 frags, 174,613 g). There is just one fabric in this group: it has a red, yellowish or brown–red laminated, sandy clay matrix containing small dark red iron oxide grits and clay pellets and stone grits up to 17 mm including chert and chalk. Fabric 6 was equated at the assessment with fabric MoL 3050, which has been identified as coming from a kiln site at Reigate, Surrey. However fabric 6 has characteristics in common with both the group E and C fabrics and may be from a closely related source to these. The Reigate kiln exploited the Gault clay and Fabric F may be produced at kilns exploiting the same geological stratum closer to Northfleet.

Group G (fabrics X, X2, and 22)

This group accounts for 0.28% of fabrics (62 frags, 12,439 g). This group is characterised by common or abundant coarse quartz. Fabric X is the most common of the group and is reddish–brown, has a very granular texture, and contains a high density of medium–coarse quartz sand, buff sandy clay pellets up to 8 mm, small chalk grit 2–4 mm; rare burnt sandstone and stone grits up to 10 mm. Fabric X2 is less well-defined, but some examples are similar to MoL fabric 3267. Fabric 22 is identical to MoL fabric 3054; the kilns from which it came are not known but are thought to have been in Sussex (Betts *et al* 1997, 19–20).

Eccles ware (fabric 17)
This group accounts for 0.28% of fabrics (71 frags, 12,246 g). This was originally assigned to Group C, but it has been separated as it appears to be quite distinct from fabric 2 and can be assigned to a known production centre. Fabric 17 is a pale pinkish–brown or cream sandy fabric identical to MoL fabric 2454, which almost certainly came from kilns at Eccles Roman villa in north-west Kent. Only very small quantities of this were found and very little has been seen by the author, most having been identified during the assessment.

There was a gradual increase in almost all fabrics from the early through to the late Roman phase, reflecting the overall pattern for tile as a whole, except for the Eccles fabric which showed a decrease after the mid-Roman phase and Group A which was not present in the early Roman phase and only appears in very small quantities in the mid-Roman phase. A late date for the Group A fabrics is consistent with what is known of its occurrence elsewhere (Betts and Foot 1994).

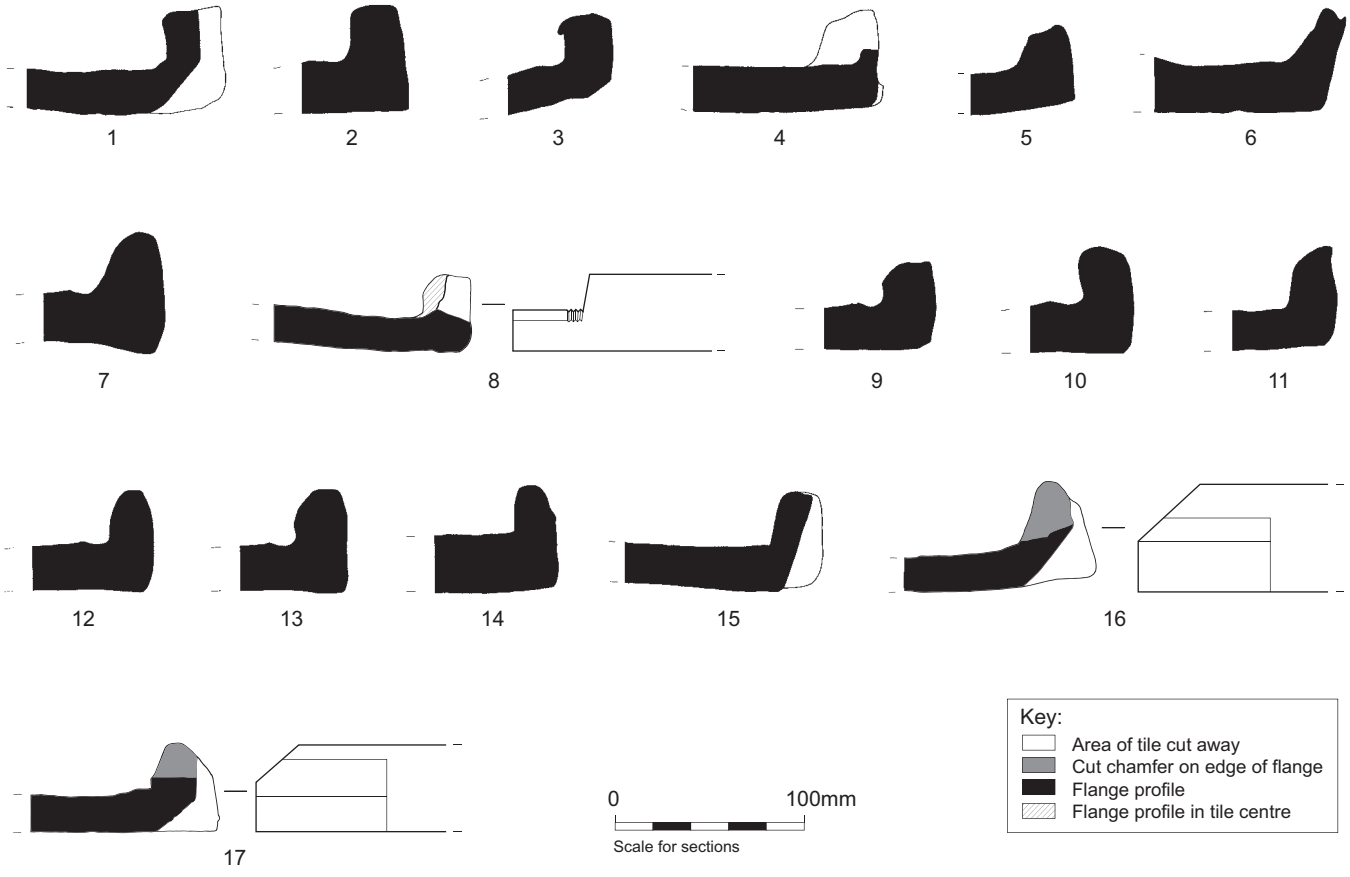
Assigning fabric codes to some pieces was frequently difficult because of the overlap and similarities between many of provisional types. Fabric groups B–D are closely related containing the same broad constituents in varying degrees of density and varying fineness or coarseness, representing a continuum of fabrics probably all deriving from the same broad geological source. The variations observed could reflect changes in the geologic source, either vertically or horizontally in the clay over either short or long distances, but cannot be taken to necessarily represent different production centres without other factors, such as tile characteristics, being taken into account. Variations may occur in clays exploited at a single centre, which may reflect differing areas quarried during the life of the kilns. The degree of preparation of the clay and resulting characteristics may have depended on the requirements for particular types of tiles or the degree of experience of the individuals producing the tiles and will have an impact on the characteristics of the resulting fabric. Similarly, colour will depend on the firing process and whether the tilery was aiming for consistency in colour.

Fabric groups E and F have characteristics in common with each other and also with groups B–D. Though many of the fabrics have been equated to MoL fabric types, it cannot automatically be assumed that the tile at Northfleet necessarily comes from the same production centres, where similar clays are exploited over a wide area. The relationship of tile characteristics to fabrics or fabric groups can be used to validate distinctions between fabrics or fabric groups and this aspect is considered further in the sections below.

Tile Forms and Characteristics

As a result of the assemblage being recorded in differing degrees of detail, no quantification will be presented apart from indicating in relative terms the more and less frequent occurrences of characteristics under discussion. Of the material recorded by Pringle measurements of only more complete tiles were recorded and no record of *tegula* flanges or cutaways was made before discard at the time of assessment. Features such as signatures, tally marks, imprints, keying, and nail-holes were recorded to varying degrees of detail. However, during subsequent analysis such information was recorded for all material retained during the assessment and that subsequently recorded.

Roofing: *tegulae*
The roofing tile is dominated by *tegulae* and *imbrices*, but includes a small quantity of ridge tiles and a single fragment of probable chimney. A total of 22 complete or near complete *tegulae* survives. The measurements of complete tiles are shown in *Table 67* together with their fabrics. These *tegulae* fall into two size groups, which reflect their fabric groups. In most examples the only complete dimension is tile thickness. Flanges and cutaways were recorded in relation to their form and size for only a proportion of the assemblage. Types are shown in Figure 130. The most common form is type A with a rectangular profile sometimes with a projecting inner lip at the top (A2) or a sloping upper surface (A3). Type B has a sloping inner side surface, so that there is a distinct difference in the width of the top and base of the flange. Type C has a triangular profile with the inner sides continuously sloping and outer chamfered at the top either by cutting, moulding, or with a finger groove to form a very narrow top. Type D has a curving profile with both inner angles rounded, the upper convex and the lower concave. Type E is similar but with a more angular lower inner angle. Type F has a rounded profile with both inner and outer convex angles at the top. There are inevitably gradations between the types, especially between type A and D and E and between C and F, which both frequently have a finger groove along the outer upper angle. Where the full length of a flange survived it was apparent that some changed both in shape and size lengthways. The cutaways at the corners of the *tegula* are limited to certain common types. Upper cutaways are nearly all type A2, where the end of the flange had been cut out to leave a rectangular recess. There is evidence that some of these were formed initially with a mould and subsequently cut to a more even shape. A few rare examples of B2 or B3, where a edge of flange is removed with either a straight or curving surface, were observed. The majority of lower cutaways are the composite type A3, with a rectangular recess formed in the outer edge of the flange by the tile mould and the lower angle then cut to a diagonal chamfer. Both these types occurred independently of the other. Sometimes the A3 type has been modified by cutting to a chamfer to produce the category A3a. In recording the *tegulae* it was noticeable that size and flange and cutaway forms as well as certain general characteristics were commonly associated with certain fabrics. The fabrics used and characteristics of the tiles occur in similar proportions throughout all periods.



0 500mm
Approximate scale for photographs

Figure 130 Northfleet: *tegulae*, 1 Flange type A and cutaway A3/C1, 2–3 Flange type A, 4 Flange type A2 upper cutaway, 5 Flange type B, 6–7 Flange type C, 8 Flange type D and cutaway A2, 9–10 Flange type D, 11–12 Flange type E, 13–17 Flange type F, 15 cutaway A3a, 16–17 cutaway C1/A3 with B2, 18–19 *tegulae* and *imbrices* group (mixed contents)

Tegulae *in fine-sandy fabric groups B–D*
The more complete tiles measure 420–78 mm long, 300–44 mm in breadth at the upper edge tapering to 270–310 mm at the lower edge, and have a thickness of 17–25 mm (excluding flange). Of the more fragmentary pieces fabric group B has a thickness range of 6–32 mm, group C: 10–35 mm and group D: 13–39 mm, though, in all, the main peak is at 20 mm. This wide range reflects the variability within individual tiles where thickness commonly varied by 5–10 mm across the tile and in a few cases up to 19 mm. Many are thinnest closest to the flange, thickening to the tile centre. This reflects the extremely irregular character of the underside of the tiles which appears to reflect a rough bare ground surface, suggesting that the initial forming of the tiles in the moulds was done directly on the ground surface.

Flange type A is most common followed by types D, B, and E; types C and F are present in small quantities. It is possible that the fabrics of the type C flanges have been misidentified as one at least has characteristics typical of the fabric Z tiles, as well as having the same gritty moulding sand. All show a considerable range of base width of 13–40 mm and height of 30–54 mm, reflecting the taper of the flanges, best appreciated on the more complete tiles, where differences of up to 20 mm have been noted. The width normally increases from the top corner to the lower corner, while height tends to be greatest in the centre, diminishing to either corner. Upper cutaways are predominantly of type A2, with only rare examples of B2, and range in length from 35 mm to 70 mm with most *c* 60 mm. A characteristic noted on several tiles is that the upper cutaway has apparently been roughly extended by chipping off part of the flange, presumably during actual roof construction. Lower cutaways are mainly of type A3/C1 measuring 40–65 mm long, with most clustering at *c* 55–60 mm. Less common is type A3a, which tends to be slightly longer with a range of 40–70 mm in length and most falling in the upper end of the range.

Sixty-five tiles, the majority in fabric 2, have nail-holes, five of which were chipped after firing. Those made pre-firing are both square and circular, measuring *c* 5–9 mm wide, usually narrowing to the base of the tile. Two retain nails. The holes were made 30–70 mm from the top edge and set symmetrically from the sides. Signature, tally marks, and imprints are most frequent in this group.

Tegulae *in calcareous fabric group A*
These tiles are consistently smaller than those in the sandier fabrics. The eleven complete or near complete tiles measure 368–70 mm in length, 290–2 mm in breadth at the upper end, 265–83 mm in breadth at the lower end and 20–9 mm thick. Tile thickness generally measures 17–31 mm with most concentrating between 20 mm and 26 mm. The tiles are even and well finished with smooth regular surfaces. The bases and sides, invariably flat and regular, have, in some instances, been cut smooth in their entirety.

Flanges are generally smooth, well rounded, and carefully finished. Type F flanges are particularly associated with this group, especially in relation to fabrics 12–14, whereas fabric Y (and its variant 50) have flanges in forms A, B, D, and E, alongside the more common type F. The type F flanges usually measure *c* 20–30 mm wide by *c* 40–62 mm high. Other types are *c* 25–30 mm wide by 34–60 mm high.

Upper cutaways of type A2 (often moulded and then cut, and *c* 40–50 mm long) are more common in the Y fabrics and type B2 or B3 (both cut forms, and 50–70 mm long), are generally associated with fabrics 12–14. Occasionally the upper cutaway is extended by additional chipping of the flange. Lower cutaways usually take the form of the composite mould-formed type A3 plus cut C1. It is noticeable in both sub-groups that the A3 cutaway can be very shallow, only 2–3mm wide and may not have been observed on all tiles where present. An additional feature of the lower corners frequently present in both sub-groups is an additional B2 type chamfer cut on the remaining end of the flange, though invariably shorter (10–20 mm) than the upper cutaways of this type at the upper corners of the tile. An example of this chamfer has also been created by a finger/thumb depression. A few examples of A3a type cutaways are present, where the moulded A3 has been cut to a chamfer along its full length and height. Two nail-holes are found on this group placed 60–8 mm from the top edge. Signatures, tally marks, and imprints are rare.

Tegulae *of Fabric Groups E and F*
These two groups have some characteristics in common and are treated here as a broad grouping. No complete tiles were found in these groups, the best preserved is one in fabric E (4) measuring >335 mm long by 275 mm broad. Tile thickness ranges from 15 mm to 30 mm with the main concentration 20–5 mm, apart from one tile with a thickness of 21–32 mm, though variations in thickness in a single tile is not usual.

Group F (Fabric 6 (MoL3050)) includes flanges of type B, D, E, and F, upper cutaways of type A2 and lower cutaways of type A3a (cut from A3 moulded type) *c* 65–70 mm long and C1 (it is uncertain whether these are associated with very shallow type A3 cutaways). Group E is dominated by fabric 4/Z, which almost exclusively has flanges of type C and F, though a few examples of types A, B, and D also occur. Upper cutaways are of type A2 (46–60 long) and lower cutaways of type A3/C1, with some similar to those in the calcareous group with a very shallow A3 combined with the B2 chamfer, and type A3a. The cutaways measure 55–76 mm long, with most towards the upper end of the range. One example of a rectangular lower cutaway of type D1 is also present. The fabric and cutaway forms of fabric E (4) seem to exhibit a clear link to the Fabric A types; it is unfortunate no complete tiles survive to compare overall size.

Roofing: *imbrices* and ridge tile

A total of 15 complete or substantial parts of *imbrex* were found, nearly all in fabrics B and C (2) apart from one complete end in fabric A. Their dimensions are shown in *Table 68*. A comparison of *imbrex* sizes summarised according to fabric group is shown in *Table 69*. The sizes of more complete *imbrices* indicates that those made in fabrics B and C are very similar in size, all falling within a fairly limited range. The comparison of all available *imbrex* data for all the fabric groups confirms this and suggests that the *imbrices* in all fabrics were of similar size except those in fabric group A. Though no complete tiles survive in this group one complete length indicates that they were substantially shorter than the other groups, though not significantly different in other dimensions. The tiles in fabrics B–D, in common with the *tegulae* in these fabrics, exhibite a range of thickness within a single tile with variations of 5–7 mm and sometimes up to 15 mm.

There are few features that can be used to characterise *imbrex*, though variations in profile were noted, ranging from angular to curved, and a more unusual shape of a polygonal profile, emphasised by the extremely thickened edges (Fig 131, 5), sometimes increasing to 30 mm. The full range of profiles was noted in fabrics B–D, whilst the more common curved and angular profiles were noted in the remainder. Faint longitudinal ribbing was noted on many, nearly all of which were fabric C, with only one example each in fabrics A, B, and E.

One tile from context 15696 is identified potentially as a ridge tile based on the absence of discernible taper. However, in all other respects it is the same size as the *imbrices*. A small number of other fragments in fabrics A–D are identified as possible ridge tiles based purely on the thickness of the tile wall and their estimated width, extrapolated from the diameter indicated by the curvature of the tile, all of which appear to have a semi-circular profile. Tile thickness measures 20–30 mm and widths are estimated at 220 mm, 280 mm, 360 mm, 260–340mm, and 400 mm. In total only 19 fragments, weighing 5237 g (0.13%), have been identified as possible ridge tiles, which suggests that *imbrices* were generally being used to cap the ridge of the roof.

Roofing: chimney

The fragment forming the rim of a cylindrical object is interpreted as being part of a chimney pot, with an estimated external diameter of *c* 180 mm and a wall thickness of 20 mm. It is crudely made with clay ridges from moulding around the circumference, a smoother interior, and knife trimming of the edge, both internally and externally (Fig 132, 1).

Flue tiles

Almost all the flue tile is in the form of box flue and hollow *voussoir*. A single fragment of a roller stamped flue tile was found in burnt ashy backfill in the cut (16170) for a wood-lined well 16731. This is the earliest piece of flue tile from the site, found in the early–mid

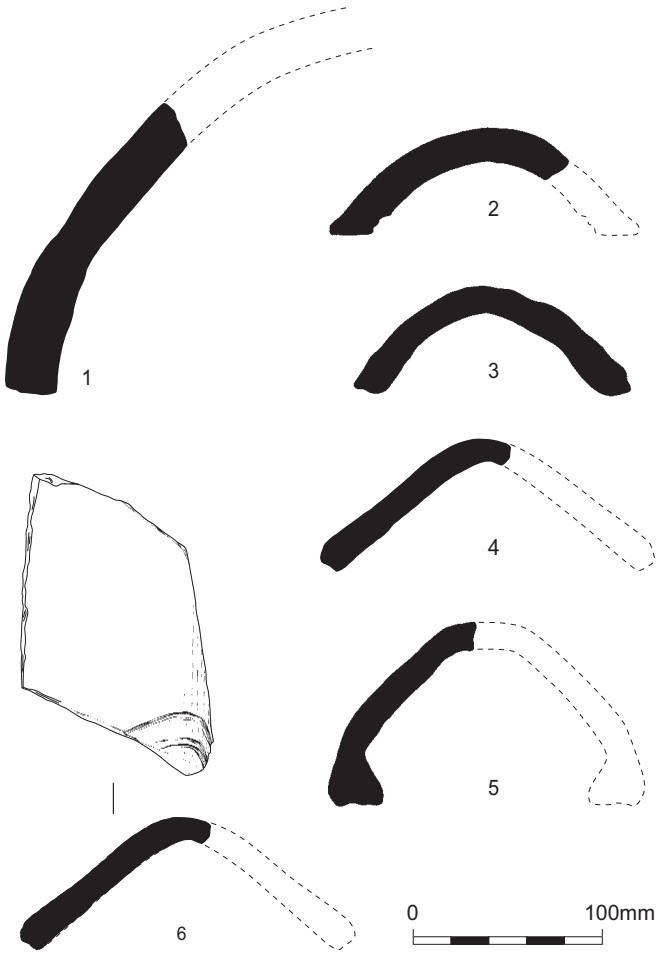


Figure 131 Northfleet: 1 tile profile, 2–6 *imbrex* profiles

Roman phase. A single fragment from context 20164 was identified by Pringle as a half-box flue tile, a type of wall jacketing often used in military bath-houses. This came from a layer around a hearth and may indicate reuse in relation to the hearth.

Apart from this, all the flue tile has combed keying and was found in mid- or late Roman contexts. No complete tiles were recovered and even complete single faces are rare. The flue tile is made in fabric groups B–D with negligible quantities in fabric groups A (260 g) and E (mainly fabric 16) (2400 g). There appears to be little difference in the character of the tile from the three main fabric groups, which appear to have the same range of sizes (*Table 70*) and combing patterns (see *Table 75*). Eighteen examples of faces with vent holes have been identified. Fabric B produced three rectangular vents, 38–60 mm wide and a circular vent of *c* 27 mm diameter, fabric C produced three rectangular vents, one measuring 45 mm wide and eight vents were recognised in fabric D, mainly rectangular or sub-rectangular, ranging in length from 50 mm to over 92 mm, and one 'butterfly' shape (Fig 132, 2), 45 mm wide. Two vent holes occur in fabric E tiles, one circular, of 34 mm diameter narrowing to 27 mm, and one rectangular, >63 mm wide.

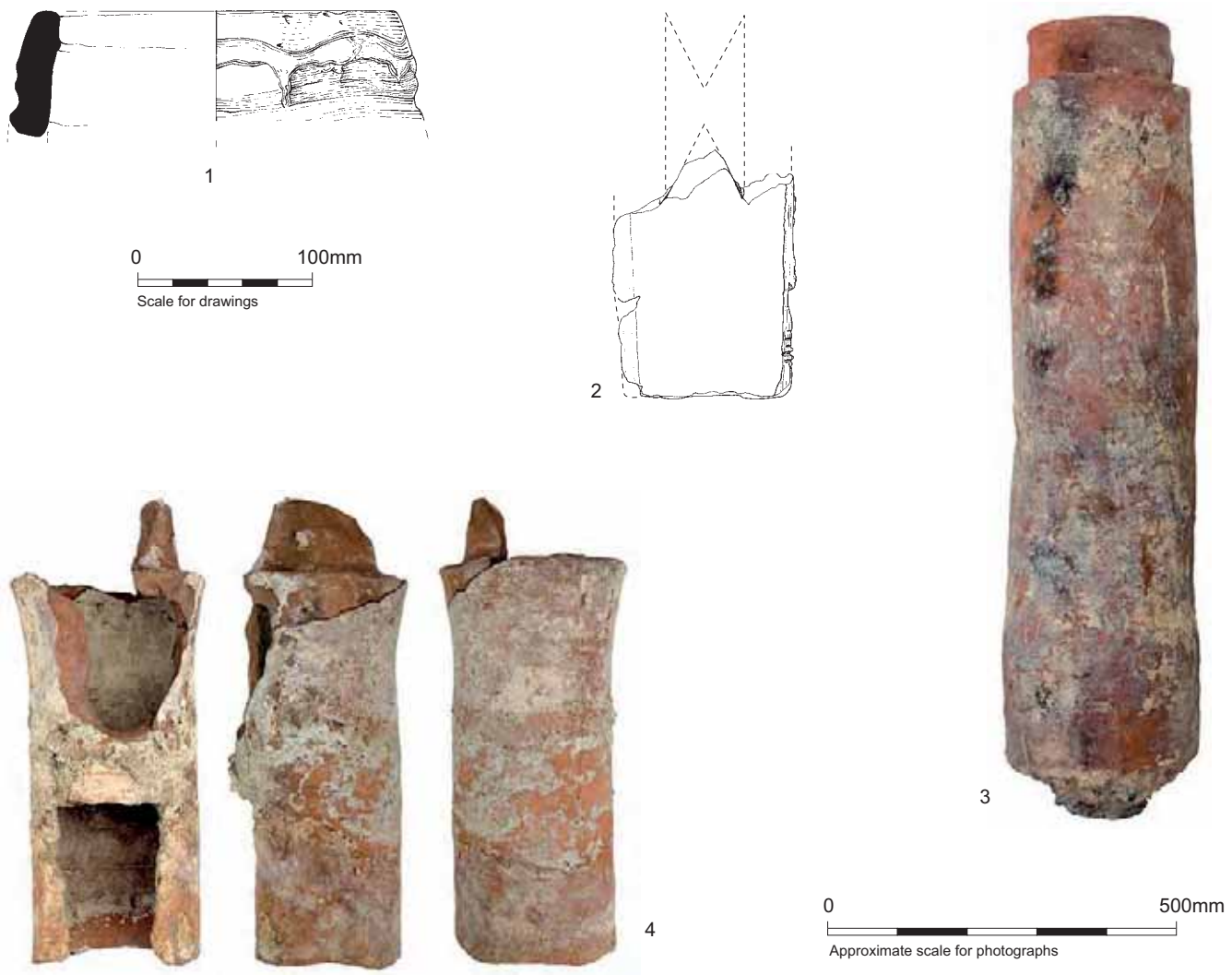


Figure 132 Northfleet: chimney pot rim (1), flue tile (2) and ceramic water pipes (3–4)

Nine tiles have been identified as *voussoir* based on form and evidence of taper. Sizes are shown in *Table 71*. A further 35 pieces have been identified tentatively as *voussoir* based on the presence of keying on adjacent faces. One (context 16342) has a section of iron pipe, 35 mm in diameter, corroded onto the tile. This appears to be a secondary use after the tile was broken, being set in mortar and used as a support for the pipe.

Bricks

The assemblage comprises rectangular wall-bonding bricks: square bricks usually used in hypocaust systems and segmental bricks that include complete examples of *lydion*, *pedalis*, and *bessalis* bricks, as well as a substantial portion of a larger square *bipedalis* or *sesquipedalis*. The bricks are made predominantly in fabric C (44%) and B (30%), with lesser quantities in fabric E (16%) and D (9%). Fabrics A and G account for less than 1% combined. Thirty-four bricks have a complete length or breadth measurement and of these 11 are complete with all three dimensions surviving. Eight of these are samples from masonry structures or floor surfaces. Sizes are shown in *Table 72*. Of the more fragmentary pieces where only thickness was measured, a similar range of sizes is indicated, with the majority falling between 30 mm and 40 mm, which appears to reflect the predominance of *bessales* and *pedales* together with the few *c* 25–8 mm, and a smaller group *c* 45–60 mm, probably indicative of *lydions*.

Most of the bricks are fairly regular and even with evidence of knife/wire trimming to the edges or base, and often slightly rounded corners. A few have a raised margin of clay 20–40 mm wide and 2–3 mm high on the upper surface alongside the edges. These are not confined to any one fabric group but occur on one or two each of fabrics B, C, and E (fabrics 4 and 6). Depressed margins 26–36 mm wide are found in the same fabrics with the addition of fabric D in similar quantity.

Evidence for segmental bricks, likely to have been used for constructing columns, is provided by a semi-circular or quadrant moulded brick, radius *c* 300 mm (context 19040), two fragments with a radius of *c* 200–20 mm (contexts 20146, 20165), and one (10593) with a radius of *c* 180 mm. Another fragment with a curved edge came from context 30012. A moulded brick with straight sides meeting at an angle of *c* 55° may have been an oddly shaped segmental brick (context 200106) but its characteristics have more in common with fired clay and it is likely to be some form of oven brick. Twenty-three bricks have signature marks of types 1, 3–7, eight have tally marks on both the tile edge and surface and five animal and other impression.

Flooring

Almost all the *tesserae* are the coarser type from plain tessellated floors measuring in the region of 20–30 mm and rectangular or trapezoidal in shape. What may be a group of smaller, mosaic-sized *tesserae* came from the area of the gravel spur (late Roman soil accumulation 10031, a rubble deposit (10480) in room 10508 of the bath-house, and, from the same room, a burnt deposit (10481) associated with the use of the hypocaust). Colours are mainly orange and red, although paler colours, such as pink, light orange, off-white, grey, and yellow were noted, as well as some black reduced *tesserae*. The *tesserae* cut from Dressel 20 amphorae are a greyish–brown colour. Of interest is a worn *tessera*, unfortunately residual from Saxon deposit 15352, with a black bituminous deposit on the top and sides. This may have been applied as some sort of damp-proofing to a floor perhaps in a cellar or waterside location. *Tesserae* cut from daub were noted; these also occur in late Roman contexts in London (Pringle, in prep). There are also a number of larger sized pieces of tile 30–60 mm wide in regular rectangular, polygonal, or triangular shapes, which may have been deliberately chipped to shape or may have been waste debris from producing *tesserae*.

Pipes

Three ceramic water pipes (*tubuli lingulati*) were recovered (Fig 132, 3–4): one complete (SF 204020) and one partial (SF 204019) formed part of a conduit draining one of the baths and a fragment of pipe came from an unrecorded context (12919). The fragment has an estimated diameter of *c* 140 mm, which is slightly larger than that of the other two and is comparable to examples from Roman deposits in London (Pringle 2004, 27–8).

The complete pipe, 200095 (SF 204020), is cylindrical, with a slight taper and a recessed tongue (*lingua*) at the narrower end, to interlock with the next pipe. It measures 480 mm long, 124–28 mm in diameter decreasing to 115 mm and 93 mm in diameter at the tongue; the walls are 10–13 mm thick. This still contains the lead pipe that had been run into it and cut off when disused. It has a smooth surface with bits of mortar adhering. There is also a band of sooting along the length *c* 20–30 mm wide. The lead pipe inside ends 55 mm inside the recessed end and this appears to a properly moulded pipe end. The other end appears to have been deliberately cut off at the pipe edge. At the cut end the lead pipe is set in mortar within the ceramic pipe. A rectangular stamp (see below) occurs at right-angles to the edge of the wider end.

The incomplete pipe (SF 204019) is smaller and different in form: it flares out at the socketed end before narrowing by 13–15 mm to create the recessed tongue, 48 mm long. It measures >300 mm long, 112–30 mm in diameter, 95 mm wide at the recessed end, and the walls are 13 mm thick. On the inside there is ribbing following the circumference below the tongue for *c* 200 mm suggesting that it was coil made and roughly smoothed out at this end, but at the wider end there are distinct longitudinal finger grooves running lengthways towards the broken end, which have smoothed away the ribbing at right-angles. It has a white veneer on the inside surface above the longitudinal finger grooves which may be a slip or a mineral deposit of calcium carbonate. A rectangular vent, 70 mm wide by 100 mm long had been deliberately chipped into the wider end to allow access for a lead pipe into the clay pipe, which seems deliberately shortened to accommodate the position of the lead pipe.

Markings

Signatures

Over 122 signature marks have been observed, some of which are too fragmentary to categorise into types. The majority occur on *tegulae*, with a much smaller number on bricks. One mark recorded as on a flue tile is probably an error in data entry and one recorded on an *imbrex* may be keying rather than a signature. Neither were retained. The function of signatures is uncertain, though Brodribb (1987) notes that they could identify the work of a particular individual, be a trademark of a tilery, or possibly relate to quality. Only 10% of the brick and *tegula* from Northfleet are marked in this way. Seven types have been identified (Fig 133), which can be further sub-divided depending on number of finger grooves or size:

Type 1: Semi-circle/hoop. This is made with 1–4 finger grooves starting and ending at the tile or brick edge. This is usually the lower edge on a *tegula* but one example at the upper edge was observed. Three sizes of small, medium (the norm), and large were observed, as well as some forming a very shallow arc. A spiral effect was observed in a couple of examples, where three or four finger grooves were offset and crossed (Fig 133, 4), rather than the arcs being concentric.

Type 2: Horseshoe. This is similar to type 1, but the grooves form a distinct horseshoe shape, turning in at the tile edge. It starts and ends at the tile edge. These are usually made with one or two fingers. Some small examples occur.

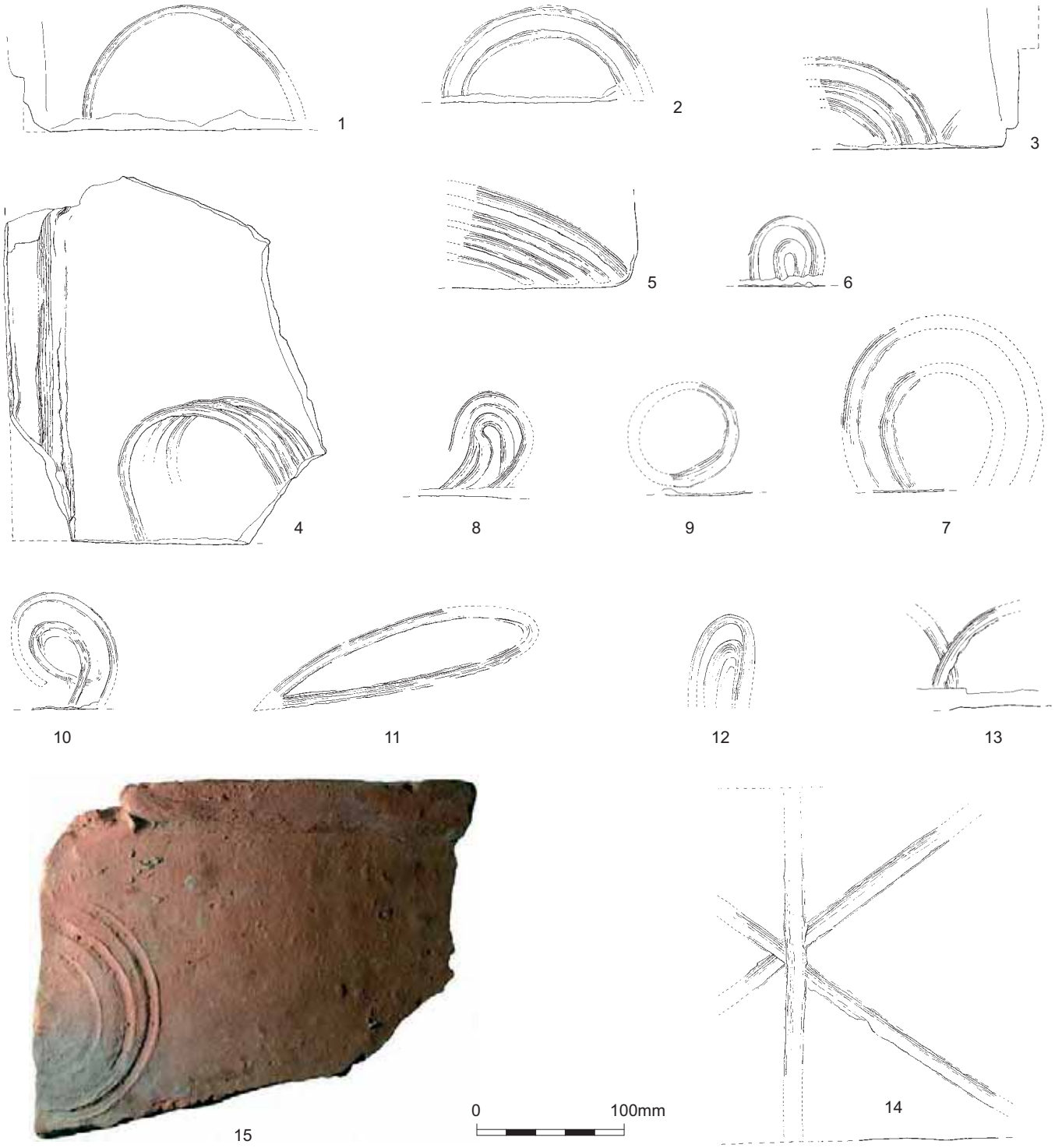


Figure 133 Northfleet: tile signatures 1–15

Type 3: Skewed hoop. This is usually made with 1–3 finger grooves, starting and ending at the tile edge with grooves running parallel at a diagonal curving to form a bulbous head.

Type 4: Circle. This is usually made with one or two finger grooves, which may form a continuous circle or the line may cross to leave two tails. It is usually placed adjacent to the tile edge.

Type 5: Loop. This appears to be placed more centrally on the tile surface and usually takes the form of a long narrow loop the groove crossing and ending as a tail. They are usually made with one groove (Fig 133, 11), though a partial example appears to have two or three grooves (Fig 133, 12).

Type 6: Crossed arcs. Only partial examples were found: these consist of two finger grooves starting from the tile edge and crossing to form overlapping arcs. It is uncertain whether they continue to form two complete overlapping semi-circles.

Type 7: Linear. Only one example was observed consisting of a perpendicular groove bisecting two diagonals which form an X (Fig 133, 14). Notes in the assessment record suggest there may be other varieties such as single diagonal lines, but these have not been seen by the author.

A quantification of the main categories of signature is summarised in *Table 73*. In common with most tile assemblages the semi-circle and its variants is the most common followed by the loop. The size of some of the smaller signatures and closeness of the grooves suggest child labour was used, possibly indicating that whole families worked in civilian tileries, as is common in brickyards in the present-day developing world. On a few tiles it is clear that the ends of the signature at the tile edge were cut by knife trimming done at a later stage. There appears to be no particular correlation between fabric groups and signature types, except that most of the very small hoop/semi-circle types occur in fabric group C with a few in group E.

Tally marks

A total of 104 tally marks were identified and fall into two distinct groups: those that occur on the tile edge and those on the upper or lower surface. The tally marks occur predominantly on the *tegulae*, with eight on bricks and one on an *imbrex*. The different types are tabulated in *Table 74* in relation to form and fabric and a selection of the main types is illustrated in Figure 134 and the full range is recorded diagrammatically in the archive. The most common type was the X (type 9). Those on the tile edge (Types 1–11; Fig 134, 1–5) are usually cut onto the lower edge of the *tegulae*, a small number on the cut surface of the type C1 or A3a cutaways, and very rarely on the top of the flange or lower angle of the flange (type 10; Fig 134, 8). The ones on the cutaway (Fig 134, 6–7) and one on a brick edge appear to be made with a thicker implement than those cut on the *tegulae* edge. All resemble Roman numerals, which is the reason these marks are normally referred to as tally marks. However it would be a mistake to assume that the marks, in fact represent the amount indicated by the equivalent Roman numeral, rather they illustrate that Roman numerals below 100 developed into a standardised form from tally marks. It is presumed that a single stroke represents a batch of tiles of unknown quantity, which may have related to daily production rates or a load for firing.

The second type of tally mark (Fig 134, 9–16) nearly always occurs on the upper or lower surface of *tegulae* in fabric C, with examples on one *imbrex* and three bricks. These took the form of knife cut lines, usually forming a cross (S2) or a double cross (S3). The double cross takes the form of two parallel lines with one diagonal cutting across them; however, one (S3b) clearly consist of two separate diagonals, one across each of the parallels. A few tiles have a single line (S1), but it is uncertain whether these are incomplete crosses. There is a single example of a more complex pattern (S4; Fig 134, 16). It could be argued that these are signatures but their form and character are consistent with tally marks. This type is rare, but one was recorded from a Roman site near Shorne (Poole 1998) a few kilometres to the south-east of Northfleet.

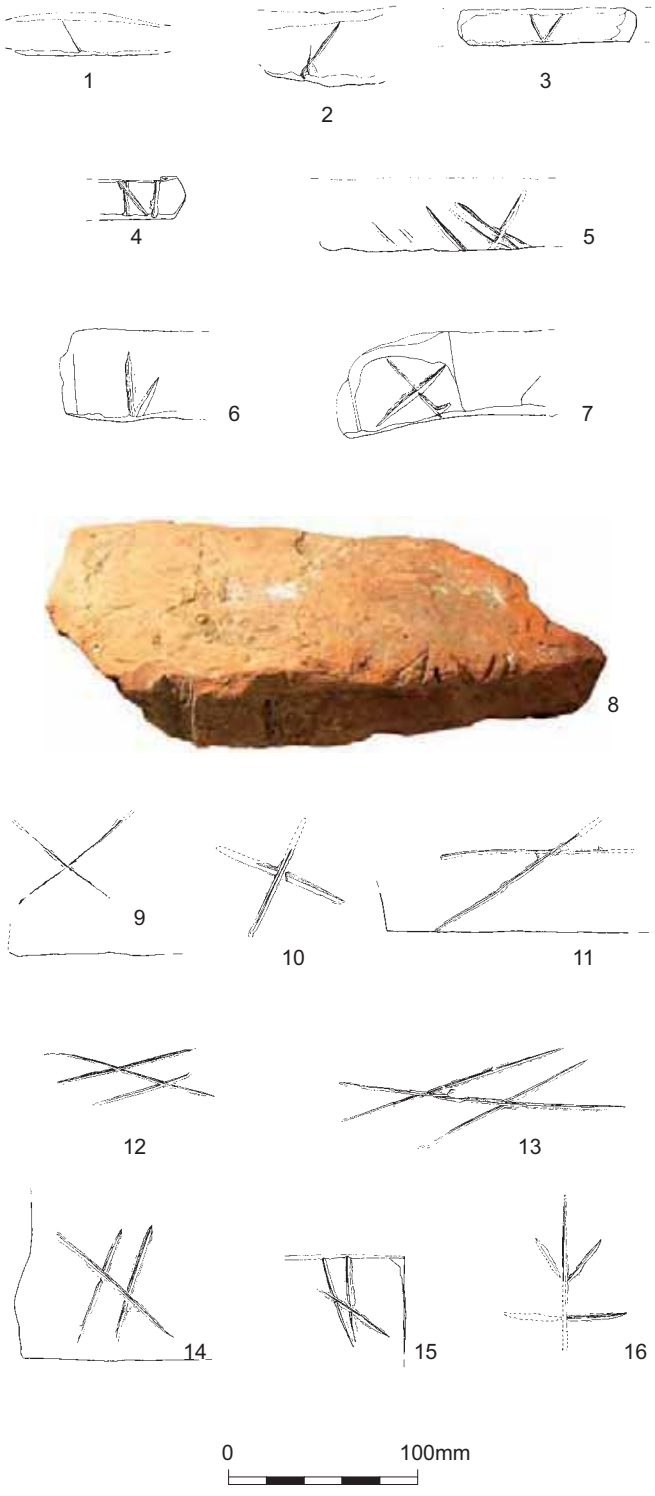


Figure 134 Northfleet: tile tally marks 1–16

Four *tegulae* have two sets of tally marks. These are a type S3a on the base with a type 3 on the flange edge, type S1 and S2 both on the base surface, a type 6c on the tile edge with a type 9 on the flange edge and a

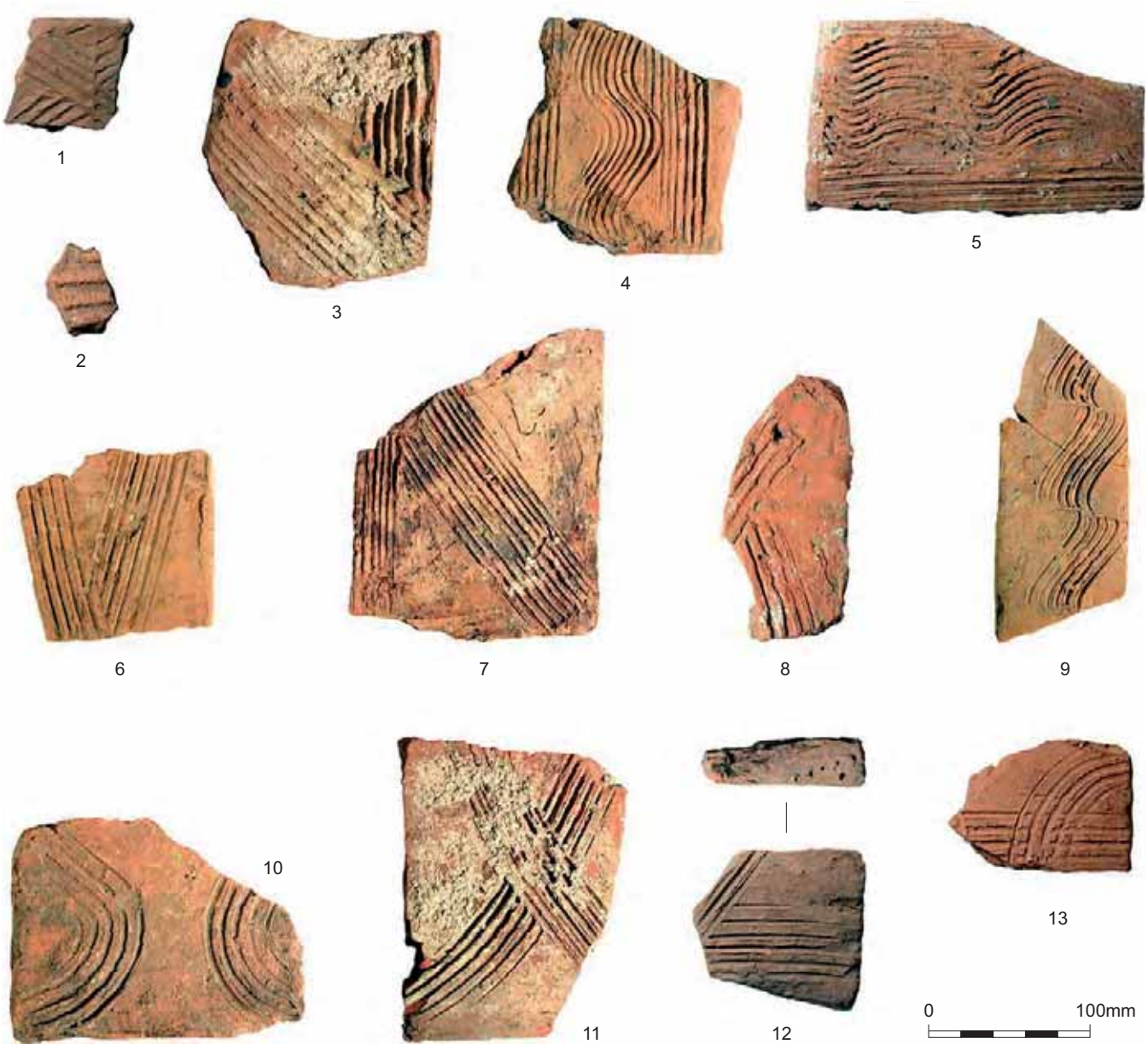


Figure 135 Northfleet: tile and daub keying 1–13

type 2 on the tile edge with a type 9 on the cutaway surface. These suggest tiles were counted on two different occasions before firing, except perhaps the two on the base surface. It seems likely that those on the edge were made on a separate occasion to those on surfaces or cutaway, suggesting the tiles were stacked in different arrangements during the drying process.

Stamp

The stamp on the pipe (SF 204020) measures 17 x 46 mm and is very shallow making it difficult to read. Three letters survive, which appear to read 'D I c', the last possibly being incomplete, as the stamp may have overlapped the pipe rim. Alternately it should perhaps be read the other way up – '(P) I CI'. The upright in the centre may not be a letter, but dividing the stamp in half.

Keying

A single example of roller stamp keying (Fig 135, 1) was identified: this is in a chevron pattern and the closest match is die 69 (Betts *et al* 1997, 126–8). It is very similar to the roller stamp impressions found on the wall daub from Springhead temple (see above). Examples of this die have been found in deposits dated to AD 120–60 at Watling Court, London and built into the 2nd century bath suite at Lullingstone villa (*ibid*).

The fragment of half box flue had knife scored lattice keying on its surface. Two flue tiles, a *tegula*, and a brick have linear finger grooves on the surface, which may have been some sort of finger keying (Fig 135, 2), and an *imbrex* has two grooves made on its apex with some sort of tool, which may have been keying.

Twenty different combing patterns have been identified on the flue tiles utilising straight vertical,

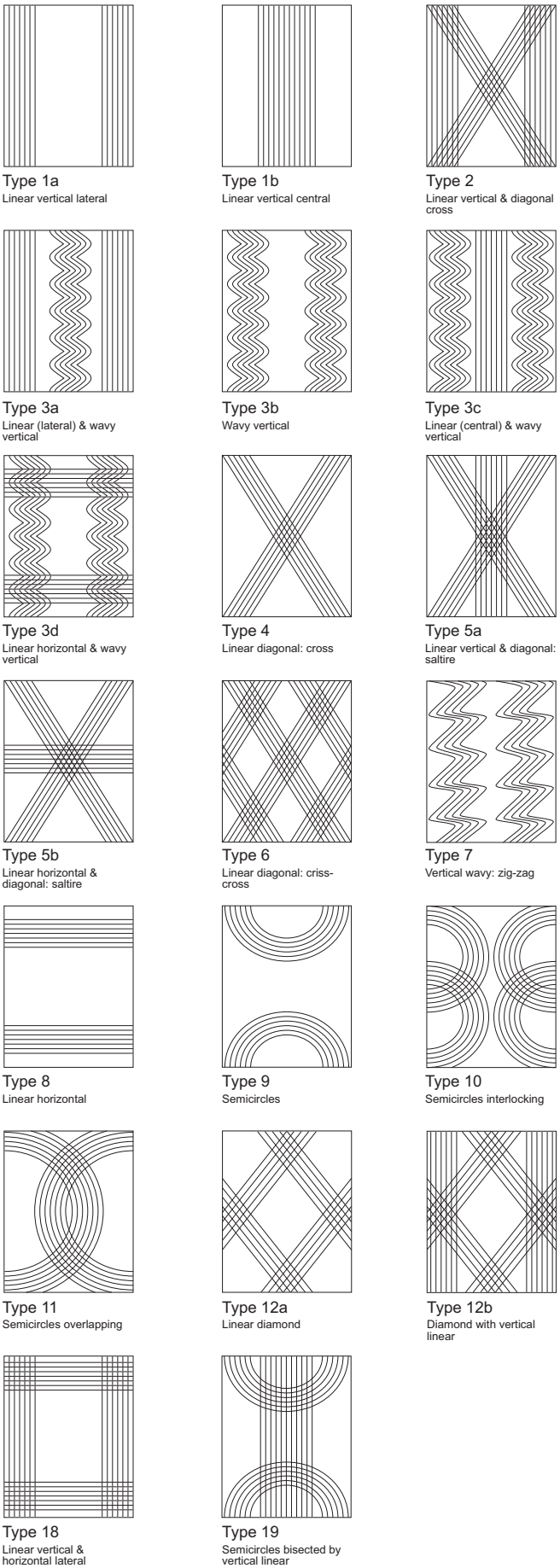


Figure 136 Northfleet: tile, schematic keying patterns on flue tiles

horizontal and diagonal bands, curved and semi-circular bands, wavy, and zigzag (*Table 75*). These occurred alone or in combination to create a series of simple or complex patterns. The full range is recorded diagrammatically in the archive (see also Fig 136). The most common patterns found are type 4, two diagonals forming a cross; type 1a, two linear vertical bands at either side of the tile face; type 3a, two linear bands as for 1a flanking a central wavy band; and type 2, an X flanked by two vertical bands. Of interest is a small group of *voussoirs* with a semi-circular or arched combed keying pattern (type 9 and 19; contexts 10003, 15340, 15417, 19107) in fabric 2; these are paralleled in 2nd–3rd century contexts from Canterbury (Black 1995, 1289, fig 565).

Where adjacent faces have keying, the patterns may be the same or differ. Combinations identified are types 1a and 4 (six examples), type 4 both sides (5 examples), and one example each of type 1a both sides, type 11 both sides, types 1a and 3b, 1b and 10, and type 2 and unidentified. The last three examples are all fabric D tiles, whilst the others are fabrics B and C. Comb sizes of varying coarseness measure 20–70 mm wide and numbers of teeth 3–11. Eighty complete widths survive giving 53 size/teeth categories (Fig 135, 3–13). The majority fall into a medium–coarse size range with a few that are fine and a few very coarse.

Graffito

A single graffito was found on the apex of an *imbrex* (fabric D), which had the inscription 'Lvcivs' written in cursive script (Fig 137). It had been made with a pointed implement, possibly a stylus or similar implement. The character of the letters suggests it was inscribed by someone well practised in writing. The significance of graffiti on tiles is not always apparent, though some clearly relate to the making of the tile and indicate some evidence of literacy amongst those working in tileries (Tomlin 1979). However, the greatest levels of literacy are concentrated at military sites, with a general decrease in rural areas (*cf* Mattingly 2007, 38–41), and the general use of non-literate tally marks and 'signature' marks in tile production suggest the majority of workers were illiterate or at best semi-literate. This together with the use of the *praenomen* may indicate that the graffito is nothing more than the work of a passing schoolboy with a handy stylus, rather than relating to tile production.

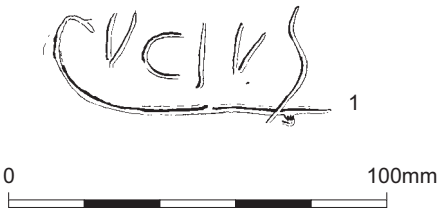


Figure 137 Northfleet: graffito of the name 'Lvcivs' on *imbrex* 12770

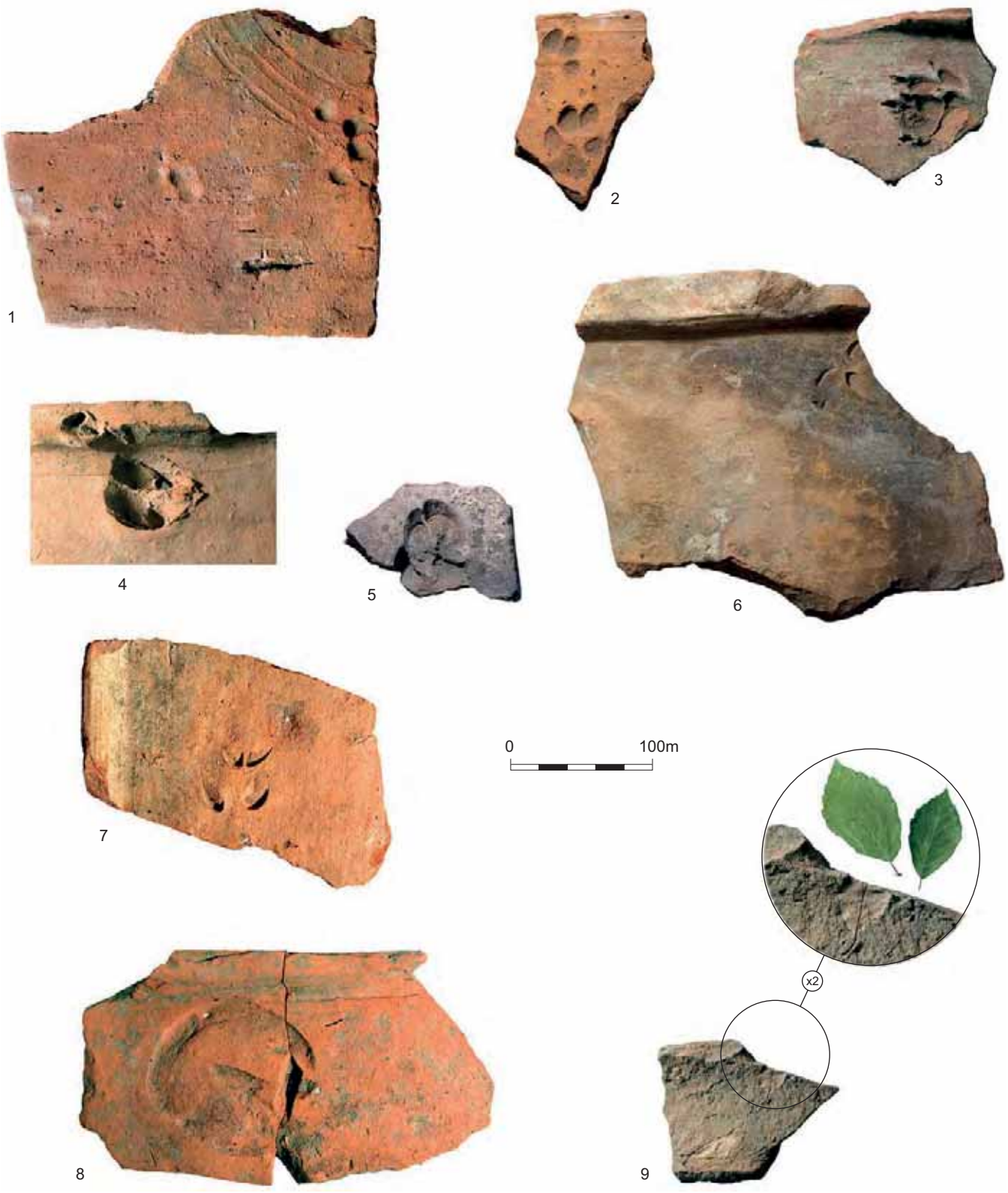


Figure 138 Northfleet: tile prints on *tegula* (1–4, 6–8), brick (5) and *imbrex* (9)

Imprints
A range of imprints has been noted, mainly on the fabric C tiles, though a small number occur on other fabrics (Fig 138). A brick in fabric A has a faint paw print and one in fabric E has a faint textile imprint. A *tegula* in fabric D has a paw print. Five *tegulae* and two bricks in fabric B produced four examples of hobnail imprints and three paw prints including a cat and a dog.

In fabric C one *imbrex* has leaf impressions on the underside which have been provisionally identified as beech (W Smith, pers comm). Other imprints on two bricks and 14 *tegulae* include hobnails (1), dog (5), dog/fox (1), cat (1), miscellaneous paw prints (4), sheep (1), roe deer (1), sheep/goat/deer (3), horse – unshod (1), small mammal (?hedgehog 1), and a worm (1).

Apart from the textile, probably part of the tiler's clothing, the worm, which may have been in the clay when the tile was made and the leaves, probably fallen on the ground surface on which the clay was placed, the remainder represent creatures moving over the tiles. At the fabric B production centre most imprints result from humans, together with animals that could have been kept on the premises for security or pest control. At the fabric C tilery, humans appear to have been more careful where they walked, whilst the area was accessible to a much greater range of animals, including cats and dogs, farm animals, and at least one wild animal. It is worth noting that several of the imprints suggest the animal was moving at some speed, which may suggest they were chased off if found walking on the tiles. Some imprints were made in extremely wet soft clay, in one case with the hoof print perforating the tile. In another, the dog had walked through the moulding sand coating its paws before walking on the tile, suggesting the sand was left in uncovered piles.

Discussion

A small quantity of material was found in features assigned to the pre-Roman phases. The Roman material has probably become incorporated into the contemporaneous soil surface and the upper fills of earlier features through trampling and disturbance of the soil during the Roman construction activity.

The assemblage, in terms of forms, fabrics, and their proportions, shows little change throughout the Roman occupation of the site. Very little tile was deposited during the early and early–mid- Roman phases, with a considerable increase in the mid-Roman phase and an even greater amount in the late Roman phase, which is a reflection of the major building programme of masonry structures including the bath-house and the villa buildings and subsequent alterations. A fairly small proportion came from *in situ* structures, whilst much in both the mid- and late Roman phases occurred as dumps of demolition or destruction debris. *In situ* structures may be under-represented, such as the paved floors where only a single brick was taken as a sample.

The early Roman (AD 70–120) and early–mid-Roman period (AD 70–250)
Quantities of tile from these phases were small amounting to *c* 16 kg (less than 0.0005% of the assemblage) in the early and even less tile (*c* 14 kg) in the later phase. *Tegulae*, *imbrex*, a possible ridge tile, brick, and *tesserae* had been deposited in cisterns, ditches, gullies, and pits. A fragment of roller stamped flue tile found in a deposit of burnt debris tipped into well 16731 is of a type in use during the mid-2nd century. The quantity of tile cannot be taken as indicative of its use in major buildings. Some tile has clearly been burnt and blackened and it is likely they had been utilised in the construction or use of ovens or hearths. This is supported by the ratio of *tegula* to *imbrex*, which is not typical of proportions for roofing. All fabric groups are represented except group A, which is not produced until the later 2nd century. Fabrics B and C dominate the assemblage. The only tile associated with building 16812 are small flakes in four of the post-holes. However, it is clear that some of the buildings in use during this phase must have utilised tile to some extent in their construction, on the evidence of material dumped in features or re-used in the succeeding phase.

The mid-Roman period (AD 120–250/60)
Tile from this phase amounts to *c* 577 kg, of which *c* 208 kg was associated with the bath-house. Tile from *in situ* primary structures is confined to the baths and some of this is clearly re-cycled material. Much of the rest was found dumped in fills of ditches, quarry hollows, pits, gullies, post-holes, a cistern, and wells. The individual groups from these features are of variable quantities but in character very repetitive, reflecting the overall consistency of the assemblage, invariably consisting of *tegula* and brick which tend to dominate, with lesser quantities of *imbrex*, flue/*voussoir* and a handful of *tesserae*, with all the major fabric groups represented. Fabric A appears in this phase and is concentrated on the area of the main villa buildings but is absent from the baths. In view of the size difference of the tiles in this fabric compared with the others it must have been used on a separate building or part of the villa roof to the other roofing tile.

The villa buildings
The ratio of *tegula* to *imbrex* is compatible with use as roofing and the quantities imply that the villa buildings were tiled. The amount of tile discarded or re-used in this phase suggests that the earlier Building 16812 was tiled also. The consistency in the character and fabrics of the roof tile from one period to another suggests that buildings were roofed with tile from preceding buildings, no doubt with additional material brought in to cover breakage and increase in building numbers and size.

The west range of the villa produced very little tile during this phase, mostly a scatter of *tegula* and *imbrex*. Only feature 15142 contained any quantity, mostly *tegula* with some *imbrex* and brick, dumped in its fill.

However, well 10977, alongside the west wall of the building, contained a massive dump of nearly 362 kg of tile which may have been removed and dumped when alterations were made after AD 270. *Tegula* accounts for 248 kg (188 kg in fabric C and 40 kg fabric A), *imbrex* 78 kg (63 kg fabric C, 7 kg fabric A), and brick 33 kg (also dominated by fabric C). The ratio of *tegula* to *imbrex* is typical of roofing. The fabric A tile represents 45% of all *tegula* and 44% of *imbrex* in this fabric found on site, suggesting that it may have been obtained specifically for this building. If the nave of the building was higher than the aisles it is possible that the fabric A tiles were used on the smaller area of the aisles and the other fabrics on the main roof. The different fabrics may have been deliberately chosen for the decorative contrast. The quantity of brick (nearly 33 kg) suggests part of the building had a paved floor. No complete brick survives but one width, of 302 mm, and the thickness of the others (32–45 mm) suggest they are either *pedales* or *lydions*.

The south range and courtyard area produced very little tile: *tegula*, *imbrex*, flue tile, and two *tesserae* had been built into the wall foundation 10095 and so derive from an earlier villa building. A scatter of fragments were found in features in the courtyard.

The bath-house

Material from the baths includes brick and *tegulae* used in the wall foundations, the flue to the hypocaust of the caldarium (10330), and *pilae*. Little material survived *in situ* from the primary construction of the baths (VP3) but, even at this stage, re-cycled *tegulae* were used in walls or *pilae*. *Pedalis* bricks had been used in construction of the hypocaust flue and as bonding in one of the walls.

Alterations in the next phase (VP4) include replacing the floor and *pilae* and the re-lining of the hypocaust flue (10157) with brick. The mix of bricks (*bessalis*, *pedalis*, and *lydion*), which are normally used for *pilae* and the overlying suspended floor, probably derive from the first phase demolished *pilae* and floor in room 10330. *Pedales* and *lydions* were the main elements used in 10157, whilst 10158 used *lydions* measuring *c* 420–25 x 290–8 x 34–46 mm of which 4–6 were made in fabric B, 4–5 in fabric C, and one each in fabrics D and F. Some *tegulae* (all fabric C) were also built into this structure. A fragment of flue tile from 10157 suggests that alterations had been made to the wall lining. The bricks are of various sizes, made in fabrics B–D and F, and include *bessalis*, *pedalis*, and *lydion*. Only a few are complete and re-cycled material may have been used in areas that would not be visible. Re-use is also indicated by the pieces of flue and *voussoir*, as well as brick and *tegula* incorporated in the associated wall or floor foundations. This suggests that the modifications to the bath-house in the second phase used material from elements of the preceding phase.

The floor 10162 was surfaced with *pedales* or *lydions* made in fabric B. Structure 10160 on the north side of the flue was constructed mainly of brick including a *bessalis* in fabric C, but included pieces of *voussoir* indicating that the baths had a vaulted roof. It is clear that much of the tile used in the construction of the baths utilised re-cycled material either from earlier phases of the bath-house or from other buildings of the villa complex. Such re-use, at least in areas that would not be visible, is fairly commonplace in most villas.

The baths were altered and extended again (phase VP 5). At the west end, room 10509 was paved with *pedalis* bricks (the one retained is fabric B) as apparently were the other additional rooms. *Pilae* were constructed of *bessales* (the sample brick is fabric C). Lead pipes draining water from the baths were jacketed or supported on *imbrex* from room 10509, whilst that from room 10624 drained through a lead pipe set into two ceramic pipes, in both cases re-cycling tile from earlier phases. The ceramic pipes may indicate the presence of an early military establishment in the area, as they are not common on civilian sites.

The Western Roman Complex

Moderate quantities of tile were found in this area. The largest deposit was in ditch 20286 comprising 37 kg of *tegula*, *imbrex*, and brick in fabrics B–D mainly. No masonry buildings were identified in this area but the quantity of tile may indicate the presence of timber buildings roofed with tile and the use of brick for flooring or in walls. However the ratio of *tegula* to *imbrex* indicates a higher incidence of tegula, which may indicate that it was being used for other functions in addition to roofing. An example is the tile re-used in oven 20748, which had a floor of ?*tegulae* (none retained). Within the oven fill were further pieces of brick, *tegula*, and *imbrex*, which probably formed part of the super-structure or had been used as oven furniture.

The late Roman period

Over half the assemblage of tile (1776 kg) was found in this phase, of which *c* 500 kg came from the bath-house. Associated with the west range was 140 kg of destruction debris (15037) within the building and a further 111 kg in the adjacent well (10977). A substantial quantity came from the quayside and foreshore (205 kg) and from the malting oven (97 kg). All of these deposits are demolition debris signalling the demise of the villa buildings during the latter half of the 4th century.

The villa buildings

The eastern range of the villa produced only a small quantity of tile, little more than 1 kg, which included *tegula*, *imbrex*, and a *tessera* and a scatter of *tegula*, *imbrex*, brick, flue, and *tessera* in features to the east of it. This is surprising, especially as a bath suite had been constructed in the building, but no tile was recovered from this. It is possible that the building was very thoroughly robbed and the debris dumped elsewhere, perhaps being used as make-up on the Roman foreshore. A well close to the south range produced a similar small assemblage.

The west range of the villa was the focus for large quantities (*c* 423 kg) of tile in features and overlying deposits in and around the building resulting from its collapse or demolition. The emphasis is very much on roofing with a fragment of ridge and chimney in addition to 58% *tegula*, 17% *imbrex*, 20% brick, and a few pieces of flue/*voussoir*. The amounts seem very large, but the *tegula* represents a minimum number of about 41 tiles based on weight or 40 based on corners. For *imbrex* the weight represents a minimum number of *c* 26 tiles, and the corners 23 tiles. Brodribb (1987) estimated that a 15 m^2 area of roof would require 160 *tegulae* and 152 *imbrices*. The quantities recovered represent a quarter of that area, which serves to remind us what a tiny proportion has survived; no attempt has been made to estimate the area of the roof, but it must have been greater than the building's footprint of 420 m^2. No complete bricks survived from the building, but fragments amount to 84 kg. This would translate into 14 *pedales*, whilst the corners indicate a minimum number of 10 bricks. Some are burnt and vitrified, which may indicate some were used for hearth surfaces.

The bath-house

The range of collapsed or demolished debris surviving in the bath-house is typical of such a building with roofing dominating the assemblage (*tegula* 46% and *imbrex* 21%). The building was roofed with *tegulae* and *imbrices* predominantly made in fabrics C, B, and D. A small quantity of roof tile also occurs in fabric A, sufficient to suggest that a small part of the bath-house roof was roofed in this – perhaps one of the late additions. The minimum number of *tegulae* represented by the debris is 38 based on weight and 27 from corners, whilst *imbrices* are estimated at *c* 37–8 by weight and 22 from corners. A single fragment of ridge tile suggests these were used rather than *imbrex* to cover the ridge.

Flue/*voussoir* form only 4.5% of the tile from the baths. They are made in almost equal proportions of fabrics C and B, with a minimal amount in fabrics D and E. Though no complete tiles survives, it is clear from the different complete breadths that a variety of sizes were used. Combing patterns were of types 1, 3, 4, 7, and 11. Only two fragments appear to be *voussoir* with keying on adjacent surfaces. This may indicate that only a small part of baths roof was vaulted in this late phase, perhaps that of the hot room added in the final alterations in the mid-Roman phase. The number of corners indicates a minimum number of six flue tiles.

The bricks form 26% of the assemblage from the baths and, as would be expected for the construction of the hypocausts, comprise a mix of *bessales*, *pedales*, and *lydions* with many showing signs of burning or vitrification. All three brick types were produced in fabrics B–D, whilst *bessales* and *pedales* were found in fabric F, a *pedalis* in fabric E, and a *lydion* in fabric A. The minimum number of bricks represented, based on corners, amounts to 19. The *bessales* would have been used to form the hypocaust *pilae*, with a *pedalis* at the top and base of each *pila* and the *lydions* spanning the gaps between *pilae* to form the suspended floor. The *bessales* and *pedales* may also have been used as floor paving in rooms without a hypocaust.

Other flooring is hinted at by five *tesserae*, two made from re-used flue tile. These are coarse, measuring 20–37 mm; one is flat and thin, measuring 30 x 30 x 20 mm, and is a late type. The *tesserae* suggest that only plain tessellated pavements were present.

The quayside

Large quantities of tile formed part of the make-up dumped along the quayside in re-construction work during the late 4th century. The assemblage has a similar composition to that over the west range though the proportions are slightly different, with *tegula* forming 42%, *imbrex* 11%, and brick 38%, and flue/*voussoir* slightly higher at just over 4%. These differences may indicate that this group derived mainly from the eastern aisled hall with the higher proportion of brick and flue tile reflecting the baths set into the building.

The largest concentration of 71 *tesserae* came from the quay, mostly red or orange in colour and occasionally grey. Of those measured, 12 fell in the 20–35 mm size range and four *c* 40–60 mm. The quality and size of the *tesserae* again suggest that only plain tessellated pavements, not mosaics, formed the floors.

The malting oven

Nearly 160 kg of tile was recovered from the fill of the malting oven. Two-thirds of this is brick and the remainder *tegula*, flue/*voussoir*, and *imbrex*. The forms and fabrics comprise the same mix of material that is associated with the villa building suggesting that they had been salvaged from the villa and re-used in the construction of the oven. Only the base of the structure survived. However, some tile survived *in situ* and it can be postulated from the quantities in the fill that the upper part utilised brick and any suitable pieces of flat tile in its construction, as indicated by the high incidence of sooting, burning, and vitrification on many of the tiles. The bricks and *tegulae* would have formed the wall lining the flue (the main firing chamber) and the *tegulae* were probably set in cob to form the main arch covering the flue and supporting the overlying floor. *Tegulae* were probably also used to form the shelf that often projects over the rear chimney flue to re-direct hot air over the floor of the chamber. The *imbrices* were possibly set on the edge of the drying floor along side the flue to support the front edge of the shelf. Such an arrangement was found in a late crop dryer at Grateley, Hampshire (B Cunliffe, pers comm). However an alternative use for the *imbrices* as vents for conducting hot air under the drying floor is suggested by the fired clay evidence (see below). All the flue and *voussoir* were broken and it is likely that they were utilised in the same manner as the brick and *tegula*. They would also be suitable to support the shelf or more obviously to create the arch over the flue, though no examples of such a use have been observed in crop dryers.

Table 76 Northfleet fired clay: fired clay function categories quantified by period

Phase	BA		Early & E-M Roman		Mid-Roman		Late Roman		Anglo-Saxon		Modern/ Unphased		Total		
Type	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	% Wt
Wall daub			161	2178	862	8800	22	465	158	1851	70	1570	1273	14,864	44.44
Utilised	1	4	106	1471	370	2356	92	1702	69	861	8	315	646	6709	20.06
Unidentified	4	48	15	119	209	1643	78	622	73	549	47	1302	426	4283	12.81
Hearth			75	1750			5	340					80	2090	6.25
Oven			3	146	73	2042			190	1619			266	3807	11.38
Oven/kiln plate					1	693			6	369			7	1062	1.10
Corn dryer							33	774	0	0			33	774	0.59
Furnace			7	142	1	6			3	48			11	196	2.31
Briquetage			1	4	35	44	1	10					37	58	0.17
Tesserae					11	230	2	45			1	20	14	295	0.88
Total	5	52	368	5680	1562	15,814	233	3958	499	5297	126	3207	2793	34,138	

Conclusions

Ceramic building material was being utilised at Northfleet from early in the Roman period. Some early forms such as the roller stamped flue tile and the ceramic pipes probably originated from other early buildings in the area, the pipes possibly indicating the presence of a military or official building.

The assemblage is very coherent throughout all phases, composed of a limited number of fabrics, of which the dominant ones (fabrics B, C, and possibly D) were probably produced locally, though not necessarily exclusively for the villa. The constant use of these fabrics throughout the life of the villa suggests that the production centre functioned over a long of period of time. A small number of distinctive fabrics were imported to the site probably from more distant productions centres (fabrics A, E, and F), some of which were also supplying London and sites along the south coast as far as Exeter.

All the main villa buildings throughout the life of the settlement were roofed with tile which was probably re-used wherever possible as buildings were altered or demolished and new ones built. Brick was found in all the villa buildings as well as the baths, suggesting that they had at least one paved floor. The scatter of coarse *tesserae* suggests the presence of monochrome tessellated pavements, possibly in all the major buildings, though none provided evidence of mosaics. The curved bricks may indicate that one of the buildings had a colonnade constructed of these; however they are so few and occur mainly in the area of the western settlement that they have probably been casually acquired for re-use from buildings elsewhere.

There is clear evidence of re-use and re-cycling of CBM, both within the buildings themselves, such as *tegulae* in the hypocaust flues and also in other structures such as the malting oven and other ovens and hearths. In spite of the massive amount of tile recovered, it is clear that at the end of the life of the settlement the buildings must have been dismantled or demolished with large quantities of the brick and tile removed for use elsewhere, whether in structures or buildings or broken up for use as hardcore along the quayside.

Fired Clay from Northfleet

Fired clay amounting to 2793 fragments (34,138 g) was recovered from 162 contexts ranging from Bronze Age to Saxon in date. Apart from a few undiagnostic fragments from three Bronze Age pits, the assemblage is of Roman date. A small quantity was found in contexts dated to the Saxon phase, but the similarity to the Roman material and absence of appropriate Saxon activity to generate such material suggest that this is residual Roman.

Fabrics

The fabric categories used were based on those established for Beechbrook Wood (Poole 2006), which were comparable. The majority of the assemblage was assigned to Fabric A, a fine silty micaceous clay with varying densities of fine–medium quartz sand with sub-types for those containing organic temper (A2), chalk (A1), and coarse sand, clay pellets, and stone grits (A3). A small quantity of material was assigned to Fabrics B (matrix similar to A but with white calcite grits), C (a powdery silty clay with no inclusions), and E (a calcareous clay with coarse chalk grits). It is likely that all the clay fabrics utilised local clay deposits or clayey sub-soil available in the vicinity of the site. The object of any quarry hollows cutting into natural clay deposits may have been to obtain building materials.

The different fabric types do not have any relationship to period or function, except for fabric A2 which was used extensively for wall daub. Apart from this deliberate addition of organic matter for the wall daub, all other variations in the fabrics probably relate to the natural variability of the clay source(s).

Forms and Function

Quantities are categorieed by function for each period in Table 76. Nearly half the assemblage is wall daub, a 5th from oven/hearth type structures and nearly a 3rd is undiagnostic, either amorphous (unidentified category) or with a single surface (utilised).

Oven, hearths, and furnace
Hearth or oven floor is characterised by a single flat smooth surface, burnt grey and sooted, with an irregular underside as though set directly on or into the ground surface. Fragments are 30–45 mm thick.

Possible oven plates came from two contexts (Saxon deposit 12588, and pit fill 15686) and are differentiated from hearth floor by the presence of an edge or corner. In addition a single large block of what appears to be a heavily vitrified block of kiln floor or plate, 90 mm thick and with straw/hay impressions on the underside, was re-used built into a wall (10106). Its size and the intensity of firing suggest it derived from a large high temperature industrial structure such as the lime kiln.

Part of an oven or furnace wall were found in post-Roman alluvial layer 19226. These pieces are up to 45 mm thick with an undulating roughly moulded surface with deep finger tip depressions. On the interior are a number of wattle impressions 7–23 mm diameter with the main peak at 18–20 mm. These are well fired to a light reddish–yellow but include fragments of purple and purplish–pink, which usually occur in association with vitrification in furnace walls. No vitrified pieces are present but some small thin scraps could be fragments of crucible or mould.

Some pieces residual in Saxon ditch fill 10574 have unusually narrow wattle or stem impressions 2–8 mm in diameter. They occur on one side of flat slabs of clay 30–45 mm thick with irregular and undulating moulded surface on the opposite face. The wattles lie side by side and are not inter-woven, though a couple cut diagonally across the others, one running through the core of the daub. Similar arrangements of wattles have been observed on the underside of Iron Age oven plates (Poole 2000, 115), though wattle sizes are larger. The function of the wattles may have been to provide support until the plate was fired and possibly to prevent the plate sticking to the underlying surface whilst being made.

Malting oven
Fragments from the malting oven are 20–25 mm thick and have a smooth flat or undulating surface. Several pieces have wide linear convex grooves 40 mm wide by 6 mm deep, all very regular and similar, with at least three side by side. It was thought when initially recorded that they were probably impressions from timber but they may be from *imbrices* set into the oven structure. This is more likely as normally the super-structure and drying floors of crop dryers/malting ovens utilise tile and clay cob for their construction. The placing of *imbrices* laid side by side is an unusual feature but may indicate that the tiles were used to create vents to conduct hot air just below the drying floor surface. Such a use of *imbrices* was found in a channel hypocaust at the villa of Abbotts Ann, Hampshire (Cunliffe and Poole 2008, 76).

Briquetage
A small quantity of briquetage was found in all Roman phases with the main concentration in the mid-Roman phase. All the fragments are small and broken and appear to be sherds of briquetage containers for transporting salt. There is no evidence for salt working or production on the site. However, salt was being produced or processed at Springhead which was probably the nearest source to the villa.

Wall daub
Nearly all the wall daub came from in and around the east range of the villa apart from tiny scraps in the area of the south and west ranges. None of the groups from individual contexts is very large, but, taken together, they illustrate the main aspects of wall structure.

Evidence of the timber framework which formed the central studwork of the wall is preserved in the form of inter-woven wattle impressions measuring 10–22 mm in diameter. There was also evidence of larger timbers: two poles 30 and 50 mm diameter may be upright sails around which the horizontal rods were woven and another may have been an impression from a beam forming the main timber framework. The pieces with wattle impressions measured *c* 30–45 mm thick, suggesting that the total thickness of the wall core would be *c* 100 mm. There were a few pieces thicker than this up to 85 mm, but these had few or no impressions and may have derived from partitions of solid pisé or adobe construction.

The majority of fragments without wattle impressions take the form of thinner slabs *c* 20–40 mm thick with two faces which formed the layers of coarse and final render to finish the wall face. A few pieces, however, are up to 65 mm thick. Most pieces have a rougher inner surface and smoother outer surface which, in a number of cases, has remnants of roller stamp impressions. Only small areas of this survive but appears to form herringbone or chevron patterns. One of the better preserved has a pattern very similar to die 44 or 69 (Betts *et al* 1997) found on flue tile though patterns on daub are not shared with tile dies (Russell 1997, 47–50) and it is likely to be the same as the die used on the Springhead daub. There were also wide grooves on some pieces which might be finger keying rather than roller stamping and some pieces appear to have impressions of combing; it is unclear whether this is an impression from combing on a clay tile which has been rendered with the daub or whether the daub surface has been combed.

In some cases there is evidence of stone impressions on the reverse of the daub to suggest that rough stone walls were rendered to present a smooth face. This may be render from the lower section of the villa walls which

were constructed of unmortared flints. These had probably been set in a clay cob bedding which may have been rendered and lime washed. However the base of the wall is the part that would suffer greatest erosion from rain splash and the lowest courses of the wall above the foundations may have been well dressed and pointed with hard lime mortar to provide the most weatherproof surface.

Some thinner pieces, 8–12 mm thick, are interpreted as the final render creating the finished surface with evidence of white lime wash on one and a thin clay veneer on another. Any exterior walls would certainly require some sort of finishing coat to protect the daub surface from weathering. Interior surfaces may have been plastered and painted but no remnants of plaster were found on the daub.

Tesserae

Several pieces of daub (from contexts 10761 and 10766 in room 16632) appear to have been cut into cubes for use as *tesserae*. This is surprising in view of how susceptible to wear they would be and it is possible they were used as inlay in something other than floors. All occurred in robber trench or demolition debris of mid- and late Roman date. Pringle (in prep) has noted similar *tesserae* in late Roman contexts in London.

Phase Groups

Early and early–mid-Roman

A scatter of fired clay occurred in features across the site in the early phase. A small fragment of briquetage and some furnace lining occurred in the Western Roman Complex. In the main settlement, apart from some possible hearth surface, the only diagnostic form was wall daub. This was concentrated in and around the eastern range with some fragments in the fill of post-holes of Building 16812. The largest amount was a dump of burnt debris in the fill levelling the top of pit 15266.

Mid-Roman

The majority of the fired clay was concentrated in the area of the east range. This includes briquetage, *tesserae*, and most of the undiagnostic fragments, as well as a large concentration of wall daub. The only piece interpreted as furnace lining was found in the limekiln 16801 and must be a fragment of the kiln lining.

Late Roman

Two groups of wall daub, one associated with the west range demolition debris and the other from the east range associated with a burnt beam, are the main diagnostic pieces assigned to this phase. However, many small amorphous fragments associated with the layers of burnt debris or other dumps of demolition debris are likely to be pieces of wall daub. Other material includes structural clay from the malting oven, hearth surface, and a possible *tessera* and a briquetage fragment. The material in this period was spread over a wider area including the quayside and reflects the extent of demolition debris spread around in the late use of the site.

Discussion

The survival of wall daub in contexts of the early and mid-Roman phases is of interest, as such material rarely survives except where buildings have been burnt down, such as the material from Springhead or those settlements subjected to the Boudiccan attacks such as Chelmsford (Drury 1988), *Verulamium* (Frere 1972), and London.

The concentration of wall daub during the mid- and start of the late Roman phases in and around the east range suggests that it relates to one of the buildings in this area. However, the question arises of as to whether the daub derives from one building or more and which one. The layers of burnt debris have been related to the eastern aisled building and a period of re-furbishment of the structure. Some of the daub was clearly associated with the spreads of burnt building debris associated with a burnt beam (10737). Although this could be interpreted as indicating a house fire, the evidence is equivocal. An alternative scenario is that the builders disposed of waste debris from the old building in a bonfire which would reasonably account for some of the daub getting fired accidentally. The relatively small amount and size of the daub fragments also support such an interpretation. However, the burnt debris is concentrated inside the building and an accidental fire damaging the building and leading to re-furbishment is a more likely explanation.

The characteristics of the daub suggest that the walls had a timber core formed of wattles *c* 15–20 mm diameter woven around upright poles *c* 30–50 mm in width. These probably formed panels infilling the areas between a more substantial timber frame. The wattles were covered with a thick layer of daub up to 50 mm thick with a roughly finished surface. This, in turn, was rendered with a rough render, on average *c* 20 mm thick. The surface of this appears, in some instances, to have had roller stamp impressions or combing impressions. It is uncertain whether this is keying for a final fine render or decoration. It has been argued as decoration at Chelmsford (Drury 1988, 86) but there are certainly a small number of pieces of daub from Springhead that have a thin final skim of daub render over the roller stamp impressions. It is possible that any pattern would have shown through the final skim or the final finish may, in some cases, have only infilled the grooves which could be emphasised with slightly differently coloured daub mixes. Whatever the surface texture the daub on any exterior surface would have to be covered with a protective wash, preferably a lime wash to protect the wall surface from the weather. Two examples were found

of this, one from early Roman pit fill 10755 with the surface burnt grey, and one residual piece from a Saxon deposit. Some fragments from an unstratified group have laminations of what appears to be thick clay/daub wash.

The part of the walls most subject to weathering and erosion from rain splash would be the base of any daub wall. It is possible that the lower part of the walls were constructed in stone up to about a metre in height. Stone dwarf walls are the norm for mud brick buildings still to be seen in Spain, where it is usual to render the stonework as well as the adobe super-structure. The same is possible for Roman buildings as a few pieces of daub have stone impressions on the reverse. This may be necessary where the stones used, such as flint, cannot produce a carefully dressed finely jointed face. The logic in view of the production of lime on site is that the lower walls were pointed or completely rendered with a more weather resistant hard lime mortar.

The use of daub can produce the fully weatherproof exterior walls with an estimated thickness of *c* 200 mm. There is no reason to assume that the material only represents internal partitions as such structures should not deteriorate so long as the exterior surface was properly maintained. In fact, internal partitions may have been constructed of solid cob/daub with no timber core, as suggested by the presence of occasional thinner pieces of daub with two faces, but no wattle impressions in the core.

Discussion of the Ceramic and Structural Clay Building Material from Northfleet and Springhead

The CBM and structural fired clay/daub is discussed together as their use is inter-related, whether in the construction of buildings or in minor structures such as ovens or crop dryers. The three principal areas of excavation provide complementary and contrasting data, which must reflect not only the differing construction of individual buildings but also the character of each area. Broad contrasts are immediately apparent in the size of the assemblages: the massive amounts of tile from Northfleet compared with much smaller amounts from Springhead, where the main concentration is associated with one building in the Roadside settlement. The daub and fired clay exhibits the reverse spatial pattern with the largest quantities from the Sanctuary site at Springhead, the majority being wall daub from buildings, with relatively little from the Roadside settlement and Northfleet. What fired clay does come from the Roadside settlement appears to derive from ovens or hearths, whilst there is a mixture of building daub and oven structure from Northfleet.

The supply of these building materials was largely met locally. Clay for ovens, hearths, and wall daub must have been quarried close to the areas of preparation or use within the sites and this is reflected in areas of quarrying into local clay or silty clay deposits of alluvium or brickearth. Though no areas of actual daub preparation and mixing were identified, these may have left little more than shallow irregular hollows.

There is also strong evidence to suggest that a high proportion of the CBM was locally produced. The medieval tile kiln at Springhead (see Vol 4, Chap 4) shows that suitable brickearth deposits were available, and though no Roman kilns have been found in the excavations the similarity of the most common Roman fabrics (1–3, 5) at Springhead to that of the medieval tile found in the kiln suggests both came from a closely related geological source in the immediate area. No Roman tile kilns have been positively identified in previous investigations in the vicinity, though Detsicas (1983, 65) has suggested a structure, close to 'building 7' at Springhead, originally described as a crop dryer may have been intended as a tile kiln, but it appears to have remain unused if built for such a purpose. The major fabric groups (B and C) used at the Northfleet villa were almost certainly local products. These fabrics exhibit variations that might be expected to occur naturally, possibly representing either different areas of exploitation at different periods of production at a single kiln or from contemporaneous tileries exploiting different areas of the same clay deposit.

Fabric group D may also be a local product as the character of the tiles produced is similar to that in fabrics B and C. Pringle (2005) suggested that this group was similar to Museum of London fabric 2815, which is typical of products in London utilising the London Clay and thought to be produced at Radlett, Hertfordshire. However, Harrison (2008) equates this fabric with kilns at Canterbury. Both sources are almost equidistant from Northfleet, but closer outcrops of London Clay such as those to the east of Northfleet might be postulated as an alternative source.

At Springhead the local fabrics appear to be dominant throughout the settlement and it seems likely that most of the town's requirements for tile were satisfied by local production. Tiles produced in the fabric from Eccles, which lies 15 km to the south-east of Springhead, and the calcareous group A fabrics were the only materials that appear to have been imported in any quantity at Springhead, possibly for just one or two specific buildings (not necessarily within the present excavations). These two fabric groups have been found on many sites throughout Kent. Tile from the Eccles kilns (MoL fabrics 2454 and 2455), in addition to its use in the construction of the Eccles villa, was common at Thurnham Villa (Smith and Betts 2006), as well as occurring in low density at Westhawk Farm, Ashford (Harrison 2008). At Northfleet this fabric occurs more frequently in the early Roman phase when it forms 5% of the tile, but less than 1% of the assemblage in all later periods.

The calcareous fabrics of group A have been identified at a wide range of sites around the south coast from London to Exeter, though the main concentration is centred on London and Kent (Betts and Foot 1994). These also represent only a small proportion of tile at

both sites and this is characteristic of assemblages elsewhere. Production started in the mid–late 2nd century and continued to the end of the 3rd century, based on evidence from London (*ibid*).

A greater range of imported tile was seen at Northfleet, suggesting that local production could not always meet the demand from the villa at certain periods of construction, with the group E and F fabrics probably being imported. Pringle equated the group F fabric with Museum of London fabric 3050, which has been identified as coming from kilns at Reigate Surrey, but another possibility is that this fabric derives from a closer production centre exploiting the Gault Clay.

Distinctive characteristics suggest links between some fabric types, perhaps relating to an 'industry' based in one locale. Tile made in the most distinctive of the group E fabrics (Z/4) bears some stylistic characteristics, especially flange and cutaway forms, in common with fabric group A tiles and may indicate that these were being imported from the same production area. Another area for comparison is combing patterns on the flue tiles. Several combing patterns are comparable to examples from Canterbury, where equivalents of pattern types 1, 3c, 4 and 9 (Fig 136) have been found at the Marlowe Car Park excavations (Black 1995, 1267–93). The opposed semi-circles of pattern 9 equivalent to Black's type M (*ibid*, fig 565) are unusual and suggest that the tiles were from the same tilery or made by itinerant tilers working in both areas. Evidence of itinerant craftsmen may also be provided by the die patterns of the roller stamped wall daub from Springhead. Whilst the majority is produced in three different patterns of diamonds and chevrons (types 1–3) that may indicate a local builder or builders, type 3 appears to be the same or very similar to a pattern found at Lullingstone villa, whilst a reticulate pattern (type 4) is similar to examples from Silchester (Russell 1997, 47–50) and Sedgebrook Villa, Plaxtol (Davies 2004, 180).

There is also a question of whether the locally produced tiles were traded outside Springhead and Northfleet. It is curious that fabric C was not found at Springhead, suggesting that Springhead was self-sufficient in tile production and the fabric was produced mainly for the villa. The distinctive tally marks found on fabric C and B have not been recorded elsewhere, except for one from a Roman rural site at Shorne (Poole 1998), which lies *c* 5 km south-east of Northfleet. This suggests that the kilns may have been supplying a wider local area than just the villa, but it may also be no more than an example of reuse of tile. There is a clear pattern of smaller rural settlements obtaining brick and tile for re-use in ovens, hearths and crop dryers. Often it is evident that no buildings within the settlement were utilising these materials in their construction but they were being obtained from outside, probably from nearby villas. It is unclear what the social and economic relationship was between villas and the rural settlements but a range of scenarios might be envisaged for the transfer of materials. The simplest might be the robbing of an abandoned villa but more inter-active situations could involve people working for the villa estate and living elsewhere obtaining the brick and tile for their own use during re-furbishment of villa buildings, either as a perk of their job or as unofficial scavenging. The same sort of re-use was occurring within the Northfleet villa itself in the construction of ovens and crop dryers, as also in the town of Springhead. The preference in these circumstances is invariably for brick and deflanged *tegula*, which could be used in the construction of flue lining and capping, hearth floors, and probably as temporary covers for stoke-holes and vents.

The use of tile and brick in major constructions is clearly related to the more substantial buildings with stone footings, for example the villa buildings and bath-house at Northfleet and the temple in property 2 at Springhead. This reflects construction methods in that lighter structures would be unlikely to support the weight of a tiled roof, but it can also be argued that only the wealthier members of the community could afford such materials and therefore would come to reflect status. The small percentage of tile that survives *in situ* or in destruction deposits of buildings indicates that it was re-used and this re-use is clearly reflected in the hearths, ovens, and crop dryers at both Springhead and Northfleet. However, one question that arises is how often was brick and tile re-used in buildings before ending its days in ovens or as hardcore for yards and paths?

In the process of removing building materials a proportion must have been either already damaged or broken so, unless they were to be used on a smaller structure, additional compatible materials would be required. How easy it would be to integrate a new batch would depend on standardisation. With bricks, where a series of standard sizes was in use, this is less likely to have been a problem, but with roofing this may have been a major consideration, as variation in size certainly existed.

At least two sizes of roof tile are represented with the larger in fabric groups B and C being the most common and a smaller size produced in fabric group A being less common. The latter was in use during the mid–late Roman period which is consistent with evidence at other sites for it being in production from the late 2nd–3rd centuries (Betts and Foot 1994). The group A fabrics occur in much smaller quantities suggesting that they were used for a small structure or within a restricted area of a building rather than covering the whole roof. This tile appears to be much better finished and more regular which may imply that it was a high quality product and, therefore, more expensive than locally produced material. The lighter colours of this group may have been sought after to contrast with the more common red–orange hues of the roofing material.

The contrast between the distribution of tile and daub is noteworthy as the two materials appear to be broadly exclusive. The largest groups of wall daub were concentrated on the Sanctuary site at Springhead but smaller deposits were also associated with the Northfleet villa. The structural evidence from the daub indicates

that it was used on timber-framed buildings combining squared and cut timbers forming the main frame infilled with roundwood wattles or, more rarely, laths inter-woven around circular or split poles set into the main framework. There is also evidence from the daub to suggest that diagonal braces formed part of the frame.

The panels of inter-woven wattles were covered with a thick layer of daub. This could be a single layer up to 60 mm thick with a plain surface, sometimes with evidence of a final skim of fine daub or lime plaster wash. In other circumstances a rough primary coat *c* 30–55 mm thick was applied which may have been keyed with a roller-stamp before a finer coat of daub was applied, usually *c* 20 mm thick, also keyed in the same manner. This was usually coated with a final finish skim of fine daub painted with a white lime or pink clay wash. There is evidence to suggest that some of the main timbers of the framework were covered by the daub render, but that some were exposed in the face. In a few cases the roundwood wattle either projected through or was visible in the end of the wall face. This may have been deliberate to allow fixtures to be more easily attached to the wall surface.

It is assumed that the rougher finish represents the exterior face of the building whilst the more careful finish was the internal wall face though there is no firm evidence to support such a hypothesis and either the reverse could be argued or the different treatment may reflect the final use to which individual rooms were put. There is no evidence to suggest that the walls were ever finished on the interior with a skim of painted plaster. Virtually no painted plaster was found at Springhead with the exception of the small amount of surviving material from the temple in property 2 in the Roadside settlement (see Mepham, Chap 7), and at Northfleet the painted plaster was not associated with the daub in any way. Those pieces of painted plaster with wattle impressions are more likely to derive from ceilings rather than wattle wall panels. Any wattle stud work is likely to have one or more layers of daub before the application of a plaster skim, as was found at the villa at Dunkirt Barn, Abbotts Ann, Hampshire (Cunliffe and Poole 2008) and at Lullingstone, Kent (Lowther 1987).

This form of construction has broad parallels at *Verulamium* (Frere 1972) and Colchester (Crummy 1984) where the roller stamped daub derives from rectangular buildings constructed with stud and wattle walls with the ground plates of the walls set either directly on the ground surface or into shallow slots. At these sites laths were set vertically and inter-woven around horizontal squared timbers. Crummy argues that this type of construction was strong enough to support a tile roof, compared with flimsier stake and wattle walls formed of vertical stakes set in the ground with horizontal wattles inter-woven around them. Though some lath impressions are present at Springhead the majority are roundwood wattles woven around round-wood poles suggesting a slight difference in the construction technique, which is more akin to that found at Dunkirt Barn (Poole 2008). Although bearing a similarity to the stake and wattle walls described by Crummy (1984), there is clear evidence at both sites that the wattles were set within a framework of larger timbers. It is possible that pre-fabricated panels or hurdles were set into the framework, possibly attached by nailing from the evidence of iron staining and the occasional nail head embedded in the daub. Such a construction may not, however, have the same strength as the stud and wattle walls found at Colchester and *Verulamium*.

Construction techniques will reflect the building's function and needs in terms of strength and durability whilst quality of materials and fashion might be used to flaunt status and wealth. At Springhead the buildings utilising wattle and daub appear to be the service buildings associated with crop processing, and the 'bakeries' and other artisan activities, especially those on the Sanctuary site. One might expect the same type of structures to have existed in some of the properties on the Roadside settlement and the absence of wall daub in this area may indicate that different building techniques were used here, though equally it may only reflect the absence of any major conflagrations in this area, a necessity if the daub is to survive.

At Northfleet villa there is clearly a mixture of construction types with the main villa buildings utilising the more durable and better quality materials. The wall daub is associated with the east range of the villa indicating that either the super-structure or possibly the internal non-load bearing partition walls were constructed in wattle and daub. However, the load bearing capacity would depend on the size and construction of the timbers whilst the wattle and daub provided a weatherproof cladding. No impressions of large timbers were found on the Northfleet material and the estimated wall thickness of 100 mm is more appropriate to internal partition walls, though a timber-framed upper storey cannot be ruled out.

The distinction between wall daub and oven super-structure re-inforced with wattles is important if interpretations are to have any validity. This was of real concern, especially with the Springhead assemblage, where there is clearly a mixture of materials and large deposits of wall daub were found in close association with crop dryers or ovens. However, it became clear that the wall daub contains a high density of organic temper, usually straw or hay, that would bind it together and might also have had an insulating effect, in contrast to the denser, less porous character of the oven daub. There was also a distinction in the size of wattle impressions and, though there is certainly an overlap, the distribution of wattle diameters from the larger groups shows a definite distinction, with smaller sizes used in the ovens and larger selected for walls. Most of the large groups from Roman contexts are interpreted as wall daub but some from the late Iron Age–early Roman and Saxon contexts derive from oven super-structure. It is possible that, in the Roman period, wattle re-inforcement of oven super-structure was less common, possibly because, as noted above, brick and tile was being used.

In general, little distinctive oven structure is produced in the Roman period, much of it having just a single plain surface from the wall or lining. More distinctive items appear to be associated with specific industrial activities. Oven or hearth furniture in the form of flat plates and pedestals has been linked to salt processing, whilst vitrified furnace walls, sometimes with a perforation and possible bellows guards, were associated with metalworking. These activities are best represented at Springhead where the activities may be linked to providing for the physical or religious needs of travellers or pilgrims visiting the sanctuary and temples. The fired clay assemblage from Northfleet villa is more typical of an agricultural and domestic settlement serving only the needs of the residents and the estate.

Catalogue of illustrated pieces

(Fig 128)

1. Context 5215 Wall daub with lath impressions.
2. Context 3547 Pedestal: central section of bi-conical pedestal with an oval or D shaped cross-section, possibly flattened at the back. Diameter of top: 190 mm. Phase: ERB.
3. Context 5753 Pedestal: top of flaring pedestal with circular top c. 80 mm diameter and sub-rectangular cross-section of body. Breadth: >75 x 50 mm; height: >95 mm Phase: ERB.
4. Context 6022 Pedestal: part of the central body of a tapering pedestal with hexagonal cross-section, burnt grey on one side grading to buff to orange elsewhere. Width: 57 –60 mm wide; breadth: >75 – >80 mm wide; height: >75 mm. Phase: ERB.
5. Context 3120 Briquetage plate: Corner fragment of briquetage plate with one flat base surface (sliced off with bladed tool when moved after making it). One bowed flat edge, one acute wedge-shaped edge. On the upper surface is a roughly moulded knob: *c* 32 mm Ht, x 25 mm W at base narrowing to c 12 mm W at top. Dimensions: >105 mm x >70 mm.
6. Context 5985 Briquetage vessel: thick walled vessel with a flaring profile, possibly with a rounded rim. Thickness: 10–20 mm
7. Context 6064 Briquetage: flat rim of transporting container
8. Context 5414 Crucible: Small cup-shaped crucible with smooth outer surface and simple rounded rim. Vitrified /metallic sheen round rim; vesicular texture (cinder) to clay fabric and thin slaggy deposit on inner surface. Ht: 27+ mm; diameter: 36–40 mm. Wall 6 mm thick. Weight: 5g
9. Context 16144 Crucible 1: Simple hemispherical bowl shaped form with a rounded rim, deliberately shaped on one side into a small curved lip for pouring. The base is much thicker than the rim. Black waste debris adhered to the inner surface together with a small patch of copper alloy residue. *c* 40% complete. Diameter: 90 mm; height: 58 mm. Wall thickness: 10–22 mm
10. Context 16144 Crucible 2: This has the same basic design as No 1. On this one the rim is vitrified and distorted. No waste debris was present on the interior, but a slaggy lump adhered to the exterior. *c* 33% complete. Diameter: 120 mm; height: *c* 60 mm. Wall thickness: 12–18 mm
11. Context 3191 Oil lamp

(Fig 129)

Wall daub

12. Context 2448: roller stamp impressions on front face with ridge between roller bands and interwoven wattle impressions on the reverse.
13. Context 2449: roller stamp impressions on front face (pattern cut across by straw stem impression) and wattle impressions on reverse.
14. Context 2449: roller stamp impressions on front face, straight flat edge and wattle impressions on reverse.
15. Context 5220: faint roller stamp impression and wattle impressions.
16. Context 5786: roller stamp impression overlain by small remnant of final render and lath impressions on the interior.
17. Context 5786: roller stamp impression on exterior and interior surfaces together with lath impressions on interior.
18. Context 6070: wall render with roller stamp impressions on exterior (LH) and interior surfaces (RH).
19. Context 6352: roller stamp impression on exterior and lath impressions on reverse.

Briquetage plates

20. Context 3987: upper surface with part of bowed edge.
21. Context 5081: with straight edge and start of rounded corner.
22. Context 5081: fragments with straight and bowed edge and surface covered in high density of organic impressions.

(Fig 130)

Tegulae *flange*

1. Type A and lower cutaway composite type A3/C1 (10939).
2. Type A1 (200083).
3. Type A2 (10275).
4. Type A3 with upper cutaway type A2 (10937).
5. Type B (15219).
6. Type C with finger groove on top outer edge and side heavily knife trimmed to chamfer (10275).
7. Type C (200084).
8. Type D with upper cutaway type A2. Shaded area shows the profile in centre of tile compared to profile (unshaded) at end beside the upper cutaway. Schematic profile shows sloping surface of cutaway base with knife cuts in angle. (16343).
9. Type D (15233).
10. Type D (20083).
11. Type E (10429).
12. Type E (20083).
13. Type F (20084).
14. Type F (10429).
15. Type F and lower cutaway A3a (10091).

16. Type F and lower cutaway: composite type A3 (very shallow) / C1 combined with type B2 chamfered end (10275).
17. Type F and lower cutaway: composite type A3 (very shallow) / C1 combined with type B2 chamfered end (15037).

Tegulae *and* imbrices

18. Group (mixed contexts).
19. Group (mixed contexts); signature mark on lower left hand *tegula*.

(Fig 131)

Imbrex

1. Ridge tile profile (19034).
2. Curved profile (20164).
3. Curved profile (200084).
4. Angular profile (15275).
5. Polygonal profile with thickened edges (20164).
6. Markings of two finger grooves (signature or keying) on apex (15275).

(Fig 132)

Chimney tile

1. Rim of chimney pot (15372).

Flue tile

2. Flue tile: 'butterfly' vent in plain side of tile (19042).

Ceramic water pipes

3. Complete pipe: end of truncated lead water pipe projects from wider socketed end. Stamp next to the socketed rim is barely visible. (200095) SF204020
4. Partial pipe: recessed tongue has modern damage, socketed end has probably been deliberately shortened in antiquity and rectangular vent was chipped in the side to allow access for lead water pipe. (200099) SF204019.

(Fig 133)

Signature marks

1. Type 1.1: single large semi-circle; *tegula* (19036).
2. Type 2.2: wide 2 finger groove semi-circle (200083).
3. Type 1.3: three finger groove hoop; *tegula* (19107).
4. Type 1.3 spiral: three finger groove hoop overlapping to create spiral effect; *tegula* (15219).
5. Type 1.4 shallow: four finger groove shallow arc running from corner; brick (19107).
6. Type 2.2 small: double groove horseshoe shaped hoop; *tegula* (15037).
7. Type 2.2 large: double groove horse shoe shaped hoop; *tegula* (19283).
8. Type 3.2: skewed arc with two grooves, and third almost obscured by overlapping loop; *tegula* (10939).
9. Type 4.1a: circle (50% surviving), single groove; brick (19101).
10. Type 4.2c: double groove circle with crossing tails; *tegula* (15037).
11. Type 5.1: single groove, long elongated loop; brick (19047).
12. Type 5.2: apex of two or three groove loop; ?*tegula* (200084).
13. Type 6: crossing single groove arcs; brick (12619).
14. Type 7: three straight linear grooves crossing forming saltire covering most of tile surface; *tegula* (16003).
15. Type 1.3: a three finger groove hoop, visible tapering flange and upper cutaway (type A2) with finger depression in angle (19107).

(Fig 134)

Tally marks

1. Type 1b: single diagonal line sloping L to R; *tegula* edge U/S (East Villa).
2. Type 1c: single diagonal line sloping R to L; *tegula* edge (19107).
3. Type 6: two diagonal lines forming symmetrical V; *tegula* edge (200084).
4. Type 11: single diagonal line sloping between two verticals, possibly forming Roman IV? *tegula* edge (200020).
5. Type 7: five diagonal parallel lines (end ones very faint) plus sixth reversed: \ \ \ \\/; brick edge U/S.
6. Type 6a: asymmetric V cut on surface of flange cutaway of *tegula* (200084).
7. Type 9: single cross cut on surface of flange cutaway of *tegula* (16748).
8. Type 10: series of diagonal cut lines on lower outer angle of *tegula* flange (19014).
9. Type S2a: single cross on base surface of brick close to edge (15155).
10. Type S2a: single cross placed centrally on surface of brick U/S.
11. Type S2b: single cross on base surface of *tegula* close to flange and lower RH corner (200084).
12. Type S3a: double cross on *tegula* upper surface (16752).
13. Type S3a: double cross consisting of two sub-parallel lines each crossed by a separate line superficially a single continuous line, but actually two separate slightly offset lines, centrally on upper surface of *tegula* (15217).
14. Type S3a: double cross of two parallel lines crossed by single diagonal line on tegula base surface close to tile side (10091).
15. Type S3a: double cross of two closely spaced sub-parallel converging lines crossed by single diagonal; alternatively could be interpreted as a Roman IX. On base close to corner of *tegula* (200084).
16. Type S4: a complex branched mark cut in centre of base surface of *tegula* (15155).

(Fig 135)

Keying on flue tiles

1. Roller stamp keying, die 69 (16380).
2. Finger keying (10090).

Combing pattern

3. Type 2 (10287).
4. Type 3a (19039).
5. Type 3a (200083).
6. Type 4 (19046).
7. Type 5a (19044).
8. Type 6 (10446).
9. Type 7 (200084).

10. Type 9 (16417).
11. Type 11 (10160).
12. Type 12a and impression of teeth of comb end in plain adjacent face (10288).
13. Type 19 (19107).

(Fig 137)
Graffito
1. The name 'Lvcivs' with the L continuing to underline the name inscribed into upper surface of *imbrex* (12770).

(Fig 138)
Animal impressions
1. Line of cat paw prints, one overlapping type 1.3 signature mark at edge of *tegula* (19017).
2. Dog (or ?fox) paw prints; *tegula* (19071).
3. Large dog paw prints, two overlapping in very soft clay; *tegula* (note also upper cutaway type B2 on flange) (15216).
4. Sheep hoof print in very soft clay; note dew claw imprint on flange of *tegula* (15217).
5. Sheep hoof prints, two overlapping in very soft clay; brick (200020).
6. Roe deer hoof print with dew claw visible; *tegula* (15217).
7. Cloven hoof print of sheep/goat/deer; *tegula* (15155).
8. Animal impression: horse hoof print, unshod; *tegula* (15279).

Plant impressions
9. Leaves, probably beech (*Fagus sylvatica*) with modern leaves for comparison; on underside of *imbrex* (15271).

Chapter 7
Wall Plaster

by Lorraine Mepham and Edward Biddulph

Wall Plaster from Springhead
by Lorraine Mepham

A total of 395 pieces of wall plaster (weight 12,537 g) was recovered from two event codes, mostly from the Roadside settlement (ARC SHN02) with a very small quantity (3 fragments; 81 g) from the Sanctuary site (ARC SPH00). This constitutes a sample of the plaster that was observed on the site during the excavations which also included a small area of plaster surviving *in situ* in one room within the temple structure in the Roadside settlement. This was recorded but not lifted.

In all cases the plaster was adhering to mortar, the sandy nature of which rendered it friable, and in many instances the plaster and mortar fragmented further on excavation. Average fragment weight is 31.7 g. A detailed record by context has been compiled for the plaster, recording surface colour, details of polychrome schemes, and noting other features such as impressions on the backing mortar. In many instances, however, surface abrasion and/or fading of colours has hampered this process, and many fragments have been simply recorded as exhibiting traces of colour. Likewise, the fragmentary nature of the assemblage has rendered it impossible to discern overall decorative schemes, and definitions of designs are necessarily tentative.

Provenance on Site

From the Roadside settlement, the overwhelming majority of the plaster came from the temple complex within property 2 (377 fragments, 12,144 g), and most of this derived from demolition deposits overlying the temple (sub-groups 300312, 300313, 300315, 300317, 300320, 300325, 300326), the largest group from layer 12382 (214 fragments, 6767 g). Only 14 fragments came from other properties.

Mortar Fabrics and Construction Techniques

The mortar backing is similar in composition throughout the assemblage, generally fairly sandy with other inclusions such as small pebbles, and the occasional piece of chalk or crushed ceramic building material (CBM). Hardness varies considerably and many pieces, as noted above, are extremely soft and liable to disintegration. The colour is, in nearly every case, in the off-white/cream/buff range. One exception comes from the Sanctuary (quarry pit 300203), which comprises a pale salmon pink mix as a second layer on top of an orange–red mix. This two-layer construction was noted on a small number of other pieces, all from temple demolition deposit 300313 in the Roadside settlement. In these examples, the mortar is of similar mix in both layers, but in none of the fragments is a layer of plaster visible between the two layers of mortar, so this does not apparently represent two phases of plastering.

The back of some pieces shows impressions; one possibly represents wattle impressions, but in general these are irregular, and may merely reflect the effects of plastering over irregular masonry surfaces. The plastered surfaces are, in general, flat and well finished, but a few examples show slightly concave surfaces (eg, temple demolition deposits 300315, 300320). One piece from demolition deposit 300313 has a very irregular mortar surface with random splashes of red pigment, which are partially covered by white plaster.

Colours and Decorative Schemes

Table 77 presents a breakdown of the assemblage by colour scheme (excluding the plaster surviving *in situ*). As noted above, abrasion has affected surface colour and in some cases the distinction between monochrome and polychrome is not always distinct; this is compounded by the small size of fragments. The quantity of monochrome coloured pieces may, therefore, be an over-estimate of the original total.

The assemblage breaks down relatively evenly into monochrome white, monochrome coloured, and polychrome. The range of colours used is quite

Table 77 Springhead: breakdown of wall plaster assemblage by colour scheme

Colour scheme	No	Wt (g)
Monochrome white	115	3614
Monochrome coloured	174	4606
Polychrome	106	4317
Total	395	12,537

restricted. Most popular are red (a maximum of 122 pieces amongst the monochrome group), white (115 pieces), and yellow (max 44 pieces). Dark purple–brown and green are sparsely represented amongst the monochrome group and feature only scarcely in the polychrome group, along with turquoise.

Decorative schemes appear to have been largely confined to block colours, borders, and bands of colour. All the colours recorded, apart from turquoise, seem to have been used for blocks or, at least, for wide bands (only a few small fragments totally cover with purple/brown and green were recovered). Red seems to have been used as a border on both white and yellow blocks and also in narrow stripes or bands on both colours, although whether horizontal or vertical, or both, is unknown. There are a few examples from temple demolition deposit 300313 with red and yellow stripes on a white background. Stripes in red, yellow, and purple/brown were recorded on one fragment from demolition deposit 300315 and purple/brown stripes with a yellow stripe or border on white from 300313.

Hints of more complex designs came from the temple demolition deposits, in the form of small fragments with red motifs (possibly floral) on both white and yellow grounds (three examples), and turquoise motifs on a white ground (two examples). Curving bands in red, purple/brown, and green may be part of a figurative design. Other polychrome examples in various colour combinations were recorded (red/yellow; red/yellow/turquoise; yellow/purple; red/purple), but fragments are too small, and the plaster too abraded, for any motifs or designs to be discerned. One fragment carries light red and yellow bands or blocks, with a possible darker red 'splatter' effect on the red. The small area of plaster surviving *in situ* within the south-west wing of the temple had traces of red and green colour, but no overall design could be discerned.

Two of the three fragments recovered from Springhead Sanctuary bear polychrome designs, the first, from quarry pit 300203, carrying red curving bands on a white ground, and the second, from robber trench 5818, with an unknown blue/green, red, and yellow design on a white ground.

Wall Plaster from Northfleet Roman villa

by Edward Biddulph

A total of 1951 fragments weighing 41,689 g were recovered from the villa. This material represents a sample of the mainly loose wall plaster that was exposed during the excavation and a quantity remained *in situ*, particularly in the bath-house, where walls survived to a reasonable height. The assemblage is mixed in terms of condition. Some relatively large fragments are present but, overall, the assemblage comprises small pieces, contributing to an average fragment weight of 21 g. Painted decoration beyond white washes and block colours is seen on a high proportion of pieces, although much of the finer, foreground detail applied on top of the bold colour panels and stripes has been lost.

The assemblage was sorted into context groups and quantified by fragment count and group weight (in grammes). A note of the mortar fabrics was made but these were not examined in detail. The painted plaster was scanned to identify the range of colours and decorative schemes present. The schemes were attributed to rooms where possible, although, since the plaster could be attributed with certainty to specific rooms only when *in situ*, the original location of the recovered material is subject to some speculation.

Fabrics

The plaster fabrics are diverse in some respects, such as coarseness, but generally are similar in composition. Most include a mixture of small pebbles, chalk fragments, sand, crushed flint, iron-rich grains, and crushed CBM, though the proportions of these components vary so that coarse, medium–coarse, and fine fabrics are represented. The fabrics also vary in terms of hardness. The plaster recorded in context 10574, residual in Saxon ditch 10573, is composed mainly of sand, chalk, and small flint fragments and had set very hard; the constituent elements in the plaster from context 10243, fill of ditch 16697, are more mixed and less well sorted, resulting in a relatively coarse and friable fabric.

The back of some pieces have the impressions of reed or wattle rods, indicating that the plaster had been applied on to reed bundles fixed to roof timbers or wattle and daub walls, probably built on top of masonry footings. Impressions were seen in, for example, context 10970, a late Roman demolition or abandonment deposit, and context 10010, a mid-Roman ditch fill. This context also produced a piece with two layers of mortar; that in the bottom layer was a hard, yellow, fabric, 15 mm thick, comprising pebbles, sand, and flint. A second layer of mortar was laid on top of this and was also 15 mm thick, but pink and slightly coarser, containing a larger proportion of chalk fragments. The two layers were apparently separated by a skim of white plaster. This, and the differences between the mortars, suggests that two phases of plastering, rather than two coats of a single phase, are represented. However, this evidence is exceptional, and it seems that most walls were not heavily repaired or re-plastered.

Decorative Schemes

Decoration is largely confined to white washes, block colours, and geometric patterns, though rarer traces of curvilinear and floral motifs were also recorded. Placing the plaster in specific rooms or buildings in the absence of supporting *in situ* evidence is almost impossible, especially if we consider that most of the plaster assemblage was recovered away from such structures;

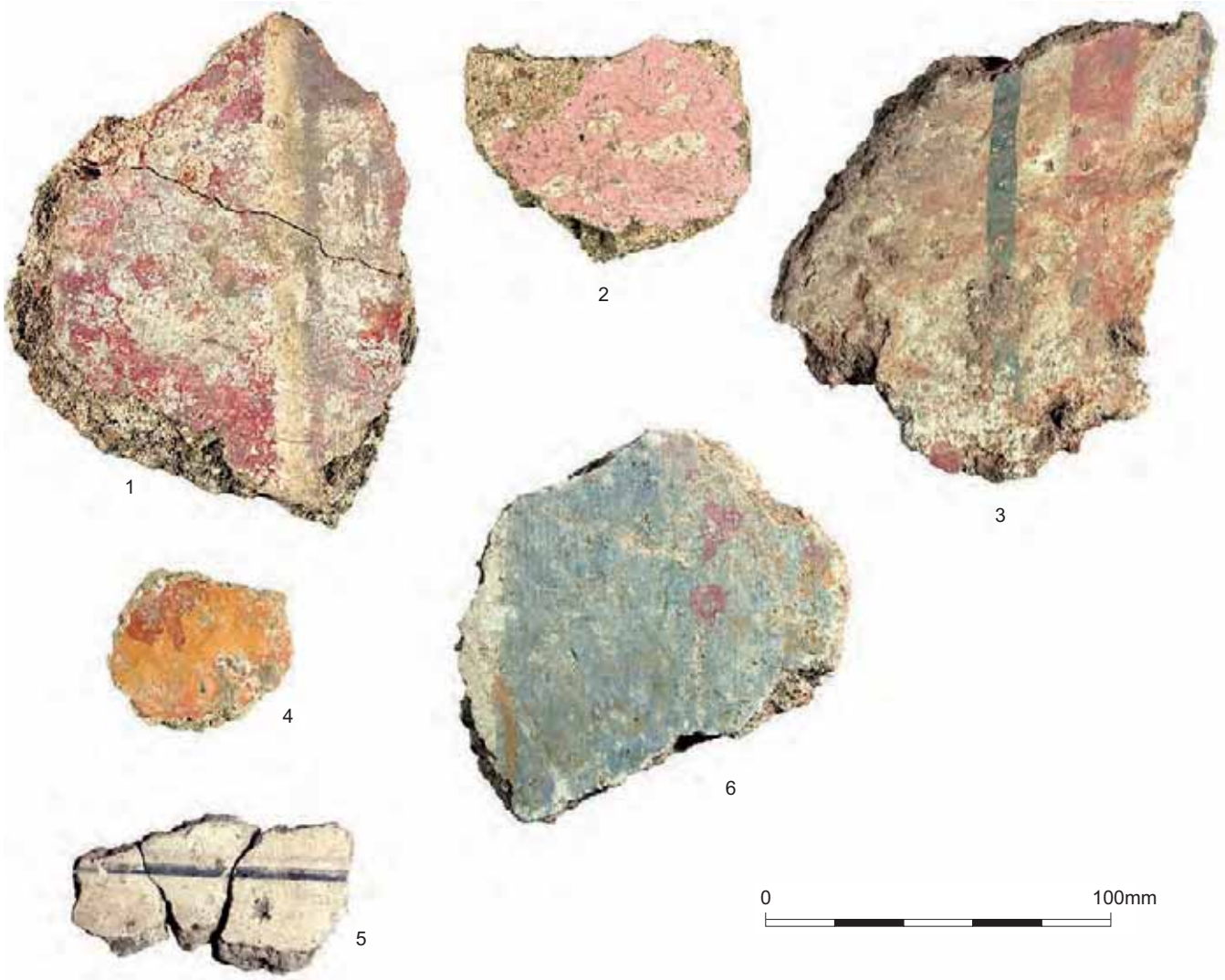


Figure 139 Northfleet: painted plaster 1–6

46% of the assemblage by weight, for example, was recovered from ditches, and plaster was also collected from structures unlikely to have been so decorated, including the limekiln and malting oven. A small amount was recovered from deposits associated with the east and west ranges though, even here, some caution should be applied since the deposits containing the plaster formed after abandonment or were associated with construction (plaster was collected, for example, from the post-holes that held the posts forming the aisled buildings) and the material could therefore have been brought from a different part of the site. However, *in situ* plaster was recorded in the bath-house, enabling loose plaster from this structure and other features to be assigned to specific rooms with greater confidence.

The bath-house, room 10509/2000240

Plaster found *in situ* on the base of walls belonging to room 10509 (a cold bath) indicates that the plaster was generally red (see Vol 1, Chap 3, Plate 3.11). Closer examination offers more detail. Sixty-eight fragments, weighing 7240 g, were recovered from late or post-Roman demolition deposits 200082 and 200083. Most pieces are painted red, but some reveal a border of pale yellow and dark grey stripes (Fig 139, 1). In addition, a few pieces of plaster are whitewashed, suggesting that a two-tonal scheme was employed, possibly dividing the walls into a red zone below the water line and white zone above it.

The bath-house, room 10624

In situ pink plaster was observed on the internal face of wall 200093, the west wall of cold bath room 10624, and it is reasonable to suggest that a small amount of loose material in deposits away from the bath-house also belonged there. Pink painted fragments were recovered, for example, from demolition or abandonment layer 10970. Another piece from 10970 has wattle impressions and may have been fixed to the room's ceiling timbers. A more elaborate fragment, showing traces of white painted detail on top of the pink background (Fig 139, 2), was found in deposit 10290. The motif is too ephemeral for firm identification, but could represent foliage, and this suggestion is given credibility with the discovery of a piece with a tentatively-identified red flower motif on an orange–yellow background (Fig 139, 4) recovered from room 10624, though not *in situ*.

Unidentified room

Late Roman ditch fill 10243 (SG 16697) contained the single largest group of plaster, 321 fragments weighing 16,896 g, and produced a variety of designs. The mortars behind the plaster are more-or-less identical and it is reasonable to suggest that all pieces decorated the same room. A relatively large piece of plaster shows a thin blue–grey stripe either side of a wider brown–red stripe, all on a white background. In Figure 139, 3 the stripes are depicted vertical but it is possible that they formed a rectangular panel and so could be horizontal. A similar scheme can be seen on another fragment, though in this case the blue–grey stripes are reduced to a thin line. A smaller piece confirms that horizontal and vertical elements are present; this shows a narrow blue–grey stripe and a slightly thicker brown–red stripe extending from it at right-angles, which lends itself to a border defining a rectangular panel sub-divided into further units. More colours were recorded on another piece from the context. A turquoise panel or thick stripe is bordered by a brown–yellow stripe, with a thick brown–red stripe extending off that, also at right-angles. The design is not restricted to geometric patterns, as traces of floral motifs can be observed. The piece in Figure 139, 6 shows a blue–grey panel on a white background; on one side there are small red flowers at the ends of yellow–brown stalks and, on the other, a curving section of a second stalk can be seen. More flowers are visible on another piece, this time with blue–grey flowers among the red ones. Corner pieces indicate that the block colours extended around the edges of doorways or windows. A fragment showing a red border on a white background, similar to the pieces recovered from 10243, was found in a demolition deposit associated with bath-house room 10508 and so it is possible that the assemblage from 10243 belongs to that structure, though it could equally have derived from a timber building, since the plaster with wattle impressions exhibited similar motifs.

Plaster with wattle impressions

Pieces with wattle impressions may have derived from the timber ceilings of the bath-house or timber-framed buildings elsewhere on the site. The east range is a strong candidate for plaster decoration as its entrance and range of rooms and hint of a column base suggest a public or residential function in addition to its working role. The range of colours and styles on pieces with wattle impressions is fairly narrow: a brown–red wash or panel from deposit 10010, and a white wash from deposit 10016, both from mid-Roman ditch 15750. Another piece with white plaster was recovered from layer 10970 along with the fragment with pink plaster. Buildings like the eastern aisled structure in the east range may therefore have been decorated in simple tones, rather than elaborate patterns. Fragments recovered from deposits associated with late Roman structure 16632 attached to the east range are consistent with this view, being covered in a white wash, though none was *in situ*. A whitewashed fragment with a red border from deposit 10060, an occupation or garden soil associated with the east range, suggests that the walls were divided into panels. Steadman (1913, 11) recorded line-decorated plaster in the room he identified as a *sudatorium* – more likely to be a bath, but in any case part of the late Roman re-modelling of the east range – but it is not certain whether the material was *in situ*.

Other decoration

A deposit (16342) from mid-Roman well 16002 produced a plaster fragment showing a simple narrow stripe on a white background, although yellow–brown patches hinted at additional floral motifs (Fig 139, 5). The scheme was similar to that seen in context 10243, and may belong to the same room.

Catalogue of illustrated pieces from Northfleet

(Fig 139)

1. Yellow and dark grey stripes or border on red background. Context 200082/200083, bath-house room 200240. Mid-Roman (VP5).
2. White motif on pink background. Finds reference context 10290.
3. Blue-grey and brown-red striped pattern on white background. Ditch fill 10243, sub-group 16697. Late Roman (VP6).
4. Possible red flower motif on orange-yellow background. Bath-house room 10624. Mid-Roman (VP5).
5. Grey-black stripe on white background. Context 16342, well 16002. Mid-Roman (VP2).
6. Blue-grey panel with white background or border and possible floral motifs. Ditch fill 10243, sub-group 16697. Late Roman (VP6).

Chapter 8
Worked Wood

by Damian Goodburn,
with a contribution by Edward Biddulph

The scope of this chapter is to summarise and provide a comparative analysis of the key groups of woodwork found during excavations at Northfleet (ARC EBB01). It overlaps in places with the stratigraphic and topographic account of the various timber and masonry structures and deposits (see Biddulph, Vol 1, Chap 3), and other contributions, such as species identification, tree-ring analyses, and landscape reconstruction (Barnett and Tyers, Vol 3, Chap 3). However, its main focus is the woodworking technology involved, from the nature and selection of the raw materials, through their conversion to their finishing, jointing, fastening, installation, wear, decay, and demolition. The reconstruction of the tool kits used and logistics is also considered. The evidence for the previous use of some material is examined and suggestions are also made as to the possible functions of the various elements and structures. It is not possible nor desirable to produce a detailed catalogue and analysis of all the worked wood and timber encountered for various reasons. The main criteria for levels of discussion here are listed below:

Because of the varying conditions of the archaeological project and degrees of preservation of the woodwork encountered some woodwork was only partially exposed, planned, and left *in situ*. This was mainly the case for decayed roundwood stakes associated with the outer features of the middle Saxon mill structure (see Chapter 6). A few timbers found were very decayed but were skilfully excavated and recorded *in situ*. This applies to some of the Roman woodwork, which is covered in brief below. Some parts of substantial structures were very repetitive in form, in which case a representative sample of the woodwork concerned is discussed in more detail.

The material covered in the most detail here is the woodwork that was at least moderately well preserved and was lifted, cleaned, recorded, and sampled in detail either by this author or under his supervision. Space would not, in any case, allow for a full catalogue of the timbers to be presented here but full details are in the archive.

Preservation and Recording

The base of the Ebbsfleet Valley has clearly remained waterlogged to varying degrees since the later prehistoric period. This condition has preserved all the woodwork encountered to varying degrees, from fresh condition to grainy peat depending on the height of the section of wood concerned.

The Roman woodwork was found in two distinct types of situation. On the slightly elevated villa site the woodwork survived in deep cut features such as wells or cisterns. Towards the lowest point of the valley, nearest the historic main channel, lay the 'Wetland area', on the south side of which lay a series of three main Roman river channel revetments. Large areas of the timber structures in this zone were exposed over relatively large areas at the same time. Despite the use of polythene sheeting and a watering regime it was very difficult to avoid some drying of some of the woodwork *in situ* before lifting for detailed recording. However, the relationships of the structures in plan could be well appreciated with the full extent of the structures exposed at the same time.

This writer visited most, but not all, the areas producing ancient woodwork to advise on its recording, sampling, initial broad dating, and interpretation. Some brief *aide memoire* notes and sketches were made during those visits which focused attention on certain areas for detailed investigation later. However, the OA excavation team carried out the vast majority of the standard *in situ* recording of scale planning, sections, elevations, photography, and other digital survey methods. The site team also began the process of filling out *pro forma* 'timber sheets' for most of the woodwork assisted by this writer when requested. A small number of tree-ring spot date samples were taken on site by this writer to check and tighten the initial broad dating on the grounds of woodworking technology. Later another group was taken by site staff.

The Range of Roman Woodwork

The Roman woodwork is varied, comprising elements of river bank revetments and well/cistern and pit linings. Some of this material was recycled from earlier buildings. Roman woodwork is rare in Kent but overlaps with the large corpus of structural woodwork from Greater London not very far to the west. By the same token, examples of woodworking from a rural, estuary-side settlement, provide some contrast with larger scale more 'municipal' works which dominate the London corpus.

The Nature and Size of the Roman Regional Comparative Corpus

The comparative corpus is structural woodwork that has been published in detail; material that is dominated by Roman woodwork found in London published since the late 1970s. It is only possible to provide brief reference to this growing body of archaeological work here. Even the early studies showed that the Romans introduced a revolution in woodworking technology, as in so many other spheres. Initially the woodwork was mainly that of civic wharfs, foundation rafts, drainage structures, wells, and planked boats (Wilmott 1982; Milne 1985; Marsden 1994). Latterly, the Greater London evidence has been examined and published in even more detail including studies of new categories of material such as building timbers (re-used and *in situ*), machinery, cooperage, fencing, treen, and amphitheatre structures (Goodburn 1991c; 2001; 2008; Brigham *et al* 1995; Bateman 2000; Rowsome 2000).

It has become increasingly possible to characterise many types of formal 'Romanised' woodworking with typical features such as the widespread use of saws, nails, and standardised dimensions (Goodburn 1991a; 1995). However, very recently, recording and analyses of a number of assemblages, mainly from suburban areas and the hinterland, have revealed the existence of traditions of woodworking owing much to native pre-Roman and possibly 'barbarian' practices (eg, Goodburn 2004; 2005). These two tendencies in the woodworking evidence may indicate the level of Romanisation of the occupants of the site concerned. This appears to be reflected in a number of attributes, such as the regularity of structural work, the squareness of beams and posts, the use of sawn planks, and often, a form of modular timber framing. Timber structures at the other end of the spectrum involve the use of elements cleft and hewn to varied shapes and scantlings, much use of roundwood, and no evidence of modular framing. The level of formal Romanised practice exemplified in the Northfleet woodwork is discussed below.

Relatively little Roman structural woodwork has been published in detail from other regions of Britain or the nearer regions of the Continent outside the sphere of planked boats and ships (Rival 1991; Nayling and McGrail 2004). Near the northern frontier, large quantities of waterlogged woodwork have been excavated at various sites in Carlisle and the fort of *Vindolanda* at Hadrian's Wall. Some assemblages from Carlisle have been reported on in detail and clearly show both formal Romanised practice and native or barbarian influences (McCarthy 1991). The *Vindolanda* corpus is large and very varied, as a visit to the site museum shows, but the level of published detail of the structural woodwork (Birley 1977) only allows for the broadest of comparisons to assemblages such as that found at Northfleet. However, we can say that at these northern sites there are differences in some techniques and species used from those typical of the Roman south-east. Archaeological investigations on some of the continental riverside sites have provided some general publications of low timber quay sides that might provide some parallels for those at Northfleet (de Boe and Hubert 1977). Recent work on several of the French rivers has produced both evidence of timber quays and river barges and it is hoped that detailed publications will emerge in due course.

Hands-on experimentation in Roman woodworking of the region provides some new insights relevant to this study. Since the end of the late 1970s a number of archaeologists working with waterlogged wood from southern England have been carrying out general and very specific targeted experiments in aspects of Roman woodworking (Darrah 1982; Goodburn and Redknap 1988; Goodburn 2001). This writer has been involved with these experiments since the mid-1980s and the work has provided new insights into the archaeological evidence, its recording and interpretation. The experiments have been carried out with period type tools and appropriate materials. Aspects covered have included experiments in Roman sawing and jointing.

A Note on Relative Sea Level Change and its Bearing on the Analysis of Timber Structures found at Northfleet

Archaeological investigations on the City of London waterfront from the mid-1970s have provided many examples of historic timber foreshore structures that have been dated unusually closely. It was soon realised that if normally dry surfaces immediately inland of these structures could be securely related to them then a dated marker of water levels relative to the local land would have been obtained. Studies of the stratigraphy, timber structures, and environmental evidence, such as diatoms, showed that the area of the City of London was at the inner end of a tidal estuary since before the Roman port was established (Milne and Milne 1982). Thus, the relative water levels (relative sea levels) corresponded to those of highest spring tides. Throughout the 1980s and 1990s such work was carried out as a matter of routine on the London waterfront

(but, oddly, rarely elsewhere) producing a more closely defined relative sea level change curve with ordnance datum (OD) heights against calendar dates. The curve of interest here runs from the early Roman to later medieval periods (Brigham 1990; 2001, 25). Although relative sea level in the south-east has risen as a whole since the last Ice Age and is rising now, it is clear that there have been periods of stasis or even marked falls in relative levels (regressions) lasting hundreds of years at a time.

The archaeological work on the Thames foreshores has shown clearly that from the Roman occupation to *c* AD 300 relative sea level fell fast along the upper Thames estuary by 1.5–2 m from + 1.5–2 m OD to around 0 m OD. This trend massively affected the nature of the port with quays being extended outward and downward towards the deeper water. Eventually the port closed down and moved down river, possibly to Shadwell, after AD 300. On a smaller scale we may see a similar trend preserved in the various phases of the Roman timber quay or river wall frontages at Northfleet (see below).

This work using timber foreshore structures as datable relative sea level markers has been refined further, with some chronological gaps filled in during the last few years (Heard and Goodburn 2003, 48; Goodburn 2009). For example, the interpretation of the likely meaning of the levels obtained in relation to the then tidal levels has been more clearly understood, the field has suffered from a lack of practical understanding amongst some archaeologists. This writer suggests that, based on the practical experience of living next to and on the tidal Thames for many years, most types of activity adjacent to the foreshore or quay surfaces, etc, are likely to have been carried out between the highest astronomically possible tides (HAT) and commonly recurring spring tide high water levels (spring tides are the larger tides experienced every month). This level would be appreciably above mean high water springs, a previously used reference level. The current assumption is that people built, as they did until recently, so as to keep their feet and front door steps clear of water in all normal conditions but accepting the occasional minor flood every now and then as a price to pay for living near the water. This can be traced in many foreshore stratigraphic successions in the form of occasional thin flood sand or silt layers over roadways, yard, and quay surfaces (Heard and Goodburn 2003, 10). The previous use of terms such as 'mean high water springs' or 'mean sea level' is misleading here; if the former was the decider of foreshore occupation levels then those concerned would have to have accepted flooding every few weeks, in the case of the latter they would have been drowned on a regular basis! Complicated terminology abounds in this field but the fundamental issue here for the Northfleet project is the level to which the tidal water came to on a regular basis at any particular period. Other areas of confusion have involved mixing coastal erosion and processes of silting and accretion with relative sea level change. It has also been the case that the sea level/time clock developed on the City foreshores has proved to be applicable for sites further to the east in the middle and outer Thames estuary including at Northfleet itself.

The Riverside Revetments

General characteristics and comments on phasing

In the south-east part of the 'Wetlands' area, three roughly parallel, east–west lines of oak piles were exposed (see Biddulph, Vol 1, Chap 3). The northernmost two lines were the rot-truncated bases of low pile and plank revetments. These had once faced the Ebbsfleet channel at this point (see Vol 1, Fig 3.24). It was not possible to investigate the earliest, southernmost, pile line in detail but it too appeared to be the remains of a truncated riverside revetment. Access was constrained by time and the hard-packed, flinty land-fill used behind each revetted frontage. The two northernmost revetments retained the original basal courses of oak planking set on edge behind the piles (see Vol 1, Chap 3, Pl 3.17). These alignments appeared to be very straightforward pile and plank revetments built in succession further out into the deeper water. The woodworking techniques and tools used to produce the elements of the structures and associated finds show that they were Roman in date. In general the piles used in the structures were cut from fast grown trees, as was the planking; that is they were poor material for tree-ring dating. However, one plank (12680), had some surviving sapwood, over 60 annual rings, and provided a tree-ring date range of AD 171–207 (see Tyers, Vol 1, Chap 3). The surviving lifted plank showed no clear signs of previous use or woodworm in the sapwood, so it would seem that a construction date for the relevant phase of the timber-revetted river bank of *c* AD 171 and 207 is sound. However, it is quite clear that a number of the piles used were re-cut from old building timbers and so a short phase of previous use for the dated plank cannot be ruled out entirely.

The revetments could have had two main functions. They may have simply acted as river walls to protect the slightly extended river bank to the east of the substantial Roman settlement. Alternatively they may have carried out that function but also have acted as low wharf frontages against which small boats and shallow draft barges could have been moored. Substantial river craft were built during the Roman period which had wide flat bottoms and could carry many tons of cargo on only 0.5 m of water (de Weerd 1988; de Boe and Hubert 1977). The estuary side location of the Northfleet complex strongly hints that the efficient use of water transport was an important consideration for the residents. The OD levels recorded on the truncated tops of the revetments themselves at around 0.9–1 m OD correspond to adjacent landward levels of *c* 1.7 m OD. Although the levels and dating in this case are a little approximate, we can suggest that the frontages could

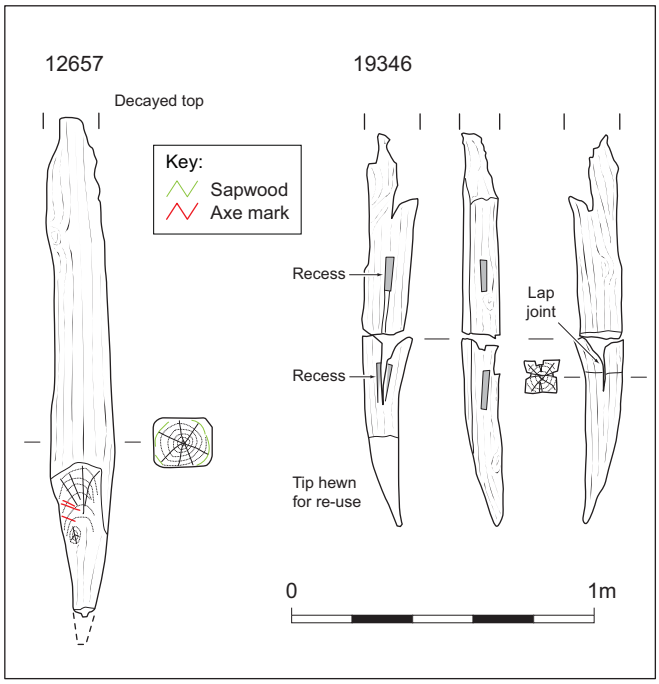


Figure 140 Northfleet: worked wood piles 12657 and 19346

have functioned as small wharves accessible to estuary craft during spring tides from the 2nd to the early 3rd century and beyond.

With shore side occupation levels as low as *c* 0 OD by *c* AD 300 close by, it would seem that only very small boats could have come alongside the frontage at that time. Clearly the structures were later eroded by decay and then tidal action as levels rose towards those of the late 7th century. Quite surprisingly no clear fragments of boats, barges, or their fittings was found, although a Mediterranean-style boat nail was found at Springhead (Schuster, Chap 3). This paucity of evidence is also true of the Roman City of London waterfront where only the occasional ship nail or broken boat hook has been found next to the active wharves. This contrasts with Saxon and medieval waterfront zones where fragmentary nautical finds are common.

The piles

The vast bulk of the revetment piles had been converted from their 'parent logs' by hewing to fairly neat, straight, rectangular sections, which contrasts with the far less regular sections used in prehistoric and Saxon piles found during the project. Most of the piles were hewn from whole logs, with a small number hewn from half logs, 'boxed heart', and 'box halved' respectively. However, there also appear to have been some *ad hoc*, low cost attempts to repair the wharf with roundwood stakes, most of which were 50 mm diameter or less (eg, stake 19007 at 30 mm diam and 12684 at 50 mm), although a small number were larger at 150 mm diameter, such as stake 12391. It seems probable that the use of the slight, less durable materials may be yet another phase of work on the quay. Another indication of attempts to keep costs down was the use of secondhand squared oak timber which was of building origin (below).

Whilst it was not possible to fully excavate all the revetment piles, several from the later phases were lifted for more detailed recording – a mix of apparently freshly used piles and some that were clearly re-used as indicated by relict joints, etc. The apparently fairly freshly prepared piles varied in size from *c* 200 x 180 mm (12656) to 150 x 110 mm in the case of 19348. Many piles survived over 1.5 m long and some as much as 1.79 m long, in the case of boxed heart pile 19348, which was 150 x 130 mm in cross-section. Such piles clearly had to be driven with the aid of some form of pile driver, even into the fairly soft shoreside deposits. The piles had been hewn from relatively small oaks that had grown at a moderate or fast rate and some piles had both knots and sapwood on the corners, with a small amount of wane here and there (eg, Fig 140, pile 12657). The parent oaks seemed to range in age between *c* 35 and about 55 years old and must have come from some form of fairly open managed woodland. This size and form of oak around 0.25–0.30 m diameter at breast height (DBH) has been found used in many Roman timber structures in the Roman City to the west (Goodburn 1991a; 1995; 1998; 2001). Slow grown, straight grained oak that derived from tall, dark 'wild wood' type woodland was not found used in this structure.

The tips of the piles had been carefully hewn to square cross-sections and often bore the fairly straight stop marks of fine axe blades up to *c* 60–70 mm wide. Similar sized axe marks were also found here and there on the faces of the piles, although many were weathered. The orientation of the marks shows that the axes were used, when finally trimming the faces and points, largely along the grain rather that at a 45° angle or across, as is often the case in the post-Roman period.

We can note that the re-used timbers distinguished by their redundant joints were all oak and the most common feature indicating their previous use was the presence of short, wide mortises without the locking pegs as seen in late medieval carpentry or Roman joinery. The mortises indicate that they derive, most probably, from some form of timber framed building or framed industrial structure, such as a tank. Many re-used Roman building timbers have been found in London, some *in situ*, and the analysis of this material has shown that there were many forms of timber framing known in the Roman south-east (Goodburn 1991a; 1995; 2008; forthcoming). Indeed, excavations in London continue to reveal evidence of a further range of construction styles. However, some forms of sill, post, brace, and plate timbers seem to recur most commonly. For example, we have considerable evidence of the use of timber framed construction with wattle infill woven vertically round short oak battens wedged into sloping recesses in the sides of regularly spaced studs and posts (Goodburn 1991a; 2008; forthcoming). This system seems also to have been used at Northfleet, as exemplified by pile 19346, which has sloping infill batten recesses in three faces showing that it was a stud from a

main wall joined by a partition (Fig 140). The timber was one of the very smallest boxed heart oak piles in the revetment(s), only *c* 120 x 100 mm in cross-section with a total surviving length of 1.5 m. It has two surviving courses of infill batten recesses on each of the three jointed faces.

The planking
Although not very well preserved, it was clear that all the planking was oak and that it was tangentially faced and of regular cross-section, suggesting that it had been sawn out. The introduction of three different methods of manual sawing by the Romans has been documented in the analysis of sawn timber from London and elsewhere (Goodburn 1995; 2001). All the methods documented involved hewing a baulk square and then marking it out to standardised dimensions for sawing. It then had to be set up on one or two trestles or a tripod. Several small sections of revetment planking were lifted, washed and examined off-site where faint saw marks could be seen here and there. The dated sample, 12680, was 380 mm wide by 35 mm thick. Other sections of plank were narrower such as plank 12658, at 240 mm wide by 35 mm thick; all these sizes are known from Roman London.

Timber-lined Cistern 16731

Aspects of woodworking
This rectangular timber lined feature has been interpreted as an industrial sized well, probably connected with malting and brewing (Biddulph, Vol 1, Chaps 3 and 4). Being on the slightly higher land to the south of the 'Wetland', area the upper parts of the structure were truncated by decay, but with skilful excavation four main courses of oak plank sheathing set on edge were revealed, retained in place by six oak uprights (Vol 1, Chap 3, Fig 3.11 and Pl 3.3). The timber lining (16696) was *c* 2.6 m square and survived to *c* 1.6 m deep although its original depth must have been more like 2.5 m. The uprights had short pile tips and had been driven a short way into the deposits below the construction cut for the structure. However, it is clear that they must have been cross braced at a higher level to resist the pressure of the backfill effectively. Between the lower ends of the uprights, extra boards had been iron-nailed to overlap the lower edges of the lowest main course of plank sheathing. This is a very unusual feature in Roman structures of this kind and must have been added when the base of the feature had been scoured out to a greater depth than originally intended. Another unusual feature was the placing of a packing piece plank on the outside of each round retaining pile, possibly to spread the load, a feature not seen in other Roman timber linings known to this writer.

Although many tree-ring samples were taken, all the sapwood had decayed and no heart/sap boundary survived, providing a dating range of after AD 56 or probably later 1st or early 2nd century (see Tyers, Vol 1, Chap 3). This broad dating fits with the broad finds dating of the structure. Also, it is clear from the varied nature of the planking and redundant notches in some plank edges that some or all of the planking was re-used in any case. It seems that the structure was built by the simple expedient of excavating a large pit, slightly driving in corner piles, and then wedging the main sheathing plank against the uprights using the back fill and some scrap timber; no complex jointing was used. This structure gives the impression of being a low cost, somewhat *ad hoc*, structure with a simple form and a selection of re-used and cheap materials.

The planking
The oak planking was all tangentially faced of very regular cross-section, despite often being knotty and of wavy grain. This indicates that in typical Roman manner it was sawn out, although decay and weathering had removed any actual saw marks. The planking varied in width and thickness, with the thickness recorded at 35 mm or 40 mm for most planks and up to 60 mm for plank (16674). The widths also vary from 430 mm or roughly cubit wide prior to decay to *c* 290–300 mm or a *pes monetalis* or foot. Both sizes are well known from analyses of Roman London plank finds (Goodburn 1995; 2008; forthcoming).

The cistern uprights
These were of very slight oak roundwood *c* 150–200 mm in diameter, with very little trimming. Clearly they retained much sapwood that was lost to decay. This meant that site staff found it difficult to describe the cross section or type of conversion of the uprights. They do not appear to have been lifted for detailed recording, but some are described as having 'axe facetted tips'.

Wood-lined Pit 12700

The rectangular-cut feature was *c* 2.3 m long by 1.6 m wide and vertical sided. The timber elements of this feature had been much reduced by decay and probably robbing of re-usable parts such as corner uprights (Vol 1, Chap 3, Fig 3.12). What was left varied from amorphous peat to moderately decayed solid oak with no tool marks or sapwood surviving. On close examination of the photographic and plan records it appears that the base comprised three main planks, with one divided down the pith by decay (recorded in two halves: 11570 and 11571). One half of this plank (11570) was sampled repeatedly (not by this author) and produced a date range of after AD 77 or late 1st or early 2nd century AD (see Tyers, Vol 1, Chap 3). The decayed tree-ring samples seemed to be radially faced, but it seems more likely that they were just half a split tangentially faced plank.

The oak planks were all *c* 2 m long, but varied in original width from *c* 0.43 m or 1 cubit (11570/ 11571) to just over 300 mm (11538 and 11537). Although the planks were decayed and compressed, a maximum

thickness of 50 mm was recorded. A very decayed fragment of oak planking on edge (11540) was also found along one edge and must have been retained by uprights originally. As the cut for the lining was cut tight up to it, it is likely that the lining was built as a rough box lowered down into the tight fitting hole.

Well 15011

Here the structural woodwork is a group of four boxed heart oak beams (15403–6) forming the square foundation frame for a masonry well lining (15075). The frame was *c* 1.18 m square externally and *c* 0.78 m square internally (Vol 1, Chap 3, Fig 3.21). The beams were *c* 200 mm by 165 mm and set on their faces. The corners were simply halved over each other but no trace of fastenings survived. They must have been held together simply by the side pressure of the surrounding deposits. All the beams were a little weathered and eroded so no tool marks survived.

Two of the beams had redundant, unpegged, sloping or 'chase' mortises. In the case of beam 15405, there were a pair of such joints set close together. This may indicate that the jointed beams were originally horizontals in a structure that had diagonal (possibly crossing) braces. Crossing braces are well known in Roman iconography in situations such as timber bridges or tower parapets (as seen on Trajan's Column), but such assemblies have not yet been found archaeologically, and the use of chase mortises in building wall frames seems to have been rare, although diagonal braces halved over studs are known (Goodburn 1991a). The beams were hewn from relatively small oaks *c* 0.4 m DBH, around 80–100 years old and of moderate growth rate, as the surviving annual rings totalled 65, giving a probable felling date range of AD 144–80 (Tyers, Vol 1, Chap 3). It is important to note here that this date range is for re-used timbers without sapwood.

Well 16516

Unfortunately no elements of this oak timber well lining, other than the largest stake tip, were seen by this writer. Neither did the elements provide viable tree-ring samples. The well lining was *c* 1.3 m square externally and survived as three courses of planking, identified as oak in the field, and four retaining stakes set in the corners (Vol 1, Chap 3, Fig 3.16). Although no tool marks were found on the planking, the regularity and flatness suggested that they were sawn out. The dimensions of the planking varied from *c* 260 mm to 290 mm wide by 30–45 mm thick in the lower two courses to *c* 430 mm wide in the uppermost course. It is likely that planks *c* 1 *pes monetalis* (*c* 290 mm) wide were trimmed down for the lowest two courses, while a cubit (*c* 430 mm) wide plank was trimmed down for the uppermost. The plank courses had been made as separate open boxes joined with a simple bridle joint at the corners. This method of jointing the corners of Roman plank well linings is well known in Roman London where it would normally have been secured with iron nails into the end grain (Wilmott 1982; Goodburn in prep). The nails were probably too corroded to see in this case.

These stakes functioned to locate each box lining course one above another. Three of the stakes were made from small cleft half logs 180 mm diameter (16497 and 16500) and another was a roughly trimmed cleft quarter log (16499); the species not recorded. However, the remaining upright, which was examined by this author, was a boxed heart oak pile driven 0.5 m deeper than all the others and *c* 160 x 140 mm. It had a neatly hewn square section tip on which faint axe stop marks could be seen. Perhaps this timber was additionally used to support some form of bucket lifting arrangement, such as a pivoted pole.

Reconstructing the Tool Kits used in Making the Roman Woodwork

Many types of tools can be reconstructed either directly, or by reasonable surmise, from the Roman woodworking evidence recorded from Northfleet. These tools include relatively narrow bladed axes (with *c* 70 mm wide blades), cross-cut saws, plank making 'rip' saws, chisels, and probably small adzes for joint cutting and drill bits for making nail pilot holes, essential for nailing in oak. Clearly implied tools include a small pile driver, ropes, carts (possibly barges?) for moving the timber, trestles, and a windlass for hoisting it up for sawing. Freshly cut oak timber is normally too heavy to float (Millet and McGrail 1987, 106) and so it cannot be moved by raft in Britain where there were no light softwoods that could be used to buoy it up. Also needed for marking the timber and assembly would be snap lines, squares, rules, plumb levels, and probably a compass. The generalities of this sort of tool kit would be familiar to an 18th century estate carpenter, although some of the tool forms and joints cut would be different. However, this type of tool kit and mind set of techniques such as timber framing were radically different to those used in the prehistoric Ebbsfleet valley and in the following Saxon period.

Aspects of the Roman Woodwork in a Wider Context

The general style of the Roman period woodwork used at the Northfleet site is, in the vast majority of cases, quite formally Roman rather than of 'native' or 'barbarian' type. These typically Roman characteristics include the overwhelming use of beams hewn to regular, relatively neat, rectangular cross-sections, the use of sawn planking, and a range of typically Roman unpegged joints, such as rather wide mortises, halving joints, and characteristic slopping recesses for wattle

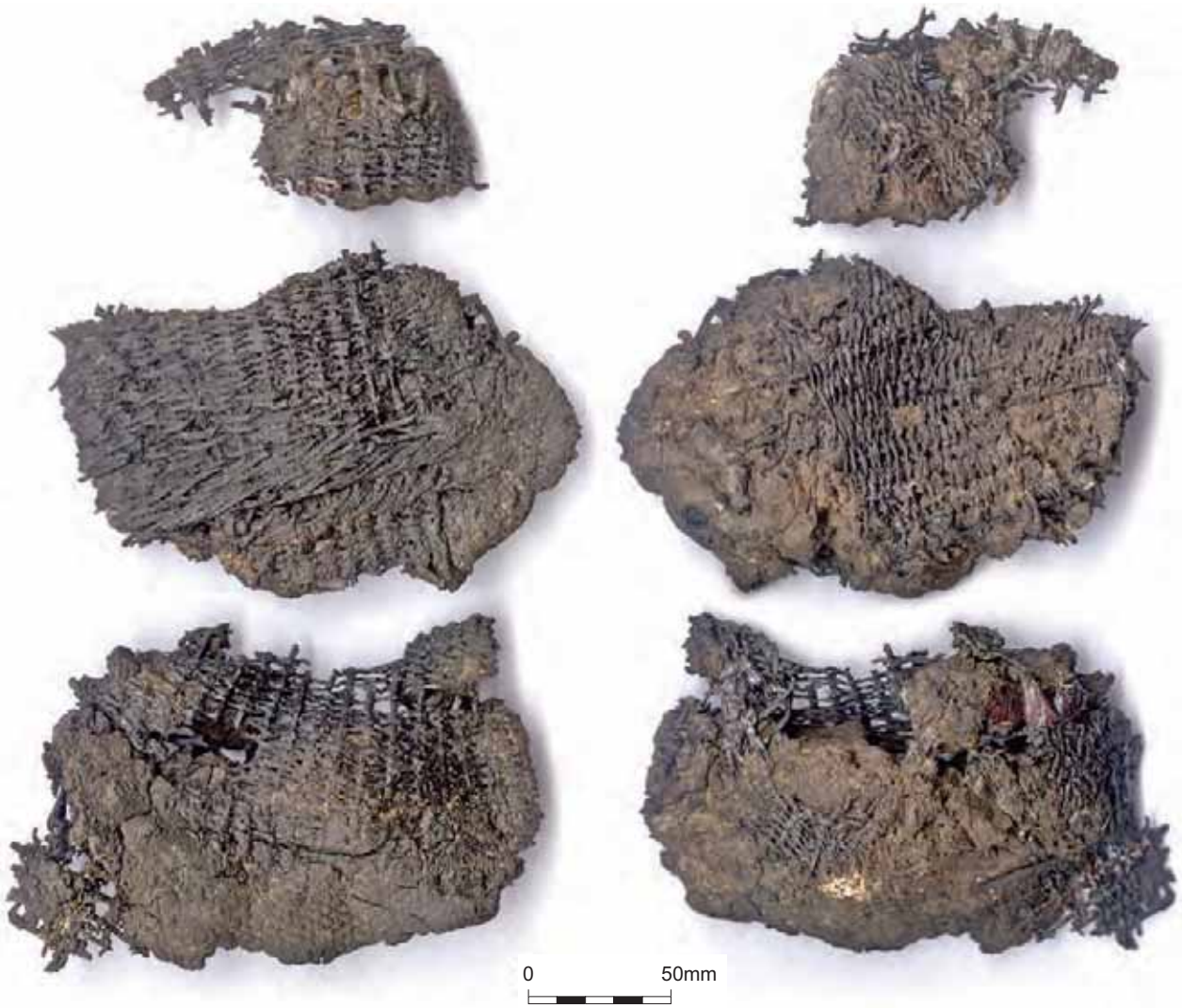


Figure 141 Northfleet: basketwork from well fill deposit 16586

infill battens. Relatively little iron seems to have been used in the form of the nails commonly found in much Roman woodwork in London. However, here problems with the preservation of iron may be partly to blame.

Although there are some minor idiosyncratic features in the various examples of Roman woodwork, we can find parallels for the vast majority of it in the Greater London corpus. The simple low riverside revetments are common features on the lesser tidal channels of sub-urban *Londinium*, such as those found in Southwark or along the river Fleet or in the Walbrook valley (Rowsome 2000; Taylor-Wilson 2002; Goodburn forthcoming). The municipal City waterfront, by contrast, is dominated by much more massive structures (Milne 1985; Brigham 1990).

The Structural Woodwork as a Window on the Regional Woodlands

Parts of the landscape with trees are here termed 'treeland' – which includes wildwood, various forms of managed woodland, hedges, wood pasture and orchard trees, and plantations – the term 'woodland' being too limiting (Rackham 1976, 18). Rackham, working in the 1970s, developed a practical approach to reconstructing parts of regional historic treeland by closely examining and recording historic structural woodwork. He showed that the treeland drawn upon by the carpenters of his region changed greatly through time, at least partly mirroring local treeland changes. This approach has been developed using more practical experience of early working methods in ancient treeland, and systematic tree-ring and wood species identification studies (Goodburn 1991a; 1991b; 2001). Such analysis has contributed to reconstructing ancient treescapes from the Bronze Age to post-medieval periods in the south-east (Goodburn 1994; 1995; 1998; 2001). However, we have to acknowledge that the picture gained has to be backed up by studies that will pick up wood species less favoured for construction work. These studies include charcoal and pollen analysis (see Vol 3). Combining all the evidence should yield the most broadly accurate results.

The summary analysis of the Roman woodwork suggests that in the region around Roman Northfleet,

the local treeland was dominated by relatively open managed woodlands producing mainly medium sized and small oaks, which often grew fairly fast. As can be seen in the summary above, the parent trees were mainly under 0.40 m DBH, and often much less. Only a few trees used for the 'cubit' wide sawn planks were of larger girth at *c* 0.65 m DBH. There is no clear evidence of the slow grown, straight grained, old wildwood type timber found to varying degrees at many sites in Roman London and to some extent in the middle Saxon assemblage from the site. A problem here may be that such large regular timber in this riverside region may have been reserved for ship building or transport to large settlements like *Londinium*, where it could be sold at a premium.

Basketwork

by Edward Biddulph

Two pieces of fine woven basketry, plus a number of smaller fragments, all belonging to the same object, were recovered from deposit 16586 (Fig 141), an early disuse fill from well 16731 (Villa Phase 1/2). The basketry was lifted from the well in a single Plaster of Paris block and sent to the York Archaeological Trust for conservation. One of the two larger pieces measures *c* 90 x 50 mm, the other 80 x 80 mm. Both are constructed with a stake and strand twining technique with a z-spin, that is, with an anti-clockwise twist. A band of thicker cord extends across the surface of one of the fragments. The fibres, analysed by Steve Allen and Allan Hall in the archive, are woody, most likely willow, *Salix* sp. The larger pieces comprise two layers of basketry, which appear to join along one side, although it is unclear whether this represents a proper edge. The resulting pockets contained soil trapped before or during deposition. A sample of the soil yielded an assemblage of charred wheat identified as emmer and spelt, and remains preserved by waterlogging comprising nettle, dock, burdock, beetles, and frog hopper.

The fine weave contrasts with the coarser wattle of the later Saxon basketry fish trap recorded in the mill area (see Goodburn, Vol 1, Chapter 5), pointing to a far more delicate object (we may usefully note that the strands did not shrink significantly during freeze-drying). The double-layered aspect to the largest fragments and apparent edge hints at a bag or similar container. Roman parallels are rare, but a cylindrical basket, also of willow, was recovered from the Roman quay at St Magnus House, London (Pritchard and Chapman 1986, 233). The width of the rods was *c* 2–3 mm, comparable to those of the Northfleet basketry, and the basket had a diameter of *c* 146 mm. More parallels have been preserved in the arid conditions of the Near East and north Africa. An ethnoarchaeological study of basket and mat makers in Egypt (Wendrich 1999) suggested that the twining method was typically employed for mats, belts, and other flat objects, while plaiting and coiling were preferred for bags and baskets. In the Amarna region of Egypt, however, twined bags were used for carrying and transportation, especially in agriculture. This tradition was known in ancient times; Wendrich (1999, 259) alludes to a twined bag, filled with doam nuts, found in the tomb of Kha.

Though it is tempting to interpret the charred remains as the original contents of a bag that was dumped into the well, the soil's assemblage can be matched with material recovered from the context as a whole; an identical range of grain, insects, and weeds was recovered through wider sampling (see W Smith, D Smith, and Stevens, Vol 3, Chaps 2 and 3). The mixed character of the charred plant remains (including grains, chaff, glume bases, and sprouts) from those samples and other finds from the deposit – a leather shoe, ceramic building material, and iron fragments among them – help confirm a period of general dumping. The basketry was no doubt deposited in the same manner, and thereafter accumulated the grain and other material. The charred plant remains provided a signature overwhelmingly related to brewing. That the basketry was also related to brewing cannot be ruled out. Traditional English basketwork has included meshes used for sieving corn and meal made by fine skeins of cleft willow (Edlin 1949, 108). The fineness of the Northfleet basketry means that a filter or sieve are not beyond the realms of possibility.

Chapter 9
Worked Stone

by Ruth Shaffrey

Rotary Querns and Millstones from Springhead

A minimum of 95 rotary querns are represented within the assemblage from Springhead, 65 from the Roadside settlement (ARC SHN02), and 30 from the area that included the Sanctuary complex (ARC SPH00). This total includes larger lava fragments that are positively identifiable as rotary querns but is in addition to almost 45 kg of smaller weathered lava fragments (25 kg from ARC SHN02 and 20 kg from ARC SPH00) and a few very small fragments of other materials. Although only the larger lava fragments are included in the quern count, the sheer weight of the additional surviving fragments suggests that a much greater number of querns originally existed. Eight definite millstones are represented in addition to the rotary querns (three from the Roadside settlement and five from the Sanctuary site); both rotary querns and millstones are analysed together, giving a total of 103 specimens represented. Many of the querns do not have measurable diameters and thus may be fragments from millstones.

Distribution and Dating

Rotary quern (or millstone) fragments were recovered from 152 contexts (of which 71 produced only small lava fragments). They were found in great numbers across the site but several properties or buildings produced noticeable concentrations; mostly these groups were found within the Roadside settlement. Property 11 at the street junction produced the greatest single concentration of querns (18) while property 10, the smithy, produced 12 querns, nine of which are lava, and property 3, the 'bakery', eight querns of mixed materials. Five of the latter were from a single context (17043) and all are sizeable fragments. No other properties or areas appeared to produce large groupings although it was not uncommon to find up to four querns in close proximity. On the Sanctuary site the largest concentration of quern fragments were associated with the early 'bakery' sequence 400039–41 (six including two millstones) and 'Viewing platform' 400045–8 (four fragments). Over half the rotary querns (and millstones) were recovered from early Roman (pre-AD 120) contexts (53) but none was found in features of pre-Conquest date. A further 31 were from early to mid- or mid-Roman contexts and only six from late Roman contexts.

Lithologies

Four principal lithologies were utilised: Lava, puddingstone, Millstone Grit, and Greensand (Table 78). Other lithologies are represented in minor numbers including Lodsworth Greensand and an igneous rock. Of the eight millstone fragments, seven are of Millstone Grit and one is of Greensand but, of the assemblage as a whole, Lava and puddingstone make up the bulk in equal parts (62%) with a further 31% being Millstone Grit and Greensand.

Lava

While all the lithologies are represented in both Springhead assemblages, lava makes up a far greater proportion of the Roadside settlement assemblage (40%) than at the Sanctuary site (14%). Because of the difference in numbers from each site, this means only five out of 33 lava querns were recovered from the latter. The 45 kg of weathered fragments indicate that there were probably far more lava querns than have survived in a recognisable form and it is clear that lava querns were a significant component of the assemblage. Half the recognisable fragments were recovered from early Roman contexts with a further 35% from early to mid- and mid-Roman contexts. The discard pattern is not strikingly early but it is a clear indicator that lava was being heavily used in the 1st century AD.

Table 78 Springhead: principal lithologies used for rotary querns/millstones

Lithology	ARC SHN02	ARC SPH00	Total
Lava	28	5	33
Puddingstone	19	12	31
Millstone Grit	8	11	19
Greensand	10	3	12
Lodsworth Greensand	2	2	4
Other	2	2	4
Total	69	35	103

The lava querns are difficult to assess typologically because, on the whole, the material has degraded very badly over time but, where observable, they are mostly of typical design with a raised kerb around the upper edge and tapering in thickness towards the centre. Where worked surfaces survive there is segmented radial grooving on the grinding surface, cross hatching or diagonal grooving on the upper surface, and vertical striae on the edges. Three querns retain the elbow-shaped handle socket often seen on lava querns (1675, SF 20476; 11239, SF 18245 and 16633, SF 20299; Crawford and Röder 1955). One quern is kerbless and of flat-topped type (2996) and one is of parallel but angled disc type (11216, SF 18243).

Puddingstone

The most significant lithology represented in this collection is the group of puddingstone querns which, with a combined total of 31 querns represented, almost doubles the number known for the county (Blanning 2006, 17). The puddingstone querns have been reported on more fully in a separate article (Shaffrey 2007). These are grouped as puddingstone because they are similar in their basic composition, that is, they are conglomerates of flint pebbles, but that is not to say that they all came from the same source. Some are types of pale-coloured silcrete (quartz cemented), of the Hertfordshire Puddingstone type, but the majority appear to have a ferruginous cement. The puddingstone querns are more significantly from early Roman contexts than other lithologies. Over 60% are early Roman, that is post-Conquest and pre-AD 120, with only 10% from late Roman contexts. The remainder are from 2nd century/mid-Roman contexts and none are of pre-Conquest date. The date of puddingstone querns at Springhead is in keeping with what is currently understood.

Puddingstone querns are usually recorded as being of the East Anglian beehive form and analysis of the Springhead examples has found that this is generally true (for example SF 20206, Fig 142, 5). There are significant variations to profile and other typological characteristics, however, for example SF 20484 (Fig 142, 4) and SF 15375 (not illus) which have unusually wide hoppers and feed pipes (Shaffrey 2007). At least one lower stone is fully perforated (5845) and there are also at least three significantly larger examples. As might be expected, there is some correlation between the different forms at Springhead and their lithology, with the less common forms and sizes being made of the paler petrological types less commonly found in the town. This supports the petrological evidence suggesting more than one source, with others perhaps subject to different stylistic influences (Shaffrey 2007).

Millstone Grit

In contrast to the lava fragments, Millstone Grit forms a greater part of the assemblage at the Sanctuary site than at the Roadside settlement (31% as opposed to 12%). Other materials are more evenly represented and the reason for this difference is not clear. It has been suggested that Millstone Grit was only imported to Kent in the form of mechanically operated millstones (Roe 2008b) and, although it is not possible to confirm this with the Springhead assemblage as only seven of the 19 fragments have measurable diameters, those that are measurable are all millstones. If it were true that Millstone Grit was only used in Kent for millstones, the evidence could be taken to suggest that a mill was located near the Sanctuary site rather than at the Roadside settlement. The five millstone fragments found at the Sanctuary site are of consistent size (620–670 mm diam) and all were found in contexts dated to the early Roman period, suggesting they were discarded fairly soon after use. Two were from 1st century contexts (5455 and 6044) close to the springs and it seems likely that neither of these fragments was moved very far from their place of use. The former came from an oven (5452), the latter from a post-hole associated with a clay-floored structure (400028). Three millstone fragments were also retrieved from the Roadside settlement and these are larger at 750–900 mm diameter, but they were mostly recovered from late Roman contexts and are highly likely to be residual; at least one (from property 4) was reused (probably as a rotating whetstone) and is decorated (SF 20474). As a whole group, the Millstone Grit fragments are spread more evenly throughout the Roman period with 36% from early Roman and 24% from late Roman contexts. This is in contrast to puddingstone, in particular, but also to most other lithologies, which are primarily early to mid-Roman with little or none from late Roman contexts. This may be because of its longevity in comparison to lava, in particular, and suitability for reuse.

The majority of Millstone Grit querns and millstones are of disc form with roughly parallel faces that are either flat or slightly angled. As recorded at Northfleet and elsewhere (King 1980, 87), some of the Millstone Grit querns/millstones imitate the lava querns by having a raised kerb around the outside edge of the upper stone (eg, that from channel fill 6447). One example is slightly tapered and of flat-topped type (from context 3588).

Greensand

Sixteen querns of Greensand were recovered including one small millstone (620 mm). These almost all came from pre-AD 120 contexts, although three are from mid-Roman contexts. Thirteen of these querns fall into two types of Greensand. One is pale green and of variable grain size, sometimes with prominent glauconite and often with polished grains visible but with no observable shells. The second type is cream or greenish–brown and contains a small number of shells. Both are consistent with rocks observed at Folkestone and, given our knowledge of an early Roman quern factory there (Keller 1988), this seems a likely source.

A third group of Greensand querns are fine grained, of a slightly greenish–grey colour with obvious cherty swirls. These are certainly Lodsworth Greensand imported from the quern factory in Sussex (Peacock

1987). Two fragments were recovered from each Springhead site and comprise three small lower quern fragments and one upper stone of fairly typical Lodsworth design, with straight sides leaning inwards, a flat/slightly hollowed top, and a concave grinding surface (SF 20257). Three of these were found in early Roman contexts and one in a probable 2nd century context (2905); this is in keeping with our understanding that Lodsworth Greensand was primarily used during the early Roman period (Peacock 1987, 73).

The other Greensand querns encompass a broad range of designs. Six querns are of similar design to the Lodsworth Greensand querns, including classic flat-topped types (eg, SF 15373), and there is a single small millstone (from context 6044). This has wear on the grinding surface consistent with being paired with a smaller lower stone and thus may have been reused as a rotary quern when it ceased to be needed as a millstone. A further two querns have the appearance of flat-topped types with large basin shaped hoppers taking up most of the upper surface (SF 18642 (not illus) and SF 15639, Fig 142, 3). Bearing in mind the amount of wear they may have undergone, however, they are also similar to (though much thinner than) an unused example from the quern factory at Folkestone (Keller 1988, fig 3.8) and thus reminiscent of Kent type 2b querns. A single quern is of disc type with segmented radial grooves on the grinding surface (SF 20254). Three querns are of the general beehive type. One of these (SF 20482) is a fairly thin beehive quern with basin shaped hopper and a pronounced ridge with iron deposits suggesting the fitting of an iron rim for a handle. One of the others (SF 20481 and 20491) is a thick example with steeply angled grinding surface and large conical hopper.

Discussion

The excavations at Springhead have produced a large assemblage of rotary querns, a quantity not unheard of for Roman towns, but noteworthy for Kent. We know from documentary evidence that rotary querns and millstones were used to grind malt for the manufacture of beer during the 16th and 17th centuries (Medlycott 1996, 154) and archaeological evidence is highly suggestive that this process also occurred during the Roman period. A large number of quern and millstone fragments was recovered from a 2nd–3rd century probable malt house at Stebbing Green in Essex and the likelihood is that these were used to coarsely grind dried malt before brewing (Bedwin and Bedwin 1999, 21). Although many of the fragments are too small for original dimensions to be determined, at least three are definitely or very likely to have been millstones and therefore the processing of malt may have occurred on a rather large scale (see Stevens, Vol 3, Chap 2). Given that there is substantial environmental evidence for the production of beer in Springhead, it seems likely that some of the querns (and possibly millstones) found were put to this use.

One of the most puzzling things about the Springhead assemblage is the large number of puddingstone querns. A source within one of the local Eocene or Palaeocene beds seems possible. Various ferruginous flint pebble beds of similar composition occur in the Blackheath beds within only a few kilometres of Springhead (Dines *et al* 1954, 88) and several querns are of very similar composition containing numerous small pebbles. Another possible source is the Swanscombe outlier, part of the Woolwich Beds and less than 3 km from Springhead. The rocks are described as having a 'ferruginous cement forming blocks of conglomerate in the pebble bed, as well as coating the pebbles themselves with a brownish crust' (Dewey *et al* 1924, 57). Finding exposures or outcrops of these rocks is notoriously difficult and thus, on geological grounds, it has not been possible to pinpoint a particular source. On archaeological grounds, however, the sheer numbers of querns of a material not particularly well suited to grinding grain for flour and not otherwise occurring in more than single numbers suggests a local origin for at least some of these querns. It seems very unlikely that querns of this difficult pebbly material would have been imported over any distance when querns of Millstone Grit and Lava would have been readily available.

Two further explanations have been identified (Shaffrey 2007). One possibility is that the town served as a distribution centre for the puddingstone querns but, given the generally low numbers of these in the area and county as a whole, this seems unlikely. A second, and more likely, explanation is that puddingstone querns served a very specific purpose, other than for grinding flour, and that their finding at Springhead represents this activity. The grinding of malt for brewing is the obvious explanation here. Imported querns such as Lava and Millstone Grit may have been too difficult to obtain or too expensive a commodity for brewing and thus local, lower quality materials were exploited. Whatever the explanation, the group of puddingstone querns is an anomaly.

The presence of querns and millstones of Lava and Millstone Grit is to be expected as they are common on Roman sites in the north of Kent, including Northfleet (see below), Farningham (Black 1987, 117), and Bexley, Joyden's Wood (Tester and Caiger 1954 182) and also at previous excavations at Springhead (Roe 1998a). Other materials include Greensand (seen at Bexley: Tester and Caiger 1965, 182) and in particular Lodsworth Greensand. Querns of Lodsworth Greensand were mainly manufactured during the 1st century AD (Peacock 1987) and were distributed to a broad area across the south of England. The recovery of several examples from Springhead are of particular significance because although three Lodsworth querns were found at Ashford, Westhawk Farm (Roe 2008b), it is otherwise unknown in Kent.

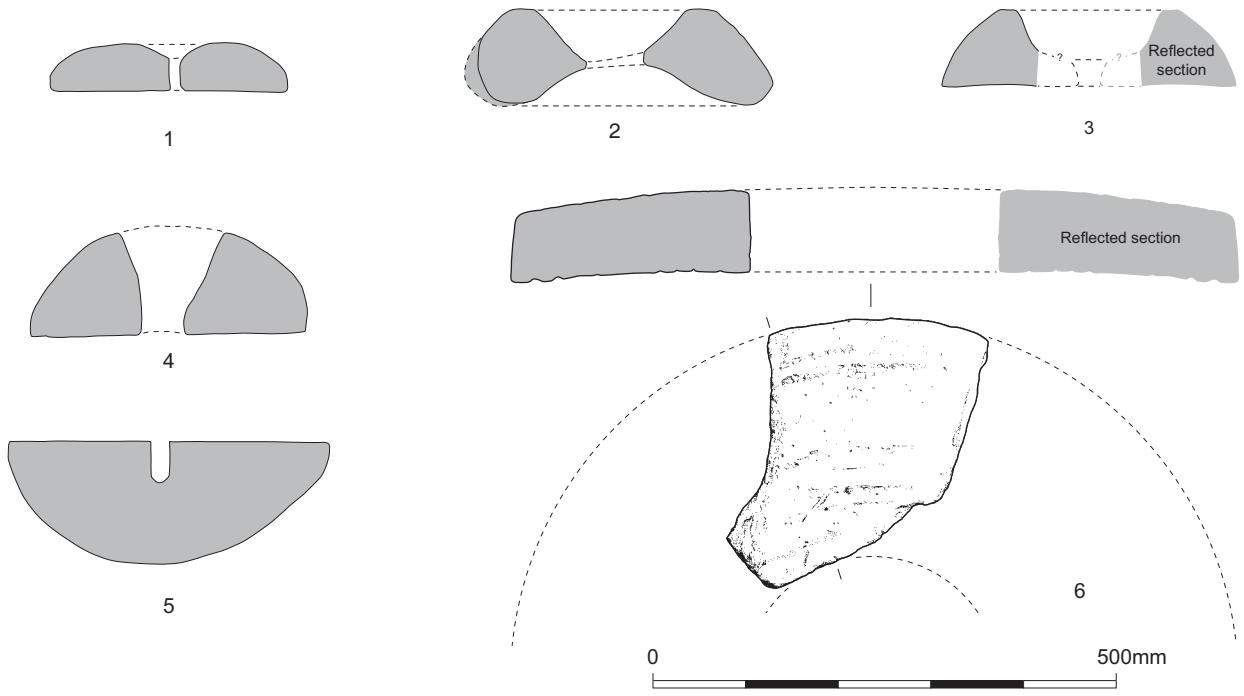


Figure 142 Springhead: querns and millstones 1–6

Catalogue of rotary querns

(Fig 142)

1. Half upper rotary quern. Ferruginous puddingstone. Flatter style quern with chipped edges which curve into roughly flat top with slight bowl shaped hopper. Feed pipe very narrow and cylindrical (17 mm diam). Coarsely worked all over with smooth flat grinding surface. 255 mm diam x 30–51 mm thick. SF 20486. ARC SHN02, context 17043, property 3. Early Roman
2. Complete upper rotary quern in two frags. Greensand. Beehive style bun shaped. Conical hopper 160 mm diam at top, 70 mm deep. Grinding surface very concave and worn smooth and elsewhere the quern is pecked. Chipped around the edges. No handle slot. Eye is a rounded square 54 x 60 mm. Reused with wear on top of stone. 360 mm diam x 100 mm thick. SF 20481/20491. ARC SHN02, context 17043, property 3. Early Roman.
3. Upper rotary quern frag. Greensand. Slightly concave and curved grinding surface which has been worn smooth. Edges straight and lean in towards edge of large basin shaped hopper. Very centre and feed pipe missing but whole quern appears to have been pecked. 320 mm diam x 89 mm max thickness. SF 15639. ARC SHN02, context 10806, SG 300438, property 11. ?Mid-Roman.
4. Upper beehive rotary quern. Ferruginous puddingstone. Uneven but conical hopper and feed pipe. Conical handle socket 42 mm long x 32 mm wide at edge, has worn into grinding surface. Approx. 300 mm diam x 120 mm max thickness at centre. SF 20484. ARC SHN02, context 17043, property 3. Early Roman.
5. Lower beehive rotary quern. Ferruginous puddingstone. Flat grinding surface with spindle socket. Perfectly rounded base, more crudely finished than upper stone would be. Damaged around circumference. 350 mm diam x 133 mm max thickness at centre. SF 20206. ARC SHN02, context 11641, SG 300422, property 11. Early Roman.
6. Upper millstone frag. Millstone Grit. Disc style very slightly angled quern. Upper surface coarsely pecked and grinding surface smooth but decorated with two concentric rings towards edge of no functional purpose and would not have been visible. Rings 25–35 mm and 40–50 mm from edge. Edges straight and vertical and also worn smooth suggesting possible second function as rotating whetstone. 790 mm diam x 60 mm max thickness. SF 20474. ARC SHN02, context 16863, property 4. Late Roman.

(not illus)

7. Upper rotary quern. Greensand. Of Wessex style with concave grinding surface, sides which curve very slightly but lean steeply in and cross between hollow top and broad bowl shaped hopper. Pecked all over with smoothed grinding surface. 360 mm diam x 93 mm max thickness at edge of hopper. SF 18642. ARC SHN02, context 11728, SG 300420, property 11. Early Roman.
8. Upper rotary quern. Ferruginous puddingstone. Two-thirds survive. Flat grinding surface. Rounded profile of flatter bun shape with damaged wedge shaped handle socket almost at grinding surface. Funnel shaped hopper/eye not distinct from one another measuring 28 mm diam at grinding surface to 78 mm at top. Not perfectly circular and whole quern quite crudely

manufactured. 355 mm diam x 112 mm thick. SF 15375. ARC SHN02, context 10647, property 11. Mid-Roman.

9. Upper rotary quern third. Greensand. Flat-topped type with very thick straight vertical edges, roughly flat top and curved concave grinding surface worn smooth. Conical shaped hopper/eye. 360 mm diam x 95 mm max thickness at edge. SF 15373. ARC SHN02, context 10647, SG 300410, property 11. Mid-Roman.
10. Upper rotary quern frag. Greensand. Beehive style quern with edges that curve right over top and marked basin shaped hopper. Circular eye 30 mm diam. Edges damaged but appears to be pronounced ridge with some evidence for iron deposits suggesting fitting of iron rim for handle. Flat grinding surface. Quern pecked all over. >310 mm diam x 77 mm thick. SF 20482. ARC SHN02, context 17043, property 3. Early Roman.
11. Upper rotary quern. Greensand. Two adjoining frags. Slightly concave and curved grinding surface dressed with segmented radial grooves. Upper surface roughly dimpled. Eye damaged. Edges straight and vertical and roughly pecked. 420 mm diam x 38 mm max thickness. SF 20254. ARC SHN02, context 12351, SG 300323, property 2. Late Roman.
12. Upper rotary quern fragments. Lava. Two, possibly three frags of same quern. Typical kerbed style with kerb measuring 49–54 mm wide x variable thickness. Third frag has partially finished handle socket or fitting partially cut under rim. 330 mm diam x 47 mm thick. SF 20476. ARC SHN02, context 16875, property 3. Early Roman.
13. Upper rotary quern frag. Lodsworth Greensand. Rim frag of thick Wessex style quern with straight sides leaning in slightly and with concave grinding surface and hollow concave top. Pecked all over but grinding surface worn smooth, especially away from edges. 87 mm max thickness. SF 20257. ARC SHN02, context 16464, SG 300501, property 10. Early Roman.
14. Upper rotary quern frag. Lava. Typical kerbed upper stone. Quite worn with centre missing but tapered to centre, grooved and with straight vertical edges. Remains of elbow-shaped handle slot or fitting. About 15% of quern survives. 370 mm diam x 64 mm max thickness at edge. SF 20299. ARC SHN02, context 16633, SG 300568, property 4. Early Roman.
15. Upper rotary quern half. Lava. Approx 20 frags. Thin disc style quern with parallel faces both of which slightly curved. No kerb and no evidence for handle slot. 410 mm diam x 2 5mm thick. SF 18243. ARC SHN02, context 11216, SG 300460, property 10. Mid-Roman.
16. Upper rotary quern frag. Lava. Rim frag with 20% of rim surviving but only 10% of quern. Typical kerbed style with kerb 41 mm wide x 5 mm high. Elbow-shaped handle slot or fitting under kerb. Tapered to centre with straight vertical edges but weathered so no evidence of original tooling survives. 390 mm diam x 15–55 mm max thickness on kerb. SF 18245. ARC SHN02, context 11239, property 10. Mid-Roman.
17. Complete lower rotary quern. Hertfordshire Puddingstone. Damaged around edges. Base very rough and of quite irregular thickness. Stone fully perforated with narrow conical hole (20 mm diam on grinding surface, 28 mm on base). Grinding surface roughly flat and base completely curved. Reused as one section is really smooth. 290 mm diam x 88 mm max thickness. ARC SPH00, context 5845, SG 300131, SFB. Early Saxon.
18. Upper millstone frag. Millstone Grit. Frag of very thick upper stone with slight shallow kerb around edge. Kerb 51 mm wide x 8 mm high. Edges straight and vertical and grinding surface flat but very slightly concave. Centre missing, 10% of circumference survives. Pecked all over although grinding surface worn into slight concentric grooves. 650 mm diam x 120 mm max thickness on kerb. ARC SPH00, context 6447, SG 300012, channel fill. Early–mid-Roman.
19. Upper millstone frag. Greensand. Flat-topped type with straight edges probably leaning in slightly, flat top, and curved concave grinding surface. Eye missing, approx 20% of quern remains. Has slight rim around edge on grinding surface suggesting sat astride a slightly smaller stone. 620 mm diam x 29–60 mm thick. ARC SPH00, context 6045, SG 300088, post-hole. Early Roman.
20. Upper rotary quern frag. Lava. Three adjoining frags of upper stone with grooves all over: crude segmented radial grooves on grinding surface, vertical grooves on edges and cross hatching on upper surface. Kerbed type which has worn very thin towards centre with wide (65 mm) but shallow (4 mm) kerb. 52 mm max thickness on kerb. ARC SPH00, context 2996, Ritual shaft. Early–mid-Roman.

Other Worked Stone from Springhead

Structural and Decorative Stonework

Although decorative stonework was very scarce at Springhead, a few small pieces do hint at the presence of decorated buildings. Two single *tesserae* were found, in the slumped top fill of late Iron Age ditch 6621 and in post-hole 16342 (300497, property 10), the former made of chalk and the latter of a probable chert. A very small group of *tesserae* was also found *in situ* on site W51724 (Springhead Nursery), representing the surviving remains of floor 88 in structure 300525 (property 8). Two pieces of marble wall veneer were recovered from post-hole 16253 (300520, property 9) and from pit 2203 near the Sanctuary complex. A third piece of marble, from pit 2157, has a shaped base indicating it was part of a palette, marble being well suited to the preparation of pigments (Pritchard 1986, 182). One example is a white continental marble and two are green marble, probably Campan Vert and quite different to previous findings from Canterbury which demonstrated that Italian marbles dominate to the total exclusion of French marble (Blagg 1984, 70).

On a larger architectural scale, there is no evidence that stone was used as a roofing material either within the Roadside settlement or the Sanctuary complex, but blocks of a variety of stone types demonstrate that a number of sources provided Springhead with building stone. Some of this stone, including the Greensand, would have been available relatively near to the town but other types must have been imported from further away including the shelly and oolitic limestones. Some of these are now quite weathered, whilst others appear to have been crudely shaped blocks (eg, from layer 16391, property 10). Tool marks remain on some blocks including a Greensand block from layer 5220 (a destruction layer associated with the Sanctuary temple). Two pieces of stone may have been architectural/ornamental but both are too small for their original form to be determined. One is a fragment of oolitic limestone with a curved edge (SF 20297, post-hole 16450, SG 300493, property 10). The second is a fragment of Greensand, which appears to be a corner piece with an internal, smoothed curved bowl (pit 10298, SG 300396, property 11). A further piece of Greensand (SF 20298) was used as a floor slab – it has at least three shaped edges and one worn face (layer 16551, SG 300498, property 10).

The presence of oolitic limestone blocks is surprising. We would not expect this stone to have been imported for basic building construction if it did not also accompany more decorative architectural pieces, yet no substantial pieces of architectural stonework were found in the HS1 excavations at Springhead. There are, however, four column bases and a section of column held at the nursery at Springhead whose precise provenance is unknown but which are likely to have been recovered from the Roman town, perhaps in the 19th century (see V Smith 1997, 64 and pl ii. Note that one of the column bases was recovered from the stream bed within the nursery after this article was published. This example had been reused in recent times as the support for a timber footbridge). The recovery of structural pieces of oolitic limestone during recent excavations makes more sense, therefore, when read in conjunction with the existence of column fragments of likely Springhead source. It is impossible to say whether the smaller decorative pieces were associated with the larger architecture and one must be careful not to read too much into a small number of fragments, but there is an indication at least of the existence of architecturally ornamental and possibly decorated structures somewhere in the vicinity.

Grinding Stones and Processors

In addition to the large assemblage of rotary querns found within the town, six saddle querns or grinding stones (five from the Roadside Settlement) and a mortar (from the Sanctuary site) were also recovered. The single fragment of mortar was recovered from an unphased post-hole (5621). Although it is possible this piece represents a vessel, the extent of smoothing inside the item suggests it was used as a mortar. Unusually, this is made of well-cemented sandstone, although it is a pale colour, which would have resembled the usual limestone utilised.

One of the saddle querns is too weathered for much to be said about its shape, whilst another (SF 20493, property 11) has been extensively reused on at least two of the edges and the base. Two further examples are more like shallow mortars (or processing stones, to distinguish them from the usual Roman 'mortar' like that mentioned above). One example (from 5215, a colluvial layer in the spring area) made use of a naturally shaped piece of stone. Another example (SF 15371) is also best described as a grinding or processing stone because it so little resembles a classic saddle quern. It is a thin stone with one worn and concave surface and was recovered from the fill of pit 10646 in property 11 (300410, the 2nd phase of circular structure). A final example is a large boulder which has been utilised as a grinding stone (SF 20502) and as a secondary function as a whetstone on one edge. This is not a saddle quern but has a shallow circular depression on the upper surface which has been used for mixing or grinding small quantities of material. It too was associated with the second phase of a circular structure (300410) in property 11 and is made of the same quartzitic sandstone as the boulder used for a socket stone (see below).

Several processors were recovered. One example (SF 20317, Fig 143, 2) is an elongate pestle with an oval section, a bevelled edge at one end and a smooth surface at the other. This would have been suitable for crushing or grinding small substances in a shallow mortar or grinding stone of the type described above. It was recovered from a fill of early Roman pit 17148 (17150) within the 'bakery' structure (300649, property 3). Another item (SF 20290) was also recovered from the 'bakery' structure in property 3 (mid-Roman layer 16917). This is a flat, oval-shaped pebble with one polished side that seems likely to have been used as a rubber or similar sort of processor – it would have been ideal for use with one of the saddle querns. Two flint nodules show extensive wear consistent with use as pounders or hammerstones. Their exact purpose is not clear but they could have been employed for the processing of a whole range of foodstuffs or possibly fulfilled some more industrial role. One of these is from property 2 (pre-temple pit 12175) and the other from an earlier, late Iron Age phase of activity on the site (pit 3379).

Three of the more usual saddle querns are made from ferruginous sandstone, one from another sandstone and one from Millstone Grit. The Millstone Grit quern (post-hole 5124) was imported to the site, probably from Derbyshire. No detailed survey of saddle querns in Kent exists, but Millstone Grit saddle querns are thought to have been transported as far as Middlesex during the Iron Age and Roman periods (King 1980, 92) and probably in greater numbers during the Roman

period. It is thus quite possible that this saddle quern was made and used at that time and may not represent earlier, prehistoric activity. The ferruginous sandstone is difficult to source precisely without detailed research but bands of it occur within the wider outcrops of Greensand, the nearest of which is less than 20 km from the site. One possible source is from the Folkestone beds – rotary querns of Greensand are known to have been manufactured during the early Roman period at Folkestone (Keller 1988) – but a Wealden source seems more likely as was suggested for the ferruginous sandstone found at Bexley (Tester and Caiger 1954, 182).

Whetstones and Other Worked Stone

A total of 12 whetstones were found at Springhead; these were distributed across both the Roadside settlement and the Sanctuary site and not concentrated in any areas. Four of these are primary whetstones (specifically shaped and designed so to be), five are natural (utilising naturally available pieces of stone but not specifically shaped, for example SF 20316) and two are secondary (using pieces of stone that had already served another function, for examples as querns); one is indeterminate. All the primary whetstones are elongate examples with sub-square or sub-rectangular cross-sections and are made of Kentish Ragstone (for example SF 15030). One of the pebble whetstones has been used mostly along one edge and has also been pierced for suspension in a style more common on primary whetstones (SF 20094, Fig 143, 3). One example of a secondary whetstone (SF 20474, Fig 142, 6) utilises what had been a millstone and appears to be of the rotating variety – certainly the edges were used for whetting and the curvature is suggestive of this. The item is also decorated with two rings towards the outer edge of what had been the grinding surface indicating that the stone was subsequently reused in a way that would make the decoration more visible.

Other unusual items include two socket stones. One of these (SF 20490, clay-lined pit 16731, property 4) is a large avocado shaped boulder, slightly pointed at each end much like a sling shot. It has been given a flat base and has been deliberately shaped with evidence of pecking surviving. The stone was clearly intended to be visible, rather than being built into the end of a wall. Its weight (25 kg) suggests it could have supported something substantial, but the shallowness of the socket (30 mm) belies this, and the width of the stone indicates it could not have supported a door post. It may have held a pole perhaps for a sign, or, given its association with a clay-lined pit or tank (16831), supported some sort of structure involved in whatever process was being carried out in the tanks.

The second socket stone is quite different; it is a much smaller, unshaped, fairly narrow lump of chalk with a central socket measuring 28 mm diameter by 64 mm deep. It was found *ex situ* as part of the packing in post-hole 2684 (part of portico structure 400020 within the Sanctuary complex), but seems most likely to have been secured within a post-hole or above the ground by other stones – it was not large enough to have supported a door post on its own. This same post-hole also produced a probable chalk mould, containing a cylindrical channel measuring 68 x 47 x 22 mm deep.

Discussion

For an urban assemblage, the range of stone artefact types represented is surprisingly small. There are no objects associated with textile manufacture, only a relatively small number of whetstones (12) and little if anything of a personal nature. These absences are quite marked and they may be assumed to be real given the large quantities of stone recovered generally and the number of these that are small fragments. Small quantities of structural and decorative stone were found but, with the exception of some imported oolitic limestone and French marble, there is nothing of particularly high status.

The presence of saddle querns and processors is evidence of additional grinding or processing activities. Saddle querns or shallow mortars would have been better suited than rotary querns to the processing of some materials, for example the mixing and grinding of small quantities of foodstuffs like herbs, or for pounding roots and crushing nuts (Barker 1985, 12). Although there is evidence for late Iron Age activity on the site, it seems likely that the saddle querns and mortars were contemporary with the Roman occupation and provided functions such as those outlined above not fulfilled by the rotary querns. The numbers are not great enough to suggest a large-scale operation but more likely reflect the needs of individuals. Three of these saddle querns or grinding stones, including the very large example, were recovered from the second phase of the circular structure within property 11 and may indicate the concentration of a particular type of processing there. They are particularly significant when it is considered that property 11 produced the highest number of rotary querns of any single property.

Catalogue

(Fig 143)

1. Saddle quern half or mortar. Sandstone. Very hollow so perhaps better described as a mortar. Probably roughly circular. SF 18641. ARC SHN02, context 11322, fill of post-hole 11321, property 10. Roman.
2. Complete pestle or processor. Flint cobble. Oval section. One end smoothed, probably from wear in the hand and other end has pronounced bevelled edge. 140 x 45–61 x 46–50 mm. SF 20317. ARC SHN02, context 17150, fill of pit 17148, SG 300649, property 3. Early Roman.
3. Pierced natural whetstone. Fine grained quartzitic sandstone. Flat pebble pierced and used as whetstone along one edge, which now flat and concave and also

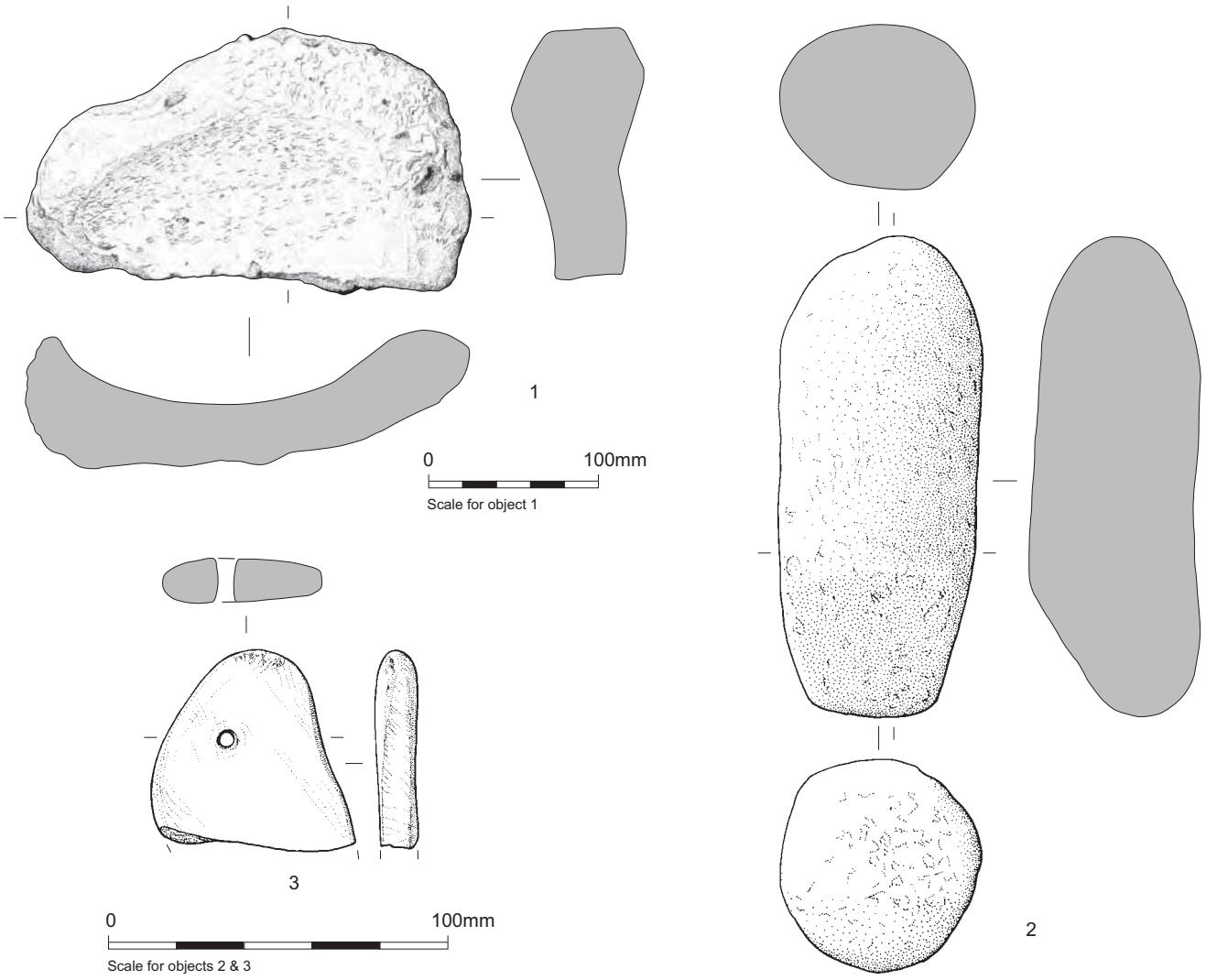


Figure 143 Springhead: other worked stone 1–3

across one surface, which is polished as a result. >57 x 57 x 12 mm. SF 20094. ARC SHN02, context 17913, property 3. Mid-Roman.

(not illus)

4. Saddle quern frag. Millstone Grit. One main concave and smooth face plus three smoothed and worn faces, including two edges and base. 175 x 155 x 98 mm. SF 20493. ARC SHN02, context 12586, property 2. Late Roman.
5. Saddle quern, unformed. Millstone Grit. Roughly rectangular lump with smoothed dished upper surface with a few scratches on it. 230 x 170 x 92 mm. ARC SPH00, context 5215, SG 300266. Early Roman.
6. Grinding stone. Large boulder of fine grained pale red quartzitic sandstone. Top and under side pecked. Shallow bowl worn inside, 100 mm in diam. Stone also been used as whetstone on one edge; deep groove. 590 x 270 x 150 mm. SF 20502. ARC SHN02, context 10875, property 11. Early Roman.
7. Grinding stone. Ferruginous sandstone. Thin stone with one worn and curved surface. No edges remain. 160 x 130 x 23 mm. SF 15371. ARC SHN02, context 10647, SG 300410, property 11. Mid-Roman.
8. Mortar or vessel frag. Sandstone. Crudely finished mortar or bowl. Inside nicely pecked and worn quite smooth but outside fairly roughly finished and base not perfectly flat. Not enough edge survives to determine diameter. 98 mm high. ARC SPH00, context 5621, fill of post-hole 5620. Early–mid-Roman.
9. Processor. Quartzite pebble. Flat oval with smooth polished surface on one side. Some slight wear along one edge but not distinct enough to be from flint knapping (H Lamdin-Whymark, pers comm). 102 x 90 x 28 mm. SF 20290. ARC SHN02, context 16917, property 3. Mid-Roman.
10. Primary whetstone. Kentish Rag. Elongate with sub-rectangular cross-section. Central frag with worn ends. Slightly bulbous at one end where section almost sub-triangular. Remnants of neat pecking visible. Mostly used on one face and edges and also diagonally across one face at narrower end. 69 x 28–29 x 16–24 mm. SF 15030. ARC SHN02, context 10269. SG 300396, roadside ditch (property 11). Early Roman.
11. Complete whetstone, natural pebble variety. Fine grained grey sandstone. Used on one face, now smooth and slightly polished and on at least one edge giving

cigar shape. 130 x 41–46 x 22–25 mm thick. SF 20316. ARC SHN02, context 17135, fill of pit 17133, SG 300649, property 3. Early Roman.

12. Socket stone. Fine grained slightly pale red quartzitic sandstone boulder. Shaped through pecking into slightly pointed avocado shape, peck marks all over. Base deliberately flattened and top contains socket of 40 mm diam x 30 mm deep. SF 20490. ARC SHN02, context 16734, fill of pit 16731, property 4. Early Roman.
13. Socket stone. Chalk. Crude soft lump, roughly elongate with circular socket in one end 64 mm deep x 28 mm diamr. 175 x 117 x 65 mm. ARC SHN02, context 2685, fill of post-hole 2684, SG 300066, portico structure 400020. Mid-Roman.
14. Possible mould. Chalk. Soft lump with cylindrical dip in upper surface broken at one end. Dip measures 68 x 47 x 22 mm. ARC SHN02, context 2685, fill of post-hole 2684, SG 300066, portico structure 400020. Mid-Roman.
15. Slab. Greensand. Three roughly square edges and two flat faces, one of which smooth, possibly used as floorstone. 195 x 195 x 56 mm. SF 20298. ARC SHN02, context 16551, layer within SG 300498, property 10. Early Roman.
16. Floor or wall veneer. White marble. Thin slab with no original edges and smooth but not polished and very flat. Probably used decoratively. 75 x 63 x 15 mm. ARC SPH00, context 2204, fill of pit 2203, SG 300210. Early Roman.
17. Slab for floor or wall veneer. Marble, possibly burnt Campan Vert (M Fulford, pers comm). Slab with flat faces and straight edges. 77 x >75 x 18 mm thick. SF 20240. ARC SHN02, context 16254, fill of post-hole 16253, SG 300520, property 9. Mid-Roman.
18. Palette. Marble, probably Campan Vert (M Fulford, pers comm). One flat and polished and one bevelled face. Rectangular originally although one corner now broken off. >67 x 31 x 9 mm thick on bevel. ARC SPH00, context 2158, fill of pit 2157, SG 300228. Early Roman.

Rotary Querns and Millstones from Northfleet

Of a total of 43 quern and millstone fragments recovered from the Northfleet Villa site, six are definite rotary querns and 16 are definite or probable millstones. A further 21 fragments are classified as rotary quern fragments for the purposes of analysis. Many of these retain enough diameter for it to be possible to tell that they are smaller than millstones but not for them to be measured accurately. Others in this group may, in fact, be millstones but as it cannot be determined either way have been added to the more common of the two categories and the one which has fewer implications for interpretation of the site. Almost 25 kg of indeterminate lava fragments were also recovered. It is impossible to say how many querns these represent but assuming an average size, then weight alone suggests there must have been at least an additional five querns.

Table 79 Northfleet: rotary querns/millstones from phased contexts

Phase	Querns	Millstones	Total
Early Roman (ER)		3	3
Mid-Roman (MR)	3	2	5
ER villa phase 1	5	3	8
MR villa phase 2	4	2	6
MR villa phase 3	1		1
Late Roman (LR) villa phase 4	1	2	3
Total	14	12	26

Description

Of the 43 querns or millstones represented, 26 are from phased contexts and are discussed below. Unphased querns and millstones are not included in the analysis unless of particular interest. The bulk of the phased querns were retrieved from early or mid-Roman contexts (Villa Phase 2 or earlier) with the millstones being most noticeably early (Table 79). Fourteen of the rotary querns are phased and found in mostly Villa Phases 1 and 2 contexts; they are a mixture of Lava (seven) and Millstone Grit (six). One is of another lithology, possibly Triassic sandstone, but without an identified source. A single quern of Greensand was recovered but is unphased. Almost all the millstones (phased and unphased) are made of Millstone Grit and, although varying in size, at least five are very large, measuring 840–900 mm in diameter. One millstone is of lava (13349, VP2) but is on the small side (570 mm diam) and we cannot rule out the possibility that some of the many small lava fragments were from millstones. Only two phased items classified as rotary querns have measurable diameters and both are of average dimensions (that is 400–440 mm diam). Both are of lava (although there is an unphased quern of Greensand). There are no definite rotary querns of Millstone Grit and it is perfectly possible that this material was used at Northfleet only for millstones (but see discussion below).

Many of the quern and millstone fragments were reused structurally, for example in the rubble surface of the Roman foreshore (Group 19651, VP6) or in the chalk/gravel surface in the courtyard area abutting the western aisled building (VP5, Group 16809). Others were included in deliberate backfill deposits such as those in wells 16002 and 16731. In both reuse and backfill deposits, multiple fragments were often deposited at the same time, including six fragments in well 16002 (four millstones and two querns) and three in well 16731. Of 12 millstone fragments from phased contexts, six are from Villa Phase 1 or earlier with two mid-Roman (two from VP 2 and two from VP 4). The early discard date of many of the millstones provides a

terminus ante quem of AD 150 for their use and places the mill firmly in the early Roman period and thus associated with the industrial phase of the site. The only millstones dating after VP2 were reused in the foundations of malting-oven 12591 and as rubble in the Roman foreshore (12617). Thus the evidence indicates that the mill was out of use by the beginning of the 3rd century and probably by the mid-2nd century.

Typologically the assemblage of both querns and millstones is quite uniform. Many fragments are too small for type to be determined but there are lava querns of typical kerbed style (eg, SF 13431, well 16002) and others of a simple disc form (eg, SF 13384, courtyard surface 16809). Most of the millstones are also of simple disc form although two Millstone Grit examples have a raised kerb in imitation of the classic lava style. Two millstones also have surviving complex rynd slots – one has the typical keyhole shaped fitting (SF 13428/13426, well 16002; Fig 144, 1) while the other has two small slots on the inside edge of the grinding surface (SF 13438, unstratified; Fig 144, 2). There are no rotary querns of beehive style or any other variation and thus the assemblage is quite limited in the types utilised.

Several of the millstones (for example SF 11644, pit 16726; Fig 144, 4), and an unstratified piece (3607) have a lip around the outside edge of the grinding surface, though this is not stylistic but an indication that they were paired with smaller stones. It is unlikely they were originally intended to be paired with smaller lower stones so the lip indicates they were used thus when their partner stone was broken. The lips are relatively narrow, however, suggesting that they were still paired with mechanically operated stones rather than with smaller hand operated querns.

Discussion

A large number of millstones was found at Northfleet, but it is not possible to say if they derived from a watermill or an animal powered mill. A number of the upper millstone fragments are worn in a way that is caused by being paired with smaller lower stones. It is unlikely they would have been originally mismatched and the evidence therefore indicates that the owners were either unable or had no desire to obtain new stones. Many of the millstone fragments were also discarded before the 2nd century, indicating a mill of relatively short duration. This is in keeping with the reuse of the millstones, which may have coincided with a 'winding-down' of the mill, when ordering new supplies would have not been economically sensible. It also suggests that the mill gradually went (or was put) out of use, rather than that it came to a sudden demise.

The reuse of existing millstones with mismatched partners also suggests that the supply of millstones to the site was rigidly controlled and not on an *ad hoc* basis (extra stones could easily have been sourced from nearby Springhead as and when required). The lithological and typological evidence of the stones themselves also indicates this control. With the exception of an unstratified Greensand quern, only the two major quern suppliers to Kent, Millstone Grit and Lava are represented at Northfleet, despite the broad range of quern materials used in the immediate vicinity. Although it is not possible to directly compare their use, because of the friable nature of the lava querns, it is reasonable to assume that each forms roughly half of the assemblage. Both materials are commonly found on Roman sites in northern Kent, for example at nearby Springhead (see above and Roe 1998a), Farningham (Black 1987, 117), and Bexley, Joyden's Wood (Tester and Caiger 1954, 182). It is the absence of querns of any other material which is significant. Other materials commonly used for querns in northern Kent include Greensand, puddingstone and to a lesser extent ferruginous sandstones (all of the above having been found at Springhead (see above and Roe 1998a) and the first two at Bexley (Tester and Caiger 1965, 182) and other sites). The absence of puddingstone querns may reflect the lack of late Iron Age occupation but the absence of other materials may owe more to the existence of the mill and the likelihood that resources for this were very carefully managed.

Typologically speaking the assemblage is also very limited. Although there are both querns and millstones, very few quern forms are represented. This is common for querns of Lava because few forms were made but a broader range of Millstone Grit querns exists. The range of simple disc type querns seen at Northfleet may be further evidence that all the broken fragments are indeed from millstones. Even if this is not the case, the indication is that the querns and millstones were supplied together and intentionally of simple form.

Overall, the evidence indicates that an early Roman mill existed on the site at Northfleet. This mill was carefully managed and the supply of materials to it rigidly controlled, so that stones were of a specific lithology and form. The reuse of stones suggests that use of the mill was wound down gradually, perhaps during the 2nd century, and that the focus of the site moved away from the centralised production and management of food and beer supplies as time went on, perhaps as the occupants of the villa became wealthier. In fact, the centralised management of flour and grist production may have been a contributing factor to their wealth. This wealth was subsequently realised in the luxurious adornment of the villa with columns and the bath-house with marble veneers (see below).

Catalogue of rotary querns

(Fig. 144)

1. Upper millstone frag. Millstone Grit. Two adjoining frags with keyhole shaped rynd socket. Grinding surface deliberately concentrically grooved. Top flat and pecked. Tapered slightly to centre. Centre missing. Approx 890 mm diam x 88 mm max thickness on edge. SF 13428/13426. Context 16385, backfill of well 16002. Early Roman: Villa Phase 2.

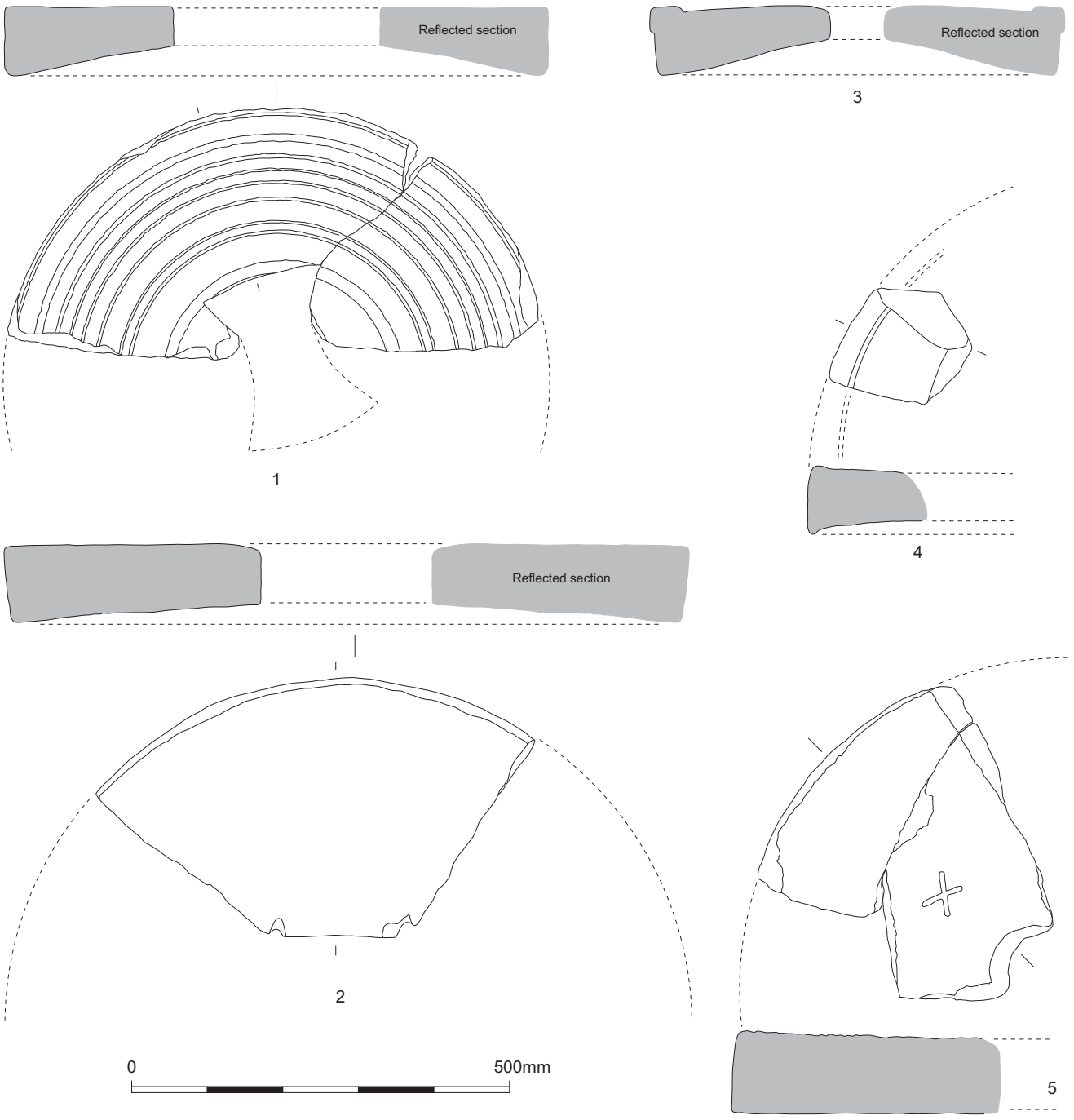


Figure 144 Northfleet: querns and millstones 1–5

2. Millstone frag, upper stone. Millstone Grit. Has rynd fittings in form of two small slots on inside edge 27 mm wide. Eye very large. Flat pecked faces, straight vertical edges and classic millstone profile. one-sixth survives. Approx 900 mm diam x 92 mm max thickness on edge. SF 13438. Context 16217, no details. Mid-Roman.
3. Upper millstone or rotary quern frag. Millstone Grit. In imitation of lava querns with raised kerb 45 x 7 mm. Eye appears circular, cylindrical and wide. Edges vertical and straight except where kerb sticks out from the edge like a lip. Quern tapered to centre with concave grinding surface, worn and flat top. Approx 550 mm diam x 92 mm max thickness at edge. Unphased.
4. Upper millstone frag. Millstone Grit. Very similar to 11643 but they do not match. Flat top with rounded kerb around circumference. Slightly rounded sides that slope in and worn concave grinding surface (worn into concentric grooves). Lip on grinding surface where mill may have sat astride slightly smaller stone. 850 mm diam x 68–93 mm thick. SF 11644. Context 10755, pit 10663, sub-group 16726. Early Roman: Villa Phase 1.
5. Upper millstone frag. Millstone Grit. Deeply pecked. Edge frag with no centre surviving but disc shape with

Table 80 Northfleet: summary of other worked stone

Category	Site phase ER VP1	MR VP2	MR	MR VP3	LR VP4	Saxon	Unphased	Total
Architectural			1		2	1	4	8
Structural	1	1			3		5	10
Ornamental		1		1	1		1	4
Whetstone			1	1		1		3
Other		1			1			2
Total	1	3	2	2	7	2	10	27

flat surfaces and straight vertical edges. Cross incised into upper surface. Approx 860 mm diam x 105 mm max thickness. SF 13427. Context 16385, backfill of well 16002. Early Roman: Villa Phase 2.

(not illus)

6. Two adjoining frags of upper rotary quern. Lava. At edge of one frag is elbow-shaped handle socket going under kerb. Kerb 42 x 5.5 mm. Diagonal tool marks all across top and edges are vertical with vertical grooves. Grinding surface appears only to be pecked. 420 mm diam x 17–53 mm thick (on kerb). SF 13431. Context 16385, backfill of well 16002. Early Roman: Villa Phase 2.
7. Millstone frag. Millstone Grit. Adjoins SF 13427. SF 13450. Context 16599, post-hole 16598, sub-group 16640. Mid-Roman: Villa Phase 5.

Other Worked Stone from Northfleet

A total of 23 pieces of structural stone was found at Northfleet including ten pieces classified as building stone (square blocks, possibly tooled but not moulded), eight pieces as architectural (moulded), and four pieces as ornamental (*tesserae* or marble). Six pieces of building stone are unphased and most of the remainder were reused in the cobble/rubble surface of the Roman foreshore (Group 19651). These are summarised by phase in Table 80.

Four pieces of decorative flooring were recovered including two probable *tesserae* (both of chalk), were recovered from Phase 7 contexts (15367) and as residual occurrences in Saxon deposits (10211). These hint at the possibility of a tessellated floor nearby but even in addition to the *tesserae* made of CBM also found, they are too few in number to be particularly informative. A single fragment of Purbeck marble was found in the lower fill of a bath-house room (200084, room 200240, VP5). This fragment has no surviving edges and although at 21 mm thick it is just thin enough to be a wall veneer, the rough underside suggests that it is a thin floor slab (Pritchard 1986, 182). A complete square piece of *opus sectile* paving (110 x 30 mm thick) was unstratified (Fig 145, 3) but may have been associated with a bath-house or the main house. It is almost identical in form to an example from London (Pritchard 1986, fig 5.5) but is made from a hard white marble, possibly Carrara.

One column capital (SF 11351; Fig 145, 2) was recovered from rubble/demolition layer 15357 associated with the western aisled building. It is slightly damaged but appears to consist of a sequence of cavetto mouldings divided by fillets. The moulded sequence is unusually short suggesting that what survives below this is not the main column but part of a tall fascia which would have had further moulding below. Given this, it is not possible to assign the capital to a particular type but as the diameter of the column cannot have exceeded 180 mm (and is probably as little as 160 mm) it can be identified as a miniature Tuscan column (Blagg 2002, 144).

One very small fragment of probable column base (15372) was recovered from the same rubble sub-group (Group 16754) as the column capital but is too small for much to be determined. One fragment of another column base recovered was unstratified (SF 11350 and incomplete but a third retains a complete profile (SF 12773; Fig 145, 2). It has double tori separated by fillets and a cavetto moulding above with extra fillet and is of Blagg's type IIA (Blagg 2002, 117). It was recovered from a Saxon deposit on the foreshore (12619) but it seems likely that it was used in the mid-2nd century re-building of the villa as its form is unknown before the early 2nd century and had probably gone out of use by the end of the 3rd. It is almost identical to a column from Eccles (Blagg 1984, fig 4.4; Detsicas 1968, 45) and similar in profile to an example from Farningham (although with shorter mouldings). Columns of the Tuscan order (ie, the smaller ones) were used to carry a porch or support an internal colonnade or veranda. The smallest of these (such as SF 11351) would have stood on low walls or pedestals but the larger (such as SF 12773) could have been up to about 2 m in height (Blagg 2002, 189). Two pieces of moulded stone (16217 and 16260), both with a flat top and three narrow waves running along their long sides (but not part of the same item) may have been decorated table or wall tops such as that associated with the column. A further two pieces are moulded but of unknown function – one has a semi-circular profile with flat ends (204025) and the other is a piece with an L-shaped profile (16100), possibly originating as part of a sarcophagus (K Hayward, pers comm).

Only a small number of other items of worked stone was recovered from Northfleet. These include three whetstones, one of which was recovered from a Saxon

context (15001) and two from mid-Roman contexts (layer 15145 and 15284 from post-hole 10635 in the eastern aisled building); they are all made of fine-grained sandstone. Two of these are examples of primary whetstones of elongate form and one of a secondary, slab shaped whetstone. Two spindle whorls were also recovered, a plain shale example (SF 20927; see Mepham, Chapter 10) and a decorated chalk example from a Saxon fill of SFB 10326 (SF 11536).

Discussion

Several pieces of architectural stone survive from the Northfleet Villa including three column bases, a column capital, and a moulded wall or table top. Although many rural houses and villas may have had wooden columns, stone columns and other architectural ornament were rare (Blagg 2002, 189) and the number of recorded cases is substantially fewer than mosaics (*ibid*). The stone columns found at Northfleet are thus a very clear indicator that the inhabitants were wealthy and had a high status.

The importance of the architectural stone is increased if we appreciate the distance it must have travelled in order to reach Northfleet. All the columns and other moulded fragments are made from oolitic limestone, a rock type that does not occur in northern Kent. Although oolitic limestone is the most common type of stone used for architectural work in Kent, the fact that it was imported (and unusual) made it a clear target for robbing and its survival all the rarer (Blagg 1984, 65). Two broad types are represented here. The first, used for three architectural pieces including a possible wall top (16260), is a type of Lincolnshire Limestone from Northamptonshire known as Weldon stone. The second type includes variations of Bath stone of probable Cotswolds origin (K Hayward, pers comm). This stone type was used for all the columns found on site. The broad category of Bath stone includes some of more typical Bath stone and of possible Combe Down origin (for example SF 11350), but several items are made of less homogeneous and shellier types whose precise source has not been pinpointed. The striking similarities between the lithology and form of column SF 12773 with an example from Eccles identified as Bath stone (Detsicas 1967, 45) indicate, however, that they may well have originated at the same workshop. This may have been based in Cirencester where a production and distribution centre for columns of oolitic limestone has been identified (Blagg 1990, 37).

The three pieces of marble are also an indication of the high status of the bath-house and therefore the villa. The imported white marble *opus sectile* is particularly interesting because *opus sectile* is thought to have been favoured as a form of flooring only during the 1st century AD and adopted by only a few of the wealthier citizens (Pritchard 1986, 185; Clarke 1982, 210). If this is Carrara marble, it may have come via Canterbury, which has produced over 26 kg of it (Blagg 1984, 69) mostly in the form of wall veneers and panels. As a single unstratified piece, it is not clear precisely where in the villa this might have been used but it is noteworthy because of the rarity with which this material is found on villas and its scarcity in Kent; Folkestone villa is the only other findspot (Winbolt 1925, 109).

Wall sheathing and flooring were the most common uses for Purbeck marble in Roman Britain (D F Williams 2004, 128) and was particularly popular for the internal decoration of baths, for example at the legionary bath-house at Exeter (Bidwell 1979). Excavations in Canterbury also produced large quantities of Purbeck marble veneer and flooring and some of this probably came from the bath-house (Blagg 1984, 69–70). Canterbury is an exception, however, with Purbeck marble slabs otherwise being rare in Kent and largely found at grand sites such as Richborough (Palmer 2001). Although there are mortars of Purbeck marble at villas in Kent, this is the first finding of Purbeck marble flooring or veneer from a villa site in the county. Its presence at the site may indicate an element of imitation of public buildings, possibly baths, and given its general scarcity at rural sites, corroborates the impression of wealth or high status provided by the columns.

Catalogue

(Fig. 145)

1. Column base. Probably Bath stone (ident K Hayward). Double tori and flat fillet between. Each torus has fillets above and below and above the top torus is cavetto moulding with fillet above. Blagg's type II (bases with a cavetto moulding above the tori), sub-type A (short cavetto, usually with fillet or bead). None of these column bases is 1st century, but mainly 2nd–3rd century (Blagg 2002, 117 and 126). 225 mm diam. SF 12773. Context 12619, quay 19651. Late Roman: Villa Phase 6.
2. Column capital. Poorer quality Bath stone. Corner section of base. Slightly damaged but appears to consist of sequence of cavetto mouldings divided by fillets. Moulded sequence is unusually short suggesting that what survives below this is not the main column but part of a tall fascia which would have had further moulding below. SF 11351. Context 15357, rubble deposit. Group 16754. Late Roman: Villa Phase 7.
3. *Opus sectile* floor tile. White marble. Perfect square with straight edges and smooth flat face on one side. Other face crudely finished. 102 x 108 x 30 mm. Unstratified.

(not illus)

4. Column base. Fine grained Bath stone possibly from Combe Down (ident K Hayward). Single torus surviving and two square edges of integral plinth. Indeterminate diam. SF 11350. Unphased.
5. Probable column frag. Similar to classic Bath stone, possibly from Combe Down (ident K Hayward). Small frag of external part of miniature column with part of small torus and cyma moulding above. Context 15372, rubble deposit. Group 16754. Late Roman: Villa Phase 7.

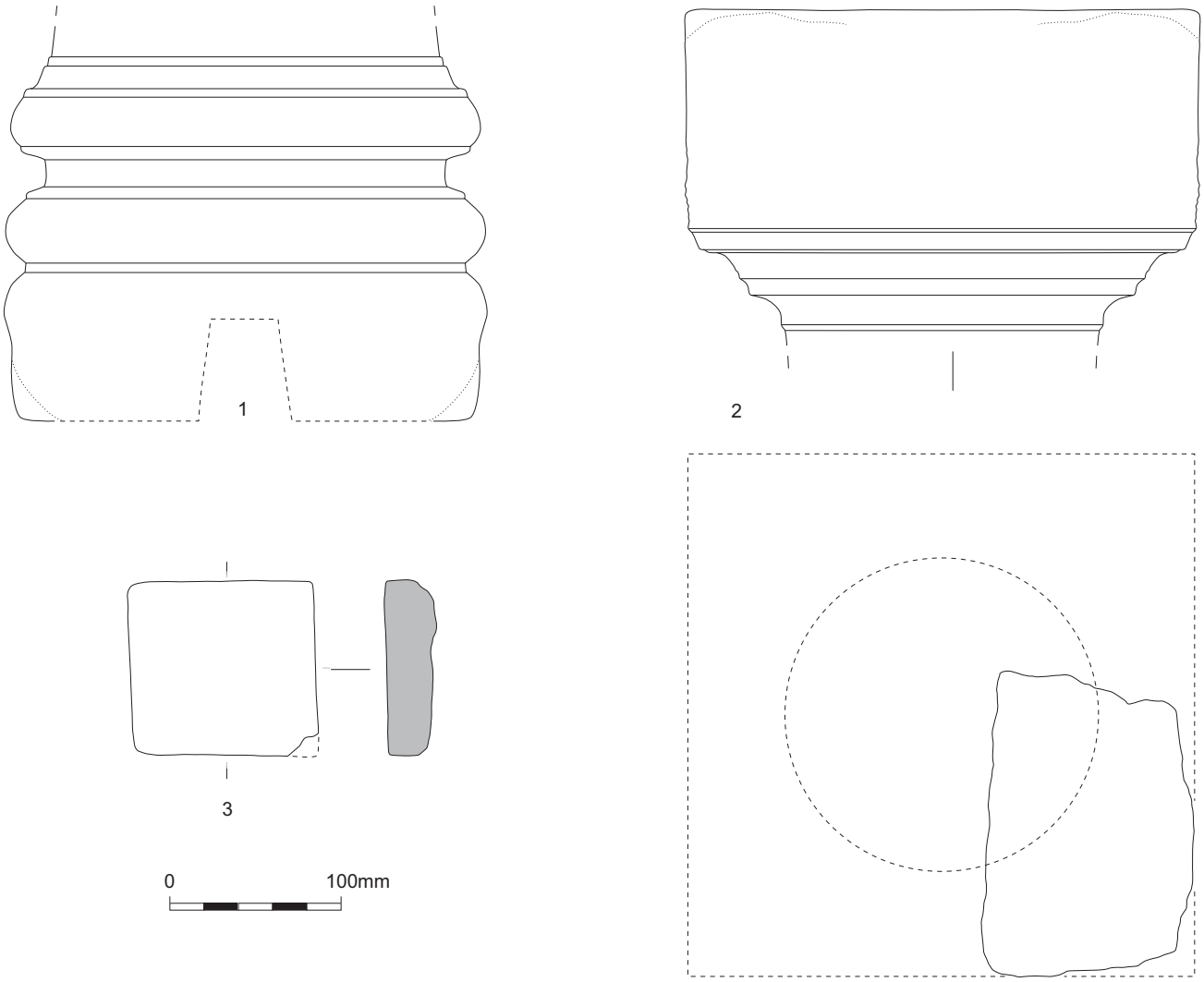


Figure 145 Northfleet: other worked stone 1–3

6. Architectural frag. Weldon stone (ident K Hayward). Curved, with semi-circular profile with both flat ends surviving and one curved face. 350 x 300 x 200 mm. SF 204025. Unphased.
7. Architectural moulded chunk. oolitic limestone. Three adjoining frags of flat piece of moulded stone with square edges and one corner surviving. Three waves: two narrow along edge of one broader shallower one. Only top is moulded but edges are straight and base flat. Context 16217, no inf recorded. Mid-Roman.
8. Architectural chunk. Weldon limestone (ident K Hayward). Flat moulded frag with two faces and one straight edge surviving.Three rolls running parallel to edge, each roughly 14 mm wide and 2 mm deep. Could be table or wall top or possibly part of funerary monument (K Hayward, pers comm). >155 x >155 x 48 mm. Context 16260. Unphased.
9. Architectural block, possible sarcophagus (K Hayward, pers comm). Weldon stone (ident K Hayward). Corner L-shaped piece tooled all over except for some slight damage to top edge. 180 x 130 x 100 mm. Context 16100, backfill of well 16516. Mid-Roman: Villa Phase 2.
10. Floor slab or veneer. Purbeck marble. Slab with no original edges and rough on side, smoothed (but not polished) on other. 102 x 80 x 21 mm. Context 200084. Lower fill of 200240, cold room in bath-house (also containing clay soil comprising crushed frags of *opus signinum* and chalk). Late Roman: Villa Phase 5.
11. Probable wall veneer. Purbeck Marble. Piece of sawn slab 13 mm thick, with nosed moulding, re-cut to fillet. 33–39 mm wide. Context 10718 (gravel spur), gully. Early Roman.
12. Elongate whetstone. Very fine grained siltstone. Two frags, not adjoining but appear to be part of same whetstone. One end fairly square showing that it started as a rectangular sectioned flat whetstone but the other

end sub-rounded. Has been utilised along both faces and on one edge more than other. >140 x 35 mm max x 14 mm. Context 15284, post-hole 10635, sub-group 15577. Mid-Roman: Villa Phase 4.

13. Spindle whorl. Chalk. One-third of decorated whorl with same profile as SF 20927. Perforation 12 mm diam. Ten regularly spaced incised lines running round circumference. 45 mm diam x 18 mm. SF 11536. Context 10322, SFB 16637. Saxon.

14. Complete spindle whorl. Shale. Plain, curved. Perforation 7 mm diam. 32 mm diam x 14 mm thick. SF 20927. Context 20047. Unphased.

Chapter 10
Shale, Jet, and Pipeclay Figurines

by Lorraine Mepham

Shale and Jet

Five shale and two jet objects were recovered from Springhead (Fig 146). Two shale objects came from the Sanctuary site (ARC SPH00) and the remaining objects from the Roadside settlement at Springhead Nursery (ARC SHN02). A further shale object was recovered from the Northfleet Villa.

The shale comprises four armlet fragments, two of which possibly derive from the same object, and two complete spindle whorls. The armlet fragments derive from lathe-turned armlets of varying sizes, of either D-shaped or oval section. Two of the fragments (possibly from the same object) are decorated with horizontal grooves on the outer face, and a third fragment has an internal groove.

The source of the shale for all these objects was almost certainly the Kimmeridge shale deposits of south-east Dorset. Large scale exploitation these beds began in the late Iron Age, at first producing hand made objects; lathe-turning replaced hand working in the 1st century BC (Cox and Woodward 1987), and production continued through the Roman period. Armlets and spindle whorls such as those found at Springhead are well paralleled at sites within Dorset, for example at Dorchester; armlets were a particularly commonly produced object and a range of cross-sections is known (Mills and Woodward 1993, figs 76 and 78).

At the Roadside settlement site, one of the armlets came from property 2, from a context (12000) associated with a layer of general overburden or demolition deposit broadly overlying the temple. The other two fragments (probably from the same armlet) are from property 10 (context 16039). The fourth armlet is from the Sanctuary site, from a context pre-dating the construction of the Sanctuary, within a series of dumped deposits (400027) overlying the early Roman road.

The spindle whorl from the Sanctuary site has an interesting provenance – it was found in an isolated pit (2874) beside the Ebbsfleet in the northern part of the site. Pottery from the pit serves to date it as early Saxon (5th/early 6th century), but the range of objects (also including a Saxon copper alloy bucket handle and a Roman brooch) could be considered unusual. The second spindle whorl, from the Northfleet Villa, is unstratified.

Both jet objects are beads, one a small, short cylinder with one transverse groove (Fig 146, 1; Crummy 1983, no 803) and the second a flat elliptical form with decorated upper edge (deeply cut notches) and two perforations (Fig 146, 2; *ibid*, nos 1496, 1498). British sources of jet are largely confined to the Yorkshire coast and there are numerous parallels for the Springhead beads from York, where flat elliptical beads were used to create segmented armlets (Allason-Jones 1996, 27–8). Both cylindrical and elliptical types were dated at Colchester to the 3rd/4th centuries AD, and indeed jet in general is rarely found anywhere in the Roman Empire before the 3rd century (*ibid*, 8).

Both of the jet beads came from the Roadside settlement, the cylindrical bead from a pit (11078) in property 10, and the elliptical bead from the charcoal layer (12390) underlying the temple in property 2.

(Fig 146)

1. Short cylindrical bead. Jet. One transverse groove (*cf* Crummy 1983, no 803). SF 20516, ARC SHN02, context 11081, pit 11078
2. Flat, elliptical bead. Jet. Upper edge decorated with deeply cut notches; two perforations *cf ibid*, nos 1496, 1498) SF 20517, ARC SHN02, context 12390

Pipeclay Figurines from Springhead

Fragments of two, possibly three pipeclay figurines were recovered from Springhead, one from the Roadside settlement and one, possibly two, from the Sanctuary site. All the fragments derive from Venus figurines cast in two-piece moulds, for front and back, the two halves being luted together while the clay was still plastic.

The fragment from the Roadside settlement (ditch 10492) comprises the face and hair of one

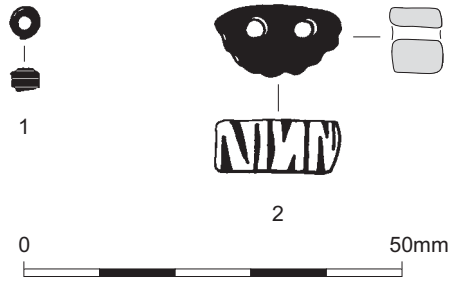


Figure 146 Springhead: jet beads 1–2

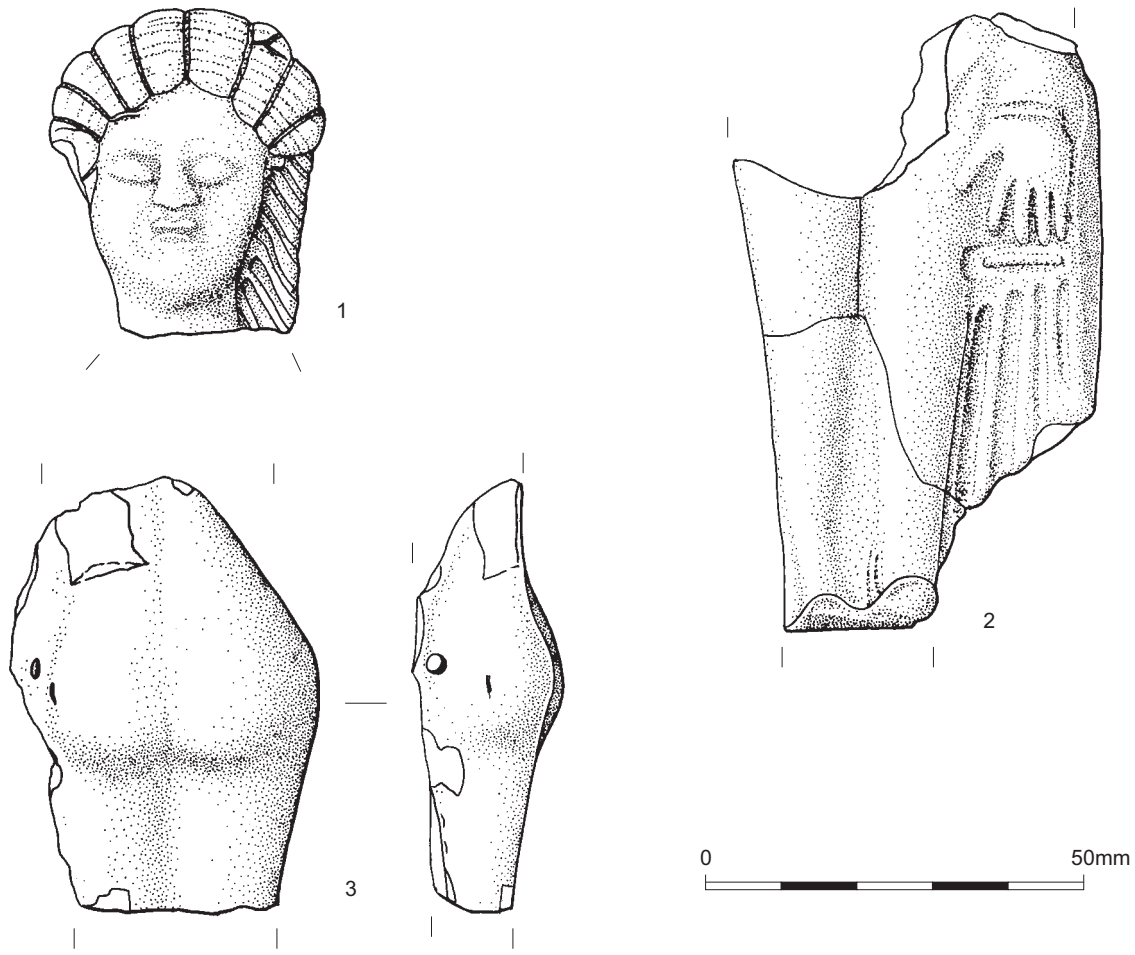


Figure 147 Springhead: clay figurines 1–3

figurine (Fig 147, 1). This is quite naturalistic; features and hair are well modelled. The hair shows carefully styled tresses over the temples, with longer locks falling to the sides.

All the fragments from the Sanctuary site came from a single context (floor deposit 6022), and the likelihood is that they represent a single figurine, although the two sections do not join. Three fragments conjoin to form a section of the front of the figure, from the thighs to the ankles; the left hand is also included and holds drapery (a *tunica*) which falls to the ankles (Fig 147, 2). The hand is somewhat stylised although all the fingers are represented; the *tunica* is depicted with vertical folds. The second section, represented by a single fragment, is from the back of the figure, showing the buttocks and upper thighs (Fig 147, 3). There is a small air hole to the left of the buttocks, to allow gases to escape during firing.

The figurine(s) from the Sanctuary site show Venus in traditional pose, standing nude with the left hand holding drapery. In more complete examples, for example from the eastern cemetery of Roman London, the figure stands on a small plinth, and has the right hand raised to the hair (Barber and Bowsher 2000, 189). The head from the Roadside settlement is likely to derive from a similar figure.

The pipeclay that these figurines were made of is typical of the clay used by the *officinae* of the Allier region of Central Gaul. A range of figurine types were produced by the *officinae*, of which the Venus figurines were the most popular. They are found across Gaul, and were exported to Britain for a short period from *c* AD 150. Their use is well attested as dedications to the gods in Romano-Celtic temples, for domestic worship in house shrines, and as grave offerings (Jenkins 1995). Figurines of various types seem to be particularly associated with the burial of children, and three complete Venus figurines accompanied a child's coffin in the London cemetery. Jenkins noted a concentration in and around London, ie in the area of Britain closest to the source of manufacture in Gaul, and suggests an association in terms of export arrangements with the samian industry (*ibid*).

(Fig 147)

1. Venus figurine; face and hair. SF 15171, ARC SHN02, context 10494, ditch 10492.
2. Venus figurine; front of legs, left hand and drapery. SF 898, ARC SPH00, context 6022.
3. Venus figurine; buttocks and thighs. SF 898, ARC SPH00, context 6022.

Chapter 11
Roman Glass

by Ian Scott

Roman Glass from Springhead

Sanctuary Site

The glass assemblage from the Sanctuary site (ARC SPH00) comprises 106 fragments (Table 81). It is made up largely of vessel body sherds many of which cannot be identified to vessel form. For this reason, and because it is comparatively small, the assemblage has been quantified by sherd count alone. Almost all the assemblage is stratified and most has been assigned to Roman phases. Only four fragments are from Saxon contexts, with a further four from post-medieval, modern, or unphased contexts.

The sherds from Roman contexts number some 80 pieces. These comprise 65 sherds of vessel glass, seven sherds of window glass, three beads, a single counter or gaming piece, two undiagnostic fragments, and two melted pieces. Most of the Roman glass comes from the mid-Roman phase. A small number of sherds come from early Roman contexts, including one vessel sherd from a late Iron Age/early Roman context. Three sherds of vessel glass and a sherd of window glass come from contexts dated simply Roman (or later). Significantly, there is only one sherd – of vessel glass – from late Roman contexts. The probable Roman glass from Saxon contexts comprises three sherds of vessel glass and an undiagnostic sherd. The 18 beads from middle Saxon graves are catalogued separately (see Chap 3).

Early Roman

A total of 19 sherds of glass are from early Roman or possibly early Roman contexts. The material includes three beads, a single piece of window glass, and 15 sherds of vessel glass. A single sherd of undiagnostic vessel glass (SF 9521) comes from a late Iron Age/early Roman context (3258). Early Roman contexts produced 14 pieces of glass including one small fragment of possible matt/glossy window glass (SF 9517, context 3083) and three beads. The beads comprise two melon (SFs 1569 (Cat No 1, Fig 148, 1) and 925 (Cat No 3), contexts 3492 and 6130) and a broken annular bead (SF 562 (Cat No 2), context 2592). The remaining ten sherds are all vessel glass, most of it not diagnostic to vessel form. There are a sherd from the neck/rim of flask or jug (context 2929; Cat No 16) and a sherd from a possible beaker (context 6390; Cat No 7). The material comes mainly from cut features, but only pit 2954 and layer/deposit 2817 have produced more than a single sherd. A sherd from the neck/rim of a flask or jug was recovered from a possible early context (3545; Cat No 17). Finally, three body sherds were found in contexts of early to mid-Roman date. These include a possible beaker body sherd in blue glass (SF 680 (Cat No 5), context 5348) and a small, thin-walled colourless sherd with elongated bubbles (context 5404; Cat No 35). This looks like a late fragment but since it is very small it could easily be intrusive. The latter is the only piece of glass from early contexts which is of late date. The quantity of glass from early Roman contexts is very small.

Mid-Roman

Contexts assigned to this phase of the site produced the most glass – 56 pieces out of a total of 106 fragments. Much of the material (24 sherds) is from layers/deposits rather than cut features or structures (Table 81). Again vessel glass is dominant, with 46 sherds. There are five sherds of window glass (context 2714; eg Cat No 39) or possible window glass; two window glass sherds (from contexts 2139 and 2671) are modern float glass and therefore intrusive. There is also an opaque white counter of slightly irregular shape (SF 935 (Cat No 4), context 5600).

Much of the vessel assemblage comprises sherds from blue–green bottles including square bottles (context 2242, 2675, 2905, and 5920; Cat Nos 21–4), at least one hexagonal bottle (context 2675 and possibly 5215; Cat Nos 26–7) and a cylindrical bottle with indented base (context 5901; Cat No 28). Most of the sherds comprise body or base sherds but there is one bottle neck sherd (context 2924; Cat No 29). There are also fragments of handles (contexts 5215 and 6135; Cat Nos 18–9) probably from flasks or jugs rather than bottles. Other vessels include possible beakers or cups and bowls (context 2139, 2716, 2735, 5215, and 5906 (Cat Nos 5–13), and possibly 2675 and 2815 (Cat Nos 31, 33)), and a jar fragment with a folded rim (context 5901; Cat No 15). Of particular note are two sherds which may be wasters or, more probably, slightly melted sherds (context 3236 and 5901; Cat Nos 41–2) and a small pear-shaped droplet of glass (context 2675; Cat No 40). All the glass from mid-Roman contexts could date from the later 1st–3rd centuries.

Table 81 Springhead Sanctuary area glass: summary quantification by phase, feature type and glass type

Phase	Feature type	Type: Vessel	Window	Bead	Counter	Unidentified	Waste	Total
Late Iron Age–(early Roman)	pit	1						1
Early Roman	cut feature	1						1
	ditch		1					1
	layer	4		1				5
	natural hollow			1				1
	pit	5						5
	surface			1				1
Early Roman total		*10*	*1*	*3*				*14*
Early Roman?	pit	1						1
Early–(mid-Roman)	layer	2						2
	pit	1						1
Early–(mid-Roman) total		*3*						*3*
Mid-Roman	corn drier	2	1					3
	cut feature	4						4
	ditches	5					1	6
	foundation cut	1						1
	layer	19	2		1	1	1	24
	pit	11	1					12
	post-hole	1	1			1		3
	structural debris	1						1
	surface	1						1
	void	1						1
Mid-Roman total		*46*	*5*		*1*	*2*	*2*	*56*
Late Roman	ditch	1						1
Roman	cut feature	1	1					2
	pit	1						1
Roman total		*2*	*1*					*3*
Roman–early med	layer	1						1
Early Saxon	pit	2				1		3
Middle Saxon	grave			18				18
	post-hole	1						1
Middle Saxon total		*1*		*18*				*19*
Post-med	grave	1						1
Modern	pit	1						1
Unphased	n/a	2						2
Total		72	7	21	1	3	2	106

Late Roman

A single body sherd from a small vessel comes from late Roman context (6452, Cat No 36). In addition there are two vessel sherds and a piece of window glass from contexts dated simply Roman. The window glass is a small sherd from context 3754. One of the vessel sherds, a small sherd possibly from a post-medieval wine bottle, is also from this context. The other is from a fire-polished rim from a small bowl (context 5786; Cat No 14). There is a small colourless or very pale yellow undiagnostic vessel body sherd from context 5247 (Cat No 20) and dated Roman or later.

Roman (?) glass from Saxon and later features

A small piece of opaque brown marbled glass comes from SFB 5903; it is cast, but the vessel form is unclear. There are three small vessel sherds undiagnostic to vessel form from pit 2874 (not catalogued). Finally there is also a jug or flask base with tubular base ring from an unstratified context.

Catalogue of selected objects, vessel glass, and window glass

(Fig 148)

Objects

1. Melon bead. Opaque turquoise. D 21 mm; Ht 17 mm. Context 3492, SF 1569. Early Roman. [Identification No (ID) 60]. Fig 148.1.

(not illus)

2. Annular bead, pale green translucent. D 14 mm; Th 5.5 mm. Context 2592, SF 562. Early Roman. [ID 6].
3. Melon bead. Turquoise frit. D 21 mm, Ht 18 mm. Context 6130, SF 925. Early Roman. [ID 94].

4. Counter, slightly irregular outline. Opaque white. D 18 x 18 mm, Ht 6 mm. Context 5600, SF 935. Mid-Roman. [ID 82].

Vessel glass

5. Cup or beaker body and rim sherd. Colourless, everted rim, possibly fire polished, horizontal cast raised rib around body. Colourless. W 29 mm, Ht 22mm. Context 2139, SF 275. Mid-Roman. [ID 2].
6. Possible beaker body sherd. From conical or cylindrical vessel. Thin walled with slightly horizontal thickening. Blue. L 28 mm, W 17 mm. Context 5348, SF 680. Early–Mid-Roman. [ID 74].
7. Possible beaker body sherd, cast horizontal moulding. Semi-opaque, colourless or white. W 21 mm, Ht 20 mm. Context 6390, SF 9541. Early Roman. [ID 98].
8. Cup or bowl, base sherd, tubular foot ring, concave base. Pale blue green. Base D 45 mm. Context 2139, SF 9526. Mid-Roman. [ID 1].
9. Cup or bowl base sherd, tubular base ring. Blue green. Base D 56 mm. Context 2716, SF 9607. Mid-Roman. [ID 27].
10. Bowl or cup base, tubular base ring, slightly indented base. Uncertain form. Pale blue green. Base D 67 mm. Context 5215, SF 683. Mid-Roman. [ID 70].
11. Bowl sherd, fire polished out-turned rim. Colourless or very pale green. L 19 mm, W 18 mm, extant Ht 12 mm. Context 5906, SF 9534. Mid-Roman. [ID 84].
12. Bowl sherd, out-turned fire polished horizontal rim. Pale blue green. Rim D *c* 120 mm, extant L 58 mm. Context 5128, SF 9528. Phase Mid-Roman. [ID 57].
13. Possible bowl base fragment, tubular base ring. Pale green. L 47 mm. Context 2735, SF 9510. Mid-Roman. [ID 30].
14. Bowl body sherd, S-curved profile, from bowl with out-turned rim. No extant rim. Green blue. L 35 mm, W 20 mm. Context 5786, SF 9533. Roman. [ID 87].
15. Jar, collar rim (double folded). Blue green. Rim D 87 mm, extant L 56 mm. Context 5901, SF 9549. Mid-Roman. [ID 88].
16. Flask or jug rim and neck sherd. Out-turned horizontal folded-in rim. Colourless or very pale green. Rim D 47 mm, Ht 27 mm. Context 2929, SF 569. Early Roman. [ID 56].
17. Flask or jug rim sherd. Out-turned horizontal folded-in rim. Pale blue green. Rim D *c* 39 mm. Context 3545, SF 9522. ?Early Roman [ID 61].
18. Folded strip handle fragment from bottle or jug. Part of vessel neck extant. Blue green. W 30 mm, Ht 37 mm. Context 5215, SF 684. Mid-Roman. [ID 71].
19. Strip handle frag from bottle or jug. Quite plain. Green blue. W 30 mm, Ht 27 mm. Context 6135, SF 920. Mid-Roman. [ID 96].
20. Jug or flask base, indented, tubular base ring. Green blue. Base D 69 mm. u/s, SF 544. Unphased [ID 95].
21. Square bottle base, slightly indented, cast circle, ?pontil mark. Blue green. L 52 mm,; W 50 mm. Context 2675, SF 9515. Mid-Roman. [ID 18].
22. Square bottle base sherd, remains of cast circle on underside. Blue green. L 60 mm, W 40 mm. Context 5920, SF 9536, Mid-Roman. [ID 89].
23. Square bottle, neck and shoulder sherd from bottle with square shoulder. Blue green. W 65 mm, Ht 40 mm. Context 2905, SF 568. Mid-Roman. [ID 46].
24. Square bottle body sherd, thick, almost flat, one curved edge. Blue green. L 54 mm, W 37 mm. Context 2242, SF 9500. Mid-Roman. [ID 3].
25. Square bottle body sherd, flat, right-angle corner on one edge. Blue green. L 41 mm, W 25 mm. Context 2675, SF 9515. Mid-Roman. [ID 19].
26. Hexagonal bottle, base sherd, cast concentric rings or circles. Blue green. L 39 mm, W 25 mm. Context 2675, SF 9546. Mid-Roman. [ID 24].
27. Probable hexagonal bottle body sherd. Blue green. L 32 mm, W 15 mm. Context 5215, SF 9529. Mid-Roman. [ID 72].
28. Cylindrical bottle base sherd, deeply indented. Blue green, L 47 mm, Ht 17 mm. Context 5901, SF 755. Mid-Roman. [ID 83].
29. Bottle neck sherd. Blue green. W 34 mm, Ht 34 mm. Context 2924, SF 573. Mid-Roman. [ID 47].
30. Body sherd, thin-walled, strongly shaped with small indentation. Uncertain form. Colourless. W 20 mm, Ht 32 mm. Context 2319, SF 388. Mid-Roman. [ID 4].
31. Tubular base ring frag. Uncertain form. Blue green. L 23 mm; W 13 mm. Context 2675, SF 9524. Mid-Roman. [ID 23].
32. Body sherd, small, curved, casting line on one face. Pale blue green. L 22 mm, W 20 mm. Context 2717, SF 9508. Mid-Roman. [ID 28].
33. Body sherd, thin-walled, colourless, small bubbles in metal. W 22 mm, Ht 37 mm. Context 2815, SF 9511. Mid-Roman. [ID 31].
34. Body sherd, small, horizontal cast rib. Pale blue. L 13 mm, W 13 mm. Context 2953, SF 9514. Early Roman. [ID 49].
35. Body sherd, very small, curved, small elongated bubbles. Probably cylindrical curve with bubbles elongated along length of body. Colourless or very pale green. Ht 14 mm, W 17 mm, Th 1 mm. Context 5404, SF 9531. Early–Mid-Roman. [ID 75].
36. Body sherd, small curved with rib. Pale blue green. From free blown vessel. W 12 mm, H 22 mm. Context 6452, SF 9544 [ID 101]
37. Possible rim sherd, small, dark chocolate brown opaque glass with white marbling. Cast vessel, form uncertain. L 20 mm, W 20 mm. Context 5904, SF 923. Mid-Saxon. [ID 86].
38. ? Everted tubular rim sherd. Uncertain form. Pale green. Extant W 14 mm, H 14 mm. Context 5914, SF 9535. Mid-Roman. [ID 90].

Window glass

39. Possible window glass, matt glossy sherd, striations on one face. Blue green. L 52 mm, W 25 mm. Context 2714, SF 9506. Mid-Roman. [ID 26].

Glass waste

40. Droplet, small pear-shaped. Pale blue green. L 15 mm. Context 2675, SF 9547. Mid-Roman. [ID 25].
41. Melted frag or sherd. Blue green. L 35 mm. Context 3236, SF 9516. Mid-Roman. [ID 53].
42. Possible melted rim sherd, perhaps from jug. Pale green blue. L 39 mm. Context 5901, SF 9548. Mid-Roman. [ID 91].

Roadside Settlement

The glass assemblage from the Roadside settlement at Springhead Nursery comprises 178 fragments (*Table 82*). The assemblage has been quantified by fragment count alone, because it is comparatively small and much of the glass comprises body sherds and small fragments. The composition of the assemblage breaks down as follows: 111 fragments of vessel glass, 32 fragments of window glass, 8 beads, and 27 undiagnostic fragments. The latter include 21 very small, colourless, undiagnostic fragments from mid-Roman context 17710. Most, but not all the glass is of Roman date; there are 22 sherds of modern float glass and 12 modern vessels or vessel sherds, which are not considered any further here. A full catalogue of the Roman beads, vessel glass, and window glass is held in the archive.

The Roman vessel glass (99 fragments) comprises mainly quite small body sherds, 55 of which cannot be identified to vessel type (*Table 82*). Of the remaining 44, square blue–green bottles are the largest identified vessel category but the dominance of bottles in the assemblage is certainly exaggerated because their distinct body sherds, robust handles, and rims are more readily identified from fragments than most other vessel forms. The other category that is well represented, jugs/flasks, has distinctive rims of small diameter. A small number of rim sherds and bases are present and even a few larger fragments of vessels but it has not been possible to identify a complete or near complete vessel profile.

Provenance and dating

The breakdown of the assemblage from the whole site by phase shows that 97 sherds (54.8% by fragment count) are from mid-Roman contexts, 44 from early Roman contexts and only 17 from late Roman. Even if we discount the 21 small undiagnostic sherds from context 17710 the number of sherds from mid-Roman contexts still totals 76. The glass assemblage is predominantly from early and mid-Roman occupation. However, if we consider the provenance of the glass from individual properties a more subtle picture emerges (see below).

The glass is not uniformly distributed across the site (*Table 83*). It has been possible to distinguish a number of discrete properties within the excavated area on both sides of Roman Watling Street and a branch road to the north-west (see Vol 1, Chap 2). Properties 2–4 on the north-east side of the road, and 10–12 on the south-west side, produced the most glass. The assemblage is best considered property by property, as there are differences between them in both the quantity of glass and its chronological distribution through phases.

Property 2

A temple (preserved *in situ*) lay within this property and the excavated deposits were mainly mid–late Roman in date. There are 28 sherds of glass, including 21 of vessel glass and three pieces of window glass; there are also four small pieces of greenish glassy slag which could be from metalworking. The glass was found in both cut features (ten vessel sherds, two window glass sherds) and layers and deposits (11 vessel, one window, three undiagnostic and one bead).

A single undiagnostic body sherd of yellow–green vessel glass came from an early Roman context (12659). Mid-Roman contexts produced 14 sherds, including two of what appears to be modern float glass, both intrusive. The vessel glass is very fragmentary. It includes fragments of two tubular base rings (context 12036; Cat Nos 20–1), two handles (one ribbed) from blue–green bottles or flasks (contexts 12181 and 12077; Cat Nos 28–9), and a body sherd from a square blue–green bottle (context 12161; Cat No 40). There is also a yellow–brown indented base probably from a conical flask or jug (context 12181; Cat No 24), and a blue–green base sherd with cast base ring possibly from a bowl (context 12593; Cat No 50). None of the above needs date later than the 2nd century. However, there are three sherds from vessels of a later date: two rim sherds from a colourless vessel with ground decorative lines around the neck and fine bubbles in the metal (Fig 148, 3; Cat No 10) and a probable base sherd from a small beaker or bowl in colourless or very pale blue glass with fine bubbles in the metal (context 12433; Cat No 58). A sherd from a vessel of colourless glass with a globular body decorated in horizontal bands or ribs formed by thickening of the vessel wall (context 12218; Cat No 53) may be more recent in date. Similar sherds were found in properties 11 and 12 (see below).

There are also 12 sherds and a bead from late Roman contexts. The glass sherds include one intrusive fragment of modern float glass from context 12407, and three small undiagnostic sherds: a small blue–green sherd (context 12328) could be window glass or from a square bottle; a small, thin, colourless or very pale green sherd (context 12385) and a small blue–green sherd (context 12387) could both be window glass or vessel sherds. The remaining eight sherds of vessel glass include two body sherds from square blue–green bottles (context 12555 and 12000; Cat Nos 41–2), a small blue–green, curved, body sherd (context 12409), and a small sherd from a blue–green out-turned, fire-polished rim (context 12453; Cat No 18). The other vessel sherds are from thin-walled colourless vessels of 4th century date: a small thin body sherd (SF 15610, context 12000), a small body sherd with wheel cut grooves on the inside of the curve (context 12381; Cat No 56), a body sherd with fine bubbles in the metal (context

12381; Cat No 59), and a body sherd with fine bubbles in the metal and thickening to form horizontal bands (context 12411; Cat No 57). The bead is a tiny fragment from small dark blue or black bead of uncertain form (context 12527; Cat No 1).

Property 3

Property 3, immediately north of property 2, contained a number of timber structures, hearths, and ovens. The property has produced 26 sherds of glass, including 16 of vessel glass, seven of window glass and two beads. There are 11 sherds from early Roman contexts, 12 from mid-Roman and only two sherds from late Roman contexts. Finally there is one undiagnostic sherd from context 19095 (unphased). Only ten sherds are from cut features and these are from contexts assigned to the early and mid-Roman phases. The remaining 26 sherds are predominantly from layers and deposits that are dated to early and mid-Roman phases, although there is one late Roman context (17882).

The glass from early Roman contexts comprises six sherds of vessel glass, three of window, two of which are probably modern and intrusive, and two beads. The vessel glass includes a sherd of post-medieval wine bottle (context 17352) which is intrusive. The remaining vessel glass comprises a body sherd from a square blue–green bottle (context 17794 Cat No 36), a sherd of a fire-polished rim from a blue–green bowl or beaker (context 17820: Fig 148, 6, Cat No 13) and a ribbed body sherd from a conical flask in yellow–green glass (context 19247; Cat No 23). Finally, there are two thin-walled colourless body sherds with fine bubbles in the metal from contexts 17913 and 17993. The bubbles in the metal suggest that the glass is late, that is of 4th century date. Both sherds are undiagnostic to form. Context 17913 also produced a sherd of cylinder, or broad, window glass, blue–green in colour, with distinctive elongated bubbles in the metal (Cat No 63). Finally, a turquoise frit melon bead (context 19149; Cat No 3) and pale blue–green segment bead (context 17961; Cat No 2) were recovered from early Roman contexts.

Mid-Roman contexts produced ten sherds of vessel glass and two pieces of window glass. The vessel glass includes a sherd from the rim of a beaker or small bowl in semi-opaque white glass (context 17234: Fig 148, 7, Cat No 14), a small heavily weathered sherd from a bowl with folded vertical rim (context 17234; Cat No 19) and a sherd from the base and side of a conical flask or bottle in colourless glass (context 17043; Cat No 25). There are six sherds from square blue–green bottles: these include three base fragments (contexts 17043, 17759, and 17833; Cat Nos 25, 45–6), two body sherds (contexts 17758 and 17237) and a sherd from the shoulder of a bottle (context 17237; Cat No 38). The final sherd of vessel glass is a small thin pale blue body sherd with bubbles in the metal (context 17833), and may be late in date. There are two sherds of matt/glossy window glass, both blue–green in colour (contexts 17759 and 17887; Cat Nos 64–5).

Late Roman contexts produced just two pieces of matt/glossy window glass, blue–green in colour, both from context 17882 (Cat No 66).

Property 4

Property 4 contained several timber buildings around a yard. It has produced 46 sherds, the largest assemblage from a single property. However the figure is distorted by the 21 small, colourless, undiagnostic sherds from context 17710. If these are discounted, then the assemblage from property 4 comprises only 25 sherds. These are almost equally divided between early and mid-Roman contexts and between cut features and layers and deposits. The glass from cut features is from both early and mid-Roman contexts. The early Roman contexts are all ditch fills and produced eight sherds of vessel glass and one small sherd of possible window glass. Six sherds of vessel glass are from context 16641, a fill of roadside ditch 16655. The mid-Roman contexts are pit fills and produced two sherds of vessel and a single of probable window glass. The layers and deposits producing glass are dated to the early and mid-Roman phases. There are 12 sherds of vessel glass and a total of 22 undiagnostic sherds, including 21 from context 17710.

The vessel glass from early Roman contexts includes two sherds of a conical flask decorated with spiral ribs and in yellow–brown glass (context 16641; Cat No 22). The same context also produced a rim sherd of a flask or jug in yellow–green glass (Cat No 31) and another rim in blue–green glass (Cat No 30). Two undiagnostic body sherds, one in yellow glass and the other in blue–green glass, also came from this context. Other finds from early Roman contexts include a near-vertical folded rim from a bowl or jar (context 17534: Fig 148, 5, Cat No 12); there is also a small piece of pale green window glass from context 17534. There is a colourless or very pale blue small body sherd from context 16875. Finally, from layers of early Roman date there are two body sherds of pale blue–green glass (SF 20283, context 16864) and a sherd of colourless glass from the neck of a flask or jug (context 17231; Cat No 32).

The base of a possible flask or bottle in colourless or semi-opaque white glass (context 16889; Cat No 26) and the rim and neck of a blue–green bottle (context 16892; Cat No 37) come from pit 16902. The only other sherd from a mid-Roman pit is a fragment of possible window glass from pit 16831 (context 16843). The remaining glass from mid-Roman contexts is from deposits rather than cut features. It includes a rim sherd from a flask or jug in blue–green glass from context 16685 (Cat No 34), a folded diagonal rim sherd from another flask or jug (Cat No 33), and two sherds from a cast blue–green bottle base embossed with concentric rings and a cross from context 17710 (Cat No 47). Context 17710 also produced a pale green body sherd from a vessel of uncertain form and 21 small colourless undiagnostic fragments. A fragment of a thin handle in blue–green glass (Cat No 52) and two creamy white

body sherds come from context 16861. The remaining glass from mid-Roman deposits includes a colourless curved body sherd with bubbles in the metal (context 16962). The vessel form is uncertain but the bubbles suggest that this is a fragment from a vessel of 4th-century date. Finally, there is an undiagnostic flat sherd of yellow–green glass from context 16825.

Properties 5 and 6
The area occupied by these properties, at the north-west end of the site, had been truncated to a greater or lesser degree by terracing for glasshouses, and the central part of property 6 lay outside the area available for excavation. Property 5 produced two sherds of vessel glass, including a pale blue–green body sherd (context 17177) from an early Roman context and a body sherd of a post-medieval wine bottle (context 17189) from a mid-Roman context. Property 6 produced a single sherd of vessel glass from a mid-Roman context. This was a tubular base ring of blue–green glass probably from a cup or bowl (context 16747; Cat No 17).

Properties 7 and 8
Properties 7 and 8 produced no glass.

Property 9
Only limited investigation of this property was possible since it lay largely outside the excavation limits. It produced a single small body sherd of a vessel of blue–green glass from an early Roman context (context 16575).

Property 10
Remains of a timber building and yard surfaces associated with quantities of iron slag were present, and it is suggested that there was a smithy here, by the road junction. This property produced 33 sherds of glass, although only six of these sherds are Roman. One thin body sherd of brown glass comes from an early Roman pit (context 11296). Two small undiagnostic blue–green body sherds and a body sherd from a possible blue-green bottle (Cat No 41) are from a deposit (context 16022) of mid-Roman date. A strongly curved blue–green body sherd came from mid-Roman pit 11078, context 11081, where it was associated with modern float glass. Finally, a blue–green square bottle base fragment with a raised cast circle is from a late Roman context (16290; Cat No 48).

Property 11
A sequence of circular structures was located close to the street junction in this area, together with cobbled surfaces, several hearths, and an oven. The 22 sherds of glass recovered from the property comprises ten sherds of vessel glass, two beads, and a single sherd of window glass from early Roman contexts, and six sherds of vessel glass and two beads from mid-Roman contexts. The glass was recovered from cut features and deposits, the majority of which have been assigned an early Roman date. Nine vessel sherds, one of window glass, two beads, and one undiagnostic sherd came from early Roman features, and six vessel sherds and two beads are from mid-Roman contexts.

Early Roman cut features have produced a limited range of glass. There is a tiny fragment of the rim from a bottle or flask of pale blue–green glass (context 10409) from pit 10408 (Cat No 35) and a weathered blue–green body sherd and a thin colourless body sherd with numerous small bubbles (Fig 148, 4; Cat No 11) from ditch 10194. The latter sherd looks like part of a 4th-century vessel, although the context has been assigned an early Roman date. A thick, pale blue–green body sherd somewhat weathered on its outer face (context 10242) and an opaque, dark brown sherd, which is deep red in fracture (context 10240), came from early Roman ditch 10233. The base of a modern bottle and a small sherd of window glass, which could be modern, came from pit 10291. Pit 11461 produced a creamy yellow slightly asymmetrical annular bead (Cat No 5).

A folded tubular rim of a jar (Fig 148, 2; Cat No. 9) comes from early Roman deposit 10898, and from layer 10808 come two very pale blue–green body sherds with at least two horizontal bands of thickening and a very pale yellow–green body sherd. Other finds from early Roman contexts are a possible rim sherd in dark brown glass (context 10613; Cat No 49) and a round, creamy yellow opaque bead with possible traces of dark paint (context 10608; Cat No 4).

Mid-Roman contexts produced a small fire-polished rim sherd in blue–green glass probably from a cup or beaker (context 10202; Cat No 16) and part of the handle from a jug or flask (context 10405; Cat No 27). The latter context also produced a small pale blue body sherd and a pale blue–green body sherd. Finally, there was an undiagnostic blue–green body sherd from context 10606.

Property 12
A probable aisled barn and a sunken-featured building were found in this property. The glass from the area comprises 18 sherds in total. Only three come from early Roman contexts (a ditch, a grave, and a pit), whereas 14 are from mid-Roman contexts and one bead is from a late Roman context. Two sherds of window glass were recovered. The grave (11734) produced a single small sherd of colourless window glass, which might be intrusive modern glass. The mid-Roman glass comes mainly from pits, but some sherds are from the SFB (context 11892). The single late Roman feature is grave 10150 which contained a tiny, silver, spiral-wound bead (context 10151; Cat No 8). All but one sherd of glass is from the fills of cut features.

The range of glass from this property is quite limited and the sherds small and most undiagnostic in terms of vessel form. There is a sherd from a globular vessel of pale blue–green glass with horizontal bands of thickening in the metal (context 10075) from ditch 10073 (Cat No 56). From early Roman pit 11823 there is a possible vessel sherd in pale blue–green glass.

The vessel glass from mid-Roman pits comprises mainly body sherds, some of them weathered. Only one vessel form, from pit 11942 (Cat No 15, context 11993, SF 21013), was identifiable. It is a tiny rim sherd in colourless glass from a vessel with an out-turned, cracked-off rim. The metal contains small bubbles and is certainly of late Roman date. The sherd is small enough to be intrusive. SFB 11892 produced half the sherds of vessel glass. They include four thin, opaque, off-white body sherds (context 11896), and four thin colourless sherds (Cat No 61; context 11896). Two of the latter sherds have a horizontal groove, possibly wheel cut. There is also a small fragment of a cast, diagonal base ring from a vessel in blue–green glass (context 11980; Cat No 50) and a small body sherd in pale blue–green from context 11916 (Cat No 62).

Finally, there are two fragments of matt/glossy window glass, one (context 10095) from mid-Roman pit 10094 and the other from context 11539 (Cat No 68), which is unphased.

Conclusions

The glass assemblage is small and its component sherds generally small. Comparatively few vessel forms can be identified and there are no complete or near-complete profiles. It is notable that there is a limited quantity of glass from late Roman contexts, and yet a number of late Roman sherds have been noted, some from contexts assigned to mid- or even early Roman phases. For example, there are thin, colourless, vessel sherds probably of late Roman date from early Roman contexts in property 3 (from contexts 17913 and 17994) and late forms from mid-Roman contexts in property 2 (from contexts 12161 and 12433). Some of this glass may be intrusive – many of the sherds are quite small – but it cannot all be explained in this fashion. However, it should also be noted that a number of Roman contexts have also produced undoubted modern glass: see for, example, most obviously context 11081 (see also *Table 82*). This raises the possibility of post-depositional disturbance of otherwise sealed contexts.

Overall, the glass assemblage is small and limited in range of identifiable vessels. It has less window glass than found at the Northfleet villa site (ARC EBB 01; see below), perhaps unsurprisingly, which presumably reflects both the types of occupation and buildings constructed. It is perhaps surprising, however, that more glass was not found on property 2 and the differences between the glass assemblage from here and those from properties 3, 4, 11, and 12 are less than might be expected, given that property 2 included a temple.

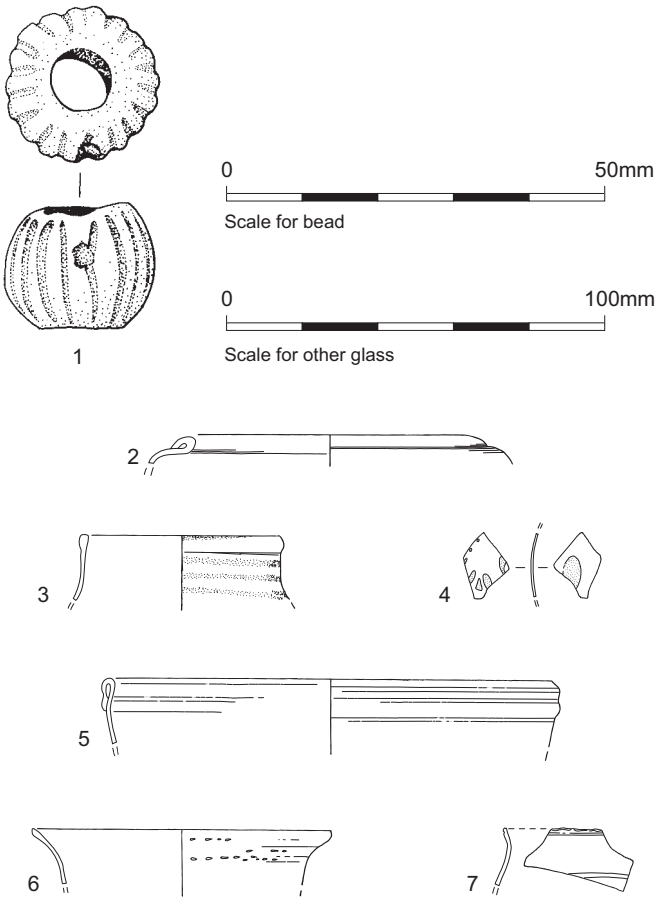


Figure 148 Springhead: glass 1–7

Catalogue of selected beads, vessel glass, and window glass

Beads

(not illus except No 3)

1. Bead frag, dark blue/black. L 2 mm, H 2 mm. Context 12527. Property 2. Late Roman. [ID 227].
2. Segmented bead, two units. Pale blue. L 19 mm, D 17 x 18 mm. Context 17961, SF 20031. Property 3. Early Roman. [ID 220].
3. Melon bead, turquoise frit. H 12 mm, D 14 mm. Context 19149, SF 20029. Property 3. Early Roman. [ID 223]. Fig 148, 1.
4. Round bead, with dark paint? Not glass? Yellow–cream, opaque. L 12 mm, D 12 mm. Context 10608, SF 15256. Property 11. Early Roman. [ID 124].
5. Annular bead, slightly asymmetrical. Yellow–cream. D 7 mm, Th 2–3 mm. Context 11463, SF 15321. Property 11. Early Roman. [ID 131].
6. Annular bead, asymmetrical, royal blue. D 5 mm, Th 2.5 mm. Context 10948. Property 11. Mid-Roman. [ID 225].
7. Annular bead, royal blue. D 3 mm, Th 2 mm. Context 10948. Property 11. Mid-Roman. [ID 226].
8. Spiral wound bead, tiny. Silver coloured. D 2 x 2.5 mm, Th 2 mm. Context 10151. Property 12. Late Roman. [ID 224].

Vessel glass

(Fig 148)

9. Jar with in-turned folded tubular rim and round shoulders, four sherds. Blue–green. H 10 mm, D 120 mm. Context 10898, SF 15219. Property 11, Early Roman. [ID 141]. Fig 148, 2.

10. Small jar, two joining rim sherds. Vertical ?fire polished rim and neck above slack shoulders. Ground/wheel-cut lines around the neck. Small bubbles in metal. Colourless. Wall thickness 1 mm. D 56 mm, extant Ht 18 mm. Context 12161, SF 21022. Property 2 Mid-Roman [ID 146]. Fig 148, 3.
11. Body sherd, possibly from beaker or cup. Numerous small bubbles in metal. The sherd has painted decoration on both sides. The painted areas on each side are different but together form a unified scheme with some depth. Colourless Wall thickness 0.5 mm. W 12, Ht 13. Context 10211, SF 21003. Property 11, Early Roman. [ID 112]. Fig 148, 4.
12. Bowl rim sherd. Near vertical folded rim. Blue–green. H 17 mm, D 130 mm. Context 17534, SF 18362. Property 4, Early Roman [ID 195]. Fig 148, 5.
13. Bowl or beaker rim sherd. Everted fire polished rim. Both faces slightly rough with horizontal striations. Horizontal elongated bubbles in metal. Blue–green. Wall thickness 1 mm. L 33 mm, Ht 14 mm. Context 17820, SF 20036. Property 3, Early Roman. [ID 212]. Fig 148, 6.
14. Bowl or beaker rim. Everted rim – cracked off rather than fire polished though somewhat damaged – cut lines below rim and shoulder. White, semi-opaque. Wall thickness 1 mm. L 29, H 16 mm. Context 17234, SF20328. Property 3, Mid-Roman [ID 196]. Fig 148, 7.

(not illus)

15. Cup or beaker rim sherd. Out-turned cracked-off rim. Colourless, bubbles in metal. Wall thickness 1 mm. W 10 mm, Ht 11 mm. Context 11993, SF 21013. Property 12, Mid-Roman [ID 137].
16. Fire polished rim, small bowl or cup sherd. Blue–green. Wall thickness 1 mm. L 19 mm, Ht 15 mm. Context 10202, SF 15115. Property 11, Mid-Roman [ID 111].
17. Cup or bowl base, tubular base ring. Blue–green. Base D 58 mm. Context 16747, SF 15962. Property 6, Mid-Roman [ID 181].
18. Cup or bowl rim sherd. Out-turned fire polished rim. Blue–green. Wall thickness 1 mm. W 16 mm, Ht 10 mm. Context 12453, SF 15847. Property 2, Late Roman [ID 161.
19. Probable bowl frag, folded vertical rim. Small, heavily weathered, iridescent surface deposits. Possibly colourless? L 23 mm, Ht 14 mm. Context 17234, SF 20326. Property 3, Mid-Roman [ID 193].
20. Tubular foot ring ?from bowl. Little of base, other than footring, survives. Blue–green. Foot ring L 49 mm, D 88 mm. Context 12036, SF 15823. Property 2, Mid-Roman [ID 142].
21. Bowl foot ring. Tubular, indented base. Blue–green. D 97 mm. Context 12036, SF 15824. Property 2, Mid-Roman [ID 143].
22. Conical flask neck, two joining sherds forming part of neck and body of conical flask with spiral ribs. Yellow–brown. Ht 58 mm, neck D 27 mm. Context 16641, SF 15684. Property 4, Early Roman [ID 172].
23. Conical flask/jug. Large body sherd, vertical ribs and part of handle attachment scar. Yellow–green. L 75 mm, Ht 40 mm. Context 19247, SF 20097. Property 3, Early Roman [ID 231].
24. Flask or jug base, yellow–brown. Indented, small vessel. D 65 mm. Context 12181, SF 20134. Property 2, Mid-Roman [ID 144].
25. Flask or jug base, conical vessel. Colourless. Wall thickness 1 mm. L 33 mm, Ht 22 mm. Context 17043, SF 20514. Property 3, Mid-Roman [ID 191].
26. Flask or jug base, white semi-opaque. Slightly indented base. L 24 mm, W 33 mm, Ht 8 mm. Context 16889, SF 20287. Property 4, Mid-Roman. [ID 190].
27. Jug or flask handle frag, decorative projections from tail of applied handle. Blue–green. W 14 mm, Ht 16 mm. Context 10405, SF 15340. Property 11, Mid-Roman [ID 118].
28. Bottle or jug handle frag, blue–green, broad handle with vertical ribbed decoration. W 34 mm, H 36 mm. Context 12077, SF 20124. Property 2, Mid-Roman [ID 147].
29. Bottle or jug handle, incomplete, blue–green. L 50 mm, W 43 mm. Context 12181, SF 20135. Property 2, Mid-Roman [ID 145].
30. Flask or jug rim. Horizontal folded-in. Blue–green. D 48 mm, Ht 11 mm. Context 16641, SF 15683. Property 4, Early Roman [ID 174].
31. Flask or jug rim. Diagonal folded-in. Yellow–green. D 38 mm, Ht 27 mm, Context 16641, SF 20311. Property 4, Early Roman [ID 176].
32. Flask or jug neck sherd. Junction of neck and body of conical flask/jug. Colourless. W 32 mm, Ht 32 mm. Context 17231, SF 20325. Property 4, Early Roman [ID 192].
33. Flask or jug rim sherd. In-folded diagonal rim, slightly angled down. Scar where handle joined. Pale blue–green. H 9 mm, D 36 mm. Context 16685, SF 20362. Property 4, Mid-Roman. [ID 178].
34. Flask or jug rim sherd. Folded and curved rim. Pale blue. D 34 mm, Ht 7 mm. Context 17710, SF 21017. Property 4, Mid-Roman [ID 209].
35. Flask or jug rim frag. Small, from folded rim with scar where handle attached. Pale blue–green. W 18 mm, Ht 14 mm. Context 10409, SF 21009. Property 11, Early Roman [ID 119].
36. Bottle body sherd, possibly from square bottle, with part of corner. Blue green. W 62 mm, Ht 74 mm, Th 3 mm. Context 17794, SF 20340. Property 3, Early Roman [ID 211]
37. Bottle rim and neck, including part of folded horizontal rim and neck with part of attached handle. Blue–green. Rim D 50 mm, Ht 18 mm. Context 16892, SF 20288. Property 4, Mid-Roman. [ID 194].
38. Square bottle. Sherd from the flat wall of the bottle. Blue–green. Maximum wall thickness 7 mm. W 81 mm, Ht 52 mm. Context 17237, SF 20098. Property 3, Mid-Roman. [ID 197].
39. Square bottle, shoulder sherd. Blue–green. Wall thickness 3–4 mm. W 27 mm, Ht 44 mm. Context 17237, SF 21024. Property 3, Mid-Roman. [ID 198].

40. Possible bottle body sherd. Slightly curved, scored on outer face. Blue–green. Wall thickness 2–3 mm. 49 x 23 mm. Context 12161, SF 20128. Property 2, Mid-Roman. [ID 148].
41. Possible bottle body sherd. Thick, strongly curved. Blue–green. Wall thickness 2–4 mm. 29 x 23 mm. Context 16022, SF 15901. Property 10, Mid-Roman. [ID 179].
42. Square bottle body sherd. Blue–green. Wall thickness 4 mm. W 50 mm, Ht 77 mm. Context 12555, SF 21014. Property 2, Late Roman. [ID 162].
43. Bottle body sherd, from shoulder. Blue–green. W 34 mm, Ht 36 mm. Context 12000, SF 15611. Property 2, Late Roman. [ID 139].
44. Possible square bottle base sherd. Blue–green. L 51 mm, W 22 mm; Th 4–6 mm. Context 17043, SF 18000. Property 3, Mid-Roman. [ID 200].
45. Square bottle base, parts of two raised concentric circles. Outer circle has expansion or thickening at one point. Blue–green. L 41 mm, W 32 mm. Context 17759, SF 20006. Property 3, Mid-Roman. [ID 208].
46. Square bottle base, cast raised circle(s). Blue–green. L 29 mm, W 22 mm, Th 6 mm. Context 17833, SF 20159. Property 3, Mid-Roman. [ID 215].
47. Bottle base, two cast concentric circles, cross in middle. Two joining sherds. Blue–green. L 72 mm, W 45 mm. Context 17710, SF 18960. Property 4, Mid-Roman. [ID 207].
48. Bottle base, cast raised circular moulding. Blue–green. L 24 mm, W 25 mm. Context 16290, SF 15935. Property 10, Late Roman. [ID 173].
49. Rim sherd, vessel form uncertain. Rim appears to be horizontal and perhaps fire polished with some reeded decoration. Dark brown. L 45 mm, W 22 mm. Context 10613, SF 21011. Property 11, Early Roman. [ID 121].
50. Cast diagonal base ring sherd. Blue–green. Height varies 10–11 mm. L 25 mm. Context 11980, SF 20062. Property 12, Mid-Roman [ID 136].
51. Cast base ring, blue–green. Base ring D 50 mm. Context 12593, SF 21015. Property 2, Mid-Roman [ID 163].
52. Handle, pale blue–green. Narrow, teardrop section. L 45 mm, W 29 mm. Context 16861, SF 15981. Property 4, Mid-Roman. [ID 182].
53. Body sherd, curved, (wheel cut?) horizontal groove along one edge. Uncertain vessel form. Pale blue–green. W 14 mm, Ht 18 mm, Th 4 mm. Context 12077, SF 20125. Property 2, Mid-Roman. [ID 155].
54. Globular-bodied vessel body sherd, horizontal bands of thicker glass. Colourless. W 30 mm, Ht 33 mm, Th 1 mm. Context 12218, SF 15394. Property 2, Mid-Roman. [ID 149].
55. Globular-bodied vessel, two joining body sherds, at least two horizontal thickened bands. Very pale blue–green. Wall thickness 1–2 mm. W 38 mm, Ht 24 mm. Context 10808, SF 15161. Property 11, Early Roman. [ID 129].
56. Globular-bodied vessel body sherd, at least two horizontal bands of thickening. Pale blue–green. Wall thickness 0.5–2 mm. L 35 mm, W 20 mm. Context 10075, SF 15083. Property 12, Early Roman. [ID 108].
57. Body sherd, slightly curved. Fine almost parallel lines cut on inside of curve. Uncertain vessel form. Colourless. L 23 mm, Ht 15 mm, Th 1 mm. Context 12381, SF 15829. Property 2, Late Roman. [ID 158].
58. Body sherd, horizontal bands of thickened glass. Very small bubbles in metal. Colourless. W 17 mm, Ht 21 mm, Th 1–2 mm. Context 12411, SF 15885. Property 2, Late Roman. [ID 170].
59. Possible base sherd. Curved with part of flattened base? Uncertain vessel form. Colourless/very pale blue. L 32 mm, W 20 mm, Th 1 mm. Context 12433, SF 15841. Property 2, Mid-Roman. [ID 160].
60. Body sherd. Curved with fine bubbles in metal. Uncertain vessel form. Colourless. Context 12381, SF 15830. Property 2, Late Roman. [ID 159].
61. Body sherds (4). Curved, colourless, with frosted surfaces. Two have horizontal groove (cast or cut). Largest sherd: L 30 mm, Ht 18 mm. Context 11896, SF 20030. Property 12, Mid-Roman. [ID 134].
62. Body sherd. Curved, cast circle or 'O' on outer face. Pale blue–green. L 25 mm, W 19 mm, Th 4 mm. Context 11916, SF 18821. Property 12, Mid-Roman. [ID 135].

Window glass

63. Possible sherd of unfinished cylinder, or broad glass. Cylinder, curved, distinctive elongated bubbles in metal. L 38 mm, W 52 mm, Th 2 mm. Context 17913, SF 20346. Property 3, Early Roman. [ID 219].
64. Window glass. Blue–green matt/glossy. 57 x 26 mm, Th 3 mm. Context 17759, SF 20339. Property 3, Mid-Roman. [ID 210].
65. Possible window glass. Matt/glossy, variable thickness. Blue–green. 44 x 37 mm, Th 2–4 mm. Context 17887, SF 18878. Property 3, Mid-Roman. [ID 216].
66. Window glass. Two blue green matt/glossy sherds. 37 x 21 mm, Th 4 mm; 30 x 27 mm, Th 3+ mm. Context 17882, SF 18810. Property 3, Late Roman. [ID 217].
67. Possible window glass. Small sherd, irregular thickness, not matt/glossy. Pale blue–green. 24 x 16 mm, Th 3–5 mm. Context 16843, SF 20279, Property 4, Mid-Roman. [ID 187].
68. Possible matt/glossy window glass. Very pale blue–green. 37 x 21 mm. Context 11539, SF 18477. Unphased [ID 150].

Roman Glass from Northfleet Villa

A small but interesting assemblage of glass, comprising 151 fragments, was recovered from this site (Table 84). Ninety-four fragments are from Roman contexts, 20 pieces from Saxon contexts, 29 from modern contexts, and eight were unstratified or from unphased contexts. Because the assemblage comprises, for the most part, small sherds and many are not diagnostic to vessel form,

Table 84 Northfleet glass: fragment count by type and period

Period	Vessel	Window	Bead	Counter	Other	Slag	Total
Roman	56	33	1	2		2	94
Saxon	17	2	1				20
Modern	17	12					29
Unphased/ unstrat	5	1			2		8
Total	95	48	2	2	2	2	151

fragment count has been used to quantify the material. A notable exception in terms of vessel size is the substantial lower portion of a globular bodied vessel in pale blue glass from early Roman context 10802 (Fig 149, 5; Cat No 8).

Unstratified Glass and Glass from Unphased Contexts

There are eight fragments, including two pieces of modern tubing of uncertain function, but otherwise comprising Roman sherds. These include a blue–green sherd with cast base ring (unstratified, Cat No 29), and a small thin body sherd of pale yellow–green glass with small bubbles in the metal of late Roman date (context 12681), a looped handle from a bath flask rather than a bottle (unstratified; Cat No 22), and therefore of 3rd century or later date, and small colourless body sherd with wheel-cut decoration (unstratified; Fig 149,3; Cat No 6) of late date. There was an undiagnostic thick strongly curved turquoise sherd (context 10179, SF 11059), and a fragment of window glass, possibly Roman.

Glass from Saxon Contexts

The glass from Saxon contexts comprises almost exclusively Roman sherds, including some of late date. They include a number of undiagnostic body sherds from vessels (contexts 10090, 10179, 11662, 19057 (x2)). Other sherds include a cast base with diagonal base ring in pale blue glass (context 10004, Cat No 28), a small sherd from the horizontal folded rim of a flask or jug, again pale blue (context 10004, Cat No 19), fragments of a blue–green bottle handle (context 10034, Cat No 26), and a badly abraded ribbed bottle handle (context 10290, Cat No 27).

There are some sherds from late Roman vessels: a probable beaker base with out-turned tubular base ring and indented base in pale green glass (context 30085, Cat No 10); a small sherd with a curved cracked-off rim in pale green glass with small bubbles in the metal and evidence for wheel cut decoration just below the rim (context 10092, Cat No 17); and five sherds from a white semi-opaque conical beaker with cracked-off rim (context 10380; Fig 149, 2; Cat No 5).

There are two sherds of matt/glossy window glass (contexts 10272 and 15005), and finally a green tubular bead of pentagonal section, with a slight twist through its length (context 10093; Cat No 2). Note should be made of a complete 18th century pharmaceutical bottle intrusive in a Saxon context (11505).

Glass from Roman Contexts

Beads and counters

Only two glass objects were recovered from Roman contexts, a small spiral wound green bead from a late context (10427; Cat No 1), and turquoise counter broken into two pieces from a mid-Roman context (15408; Cat No 3).

Vessel glass

The glass from Roman contexts in terms of fragment numbers comes almost equally from middle and late Roman contexts (*Table 85*). Although this shows slightly more sherds from late Roman contexts than from middle Roman contexts, the figures are distorted by the ten sherds, almost certainly from a single vessel with globular body, from context 15408 (Cat No 20).

There are some distinctions which can be made between material from mid- and late Roman contexts. Late Roman contexts have produced more fragments that can be identified confidently to form, whereas much of the vessel glass from mid-Roman contexts can only be identified as beaker/cup or bowl/beaker fragments.

From late Roman contexts there are conical beakers (context 10480; Fig 149, 1; Cat No 4; from the same context Cat No 9; context 10380; Fig 149, 2; Cat No 5), and beakers with wheel cut facets (unstratified; Fig 149, 3; Cat No 6). There is evidence for bowls with engraving and wheel cut decoration (contxt 200129, Fig 149, 4; Cat No 7; context 10092, Cat No 17) and sherds from bowls or beakers (context 12618, Cat No 13; context 200020, Cat No 16). There is an indented base with tubular base ring from a beaker or flask (context 10004, Cat No 20). There are two thin colourless sherds, perhaps with a hint of yellow, with small bubbles in the metal from the neck of a bottle or flask (context 200020, Cat No 21), and sherds from a vessel of uncertain form in pale green glass with self coloured trails (context 16391, Cat No 31).

From mid-Roman contexts come sherds from bowls or beakers (context 10890, Cat No 12; context 20437, Cat No 15) and two which are thin walled and have small bubbles in the metal suggesting that they are of late Roman date (context 10798; Cat No 11; context 15470, Cat No 14). Another difference is that there are more blue–green bottle fragments from mid-Roman contexts than from later ones. Blue–green bottles are common in the 1st and 2nd centuries. Later forms are less common. There are examples of blue–green bottle sherds from context 10937 (Cat No 23), context 16597 (Cat No 24) and context 20389 (Cat No 25). There is a blue–green sherd from probably the neck of a bottle from a late Roman context (200149, Cat No 30).

Finally there is a slight change in the range of colour in use between the middle and late Roman phases (*Table 86*). In the mid-Roman phase there is a predominance of blue–green glass as would be expected although some colourless glass was found. In the late Roman phase there is much less blue–green and the emphasis is on colourless, pale green, very pale yellow, and white and semi-opaque glass.

There is a single vessel, from early Roman contexts. This has a globular body in pale blue glass. The constricted base ring suggests a 1st or 2nd century date (context 10802, Fig 149, 5, Cat No 8).

Window glass

A small quantity of cast matt/glossy window glass was found, with most coming from mid-Roman contexts (*Table 87*). As this shows there is more than one colour of glass, but the commonest colour was blue–green (21 of 33 identified sherds). Much of the blue–green glass is derived from thick panes of 4–6 mm thickness (*Table 88*). Almost two-thirds of the window glass fragments are from thick panes of matt/glossy glass and most are blue–green or pale blue–green in colour. Other sherds are found in pale green and greenish–yellow glass.

Four sherds of thick glass come from late Roman contexts: two (10042 and 15878, Cat Nos 37 and 39) each produced a single sherd of thick blue–green glass with the distinctive thickened and rounded edge of cast window glass, and a third (context 15372, Cat No 38), produced two sherds (including an edge piece) of thick pale green glass.

One pale green window glass sherd came from an early/mid-Roman context (10844, Cat No 32). The remaining 14 sherds are from contexts of mid-Roman date. Most contexts produced a single substantial sherd of. Two produced sherds with tooling marks from the corners of cast glass sheets (context 10696 and context 20405, Cat Nos 33–4). Context 15451 (pit 15450; sub-group 15790, Cat Nos 35–6) produced six sherds including two edge pieces.

The 33 window glass sherds from Northfleet form 35.1% of the glass assemblage from Roman contexts. This contrasts with both the Sanctuary site where window glass formed just 8.9% of the Roman glass assemblage by fragment count and Roadside settlement (11.5%).

Catalogue of selected glass objects and vessels

Objects

(not illus)

1. Bead. Small, spiral wound. Green. D 4.5 mm. Context 10427. Sub-group 16698. Late Roman. [ID 343].
2. Bead. Tubular, pentagonal section. Green. L 9 mm, D 4 mm. Context 10093. SF 11054. Saxon [ID 234].
3. Counter. Domed, flat on one face, regular, damaged on one side. Turquoise. D 22 mm, Th 7 mm. Context 15408. SF 13387. Sub-group 15011. Mid-Roman. [ID 273].

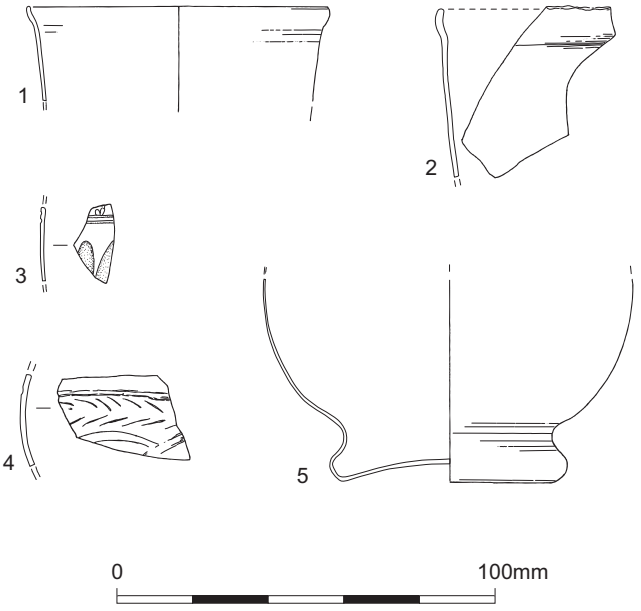


Figure 149 Northfleet: glass 1–5

Vessels

(Fig 149)

4. Beaker, near vertical sided, curved cracked-off rim. Conical beaker of distinctive 4th century type. Wall th < 1 mm. White semi-opaque. D *c* 80 mm, Ht 25 mm. Context 10480. SF 11584, Sub-group 10508. Late Roman. [ID 246]. Fig 149, 1.
5. Conical beaker, slightly out-turned cracked-off rim. Conical beaker of 4th century type. One large and four small pieces. Wall th <1 mm. White semi-opaque. Extant Ht 47 mm. Context 10380, SF 13416, Sub-group 10580. Saxon [ID 245]. Fig 149, 2.
6. Beaker body sherd. Beaker or cup of 4th century type. Small, wheel-cut facets and horizontal band. No obvious small bubbles but probable 4th century. Colourless/white. 21 x 11 mm. Uunstratified. SF 11596. [ID 302]. Fig 149, 3.
7. Bowl. Body sherd, engraved and wheel-cut decoration. Some small bubbles in metal. Colourless. 4th century. W 35 mm, Ht 22 mm. Context 200129. SF 204026. Late Roman. [ID 344]. Fig 149, 4.
8. Jug or flask. Lower part, globular body and constricted base ring. Form of base suggests 1st or 2nd century date. Two sherds. Wall th 1+ mm. Pale blue. Extant Ht 48 mm, base D 58 mm. Context 10802. SF 11638, Sub-group 16723. Early Roman [ID 257]. Fig 149, 5.

(not illus)

9. Beaker. Body sherd, possibly from same vessel as SF 11584, 4th century type. Wall th <1 mm. White semi-opaque. 21 x 16 mm. Context 10480, Sub-group 10508. Late Roman. [ID 248].
10. Beaker. Base fragment with tubular base ring. Pale green. Romano-British. D 60 mm. Context 30085, Sub-group 30107, SF 30941. Saxon [ID 291].

11. Bowl or beaker. Four thin sherds, some small bubbles in metal. Wall th *c* 0.5 mm. Colourless or very pale blue. 4th century. L 32 mm, 27 mm, 22 mm, 21 mm. Context 10798. SF 11640, Sub-group 10330. Mid-Roman. [ID 251].
12. Bowl or beaker. Two small body sherds. Wall th 1 mm. Blue–green. L 38 mm, 20 mm. Context 10890. SF 11674, Sub- group 16732. Mid-Roman. [ID 252].
13. Bowl or beaker. Sherd from constricted base? Wall th 1.5–3 mm. Pale blue–green. L 33 mm, Ht 9 mm. Context 12618. SF 12707. Sub-group 19651. Late Roman. [ID 260].
14. Bowl or beaker. Small thin body sherd, some bubbles in metal suggesting 4th century date. Wall th <1 mm. Colourless. 16 x 12 mm. Context 15470. SF 13440. Mid-Roman [ID 269].
15. Bowl or beaker. Indented base, tubular base ring and prominent pontil mark. Four sherds. Colourless/yellow. D 49 mm, Ht 13 mm. Context 20437. SF 20935. Sub-group 20673. Mid-Roman. [ID 290].
16. Bowl or beaker. Six thin curved body sherds. Wall th 0.5 mm. Semi-opaque/colourless. 21 x 19 mm; 24 x 23 mm; 27 x 20 mm; 27 x 24 mm; 35 x 7 mm; 16 x 6 mm. Context 200020. SFs 204009–14. Late Roman. [ID 336–341].
17. Bowl or beaker. Sherd from cracked-off, slightly out turned rim. Bubbles in glass. Slight trace of wheel cut decoration. Pale green. Late Roman. W 24 mm, Ht 19 mm, Th 3 mm. Context 10092, SF 11041. Saxon [ID 239].
18. Beaker or flask. Indented base, horizontal tubular base ring and large pontil mark. Pale green. D 49 mm, Ht 12 mm. Context 15182. SF 13317. Sub-group 16810. Late Roman. [ID 265].
19. Flask or jug. Sherd from small horizontal folded rim. Pale blue. Romano-British. L extant 13 mm, W 10 mm. Context 10004, SF 11602. Saxon [ID 236].
20. Globular bodied vessel. Ten body sherds – four large, six small. Wall th 1+ mm–<1 mm. Colourless. 50 x 43 mm; 57 x 26 mm; 34 x 19 mm; 39 x 19 mm. Context 15408. SF 13368, Sub-group 15011. Mid-Roman. [ID 267].
21. Bottle or flask. Two sherds from neck. Some small bubbles in metal. Wall th 2 mm. Colourless with hint of yellow. Ht 41 mm. Context 200020. SF 204015. Late Roman. [ID 346].
22. Bottle or bath flask, square shoulder. Handle intended for hanging. Blue–green. W 30 mm, Ht 40 mm. Unstratified. SF 10981. [ID 304].
23. Bottle. Base sherd with two cast concentric circles. Blue green. Romano-British. L 47 mm. Context 10937, Sub-group 16807, SF 11664. Mid-Roman. [ID 253].
24. Bottle. Sherd from base of a cylindrical bottle. Base thickness 4+ mm, wall th 7 +mm. Blue green. L 30 mm, Ht 25 mm. Context 16597, Sub-group 16731, SF 13461. Mid-Roman [ID 282].
25. Bottle. Small thick base sherd with cast raised circle. Base th 11 mm. Blue–green. Romano-British. L 23 mm. Context 20389, Sub-group 20303, SF 20944. Mid-Roman. [ID 288].
26. Handle. Frags strip handle folded with slight evidence of parallel ribs. Possibly from jug or flask. Blue–green. Romano-British. L extant 19 mm, W 20 mm. Context 10034, SF 10982. Saxon [ID 238].
27. Handle frag. folded with fine ribs. Probably from bottle. Colourless. Romano-British. W 33 mm, Ht 21 mm. Context 10290, SF 11552. Saxon [ID 244].
28. Frag. cast diagonal base ring. Pale blue. Romano-British. L extant 32 mm, Ht 14 mm. Context 10004, SF 11602. Saxon [ID 235].
29. Base with cast or ground base ring. Blue–green. Romano-British. D 63 mm, Ht 10 mm. Unstratified, SF 13471. [ID 303]

30 Neck sherd, probably from bottle. Blue–green. Ht 50 mm. Context 200149, Sub-group 200177, SF 204024. Late Roman. [ID 345].

31. Uncertain vessel form. Five joining body sherds, curved and folded with applied self-coloured trails. Pale green. L 35 mm, Ht 23. Context 16391, SF13436. Late Roman. [ID 281].

Window glass

(not illus)

32. Matt/glossy sherd of variable thickness. Pale green. 71 x 44 mm, Th 2.5–4 mm. Context 10844, Sub-group 10963. Early/Mid-Roman [ID 334].
33. Matt/glossy corner sherd and small flat sherd. Clear tooling marks on corner sherd. Blue green. 44 x 30 mm and 38 x 18 mm, Th 3 mm. Context 10696, SF 11635. Mid-Roman [ID 250].
34. Matt/glossy corner sherd. Pale green–blue. 59 x 52 mm, Th 4 mm. Context 20405, Sub-group 20768, SF 20948. Mid-Roman. [ID 289].
35. Two matt/glossy edge sherds with rounded edge. Pale blue–green. (1) 50 x 29 mm, Th; 3+ mm; (2) 49 x 31 mm, Th 3+ mm. Context 15451, Sub-group 15790, SF 13376. Mid-Roman. [ID 274–5].
36. Four matt/glossy sherds. Pale blue–green. (1) 54 x 23 mm, Th 3 mm; (2) 42 x 28 mm, Th 3–1.5 mm; (3) 46 x 26 mm, Th 3–2 mm; (4) 48 x 18 mm, Th 3–2 mm. Context 15451, Sub-group 15790, SF 13376. Mid-Roman. [ID 276–9].
37. Matt/glossy edge sherd with thickened rounded edge. Pale blue–green. 48 x 36 mm, Th 6 mm. Context 10042, SF 13346. Late Roman [ID 237].
38. Two matt/glossy sherds, including one with rounded edge (1). Pale green. (1) 62 x 27 mm, Th 5–4 mm; (2) 60 x 24 mm, Th 4–3 mm. Context 15372, Sub-group 16754, SF 13359. Late Roman [ID 271–2].
39. Matt/glossy edge sherd with rounded edge and grozed edge. Blue–green. 2 x 34 mm, Th 5 mm. Context 15878, Sub-group 16698, SF 13399. Late Roman [ID 268].

Chapter 12
Leather from Northfleet

by Quita Mould

The remains of five shoes of Roman date were found in Roman contexts at Northfleet. A piece of leather of Roman date, likely to come from a 6th example, was found in a mixed deposit of re-deposited material associated with a mid-Saxon water mill.

Methodology

The leather was wet when examined. The terms used to describe Roman shoes and the shoe constructions employed are those most recently summarised by van Driel-Murray (2001). Leather species were identified by hair follicle pattern using low powered magnification. Identification was not always possible where the grain surface of the leather was heavily worn. The distinction between immature (calfskin) and mature cattle hides is not always easy to determine and the term bovine leather has been used when in doubt. The poor condition of the shoes precluded any estimation of size calculated according to the Modern English Shoe-Size scale.

Villa Complex

The fragmentary remains of two shoes of single piece construction and a shoe of nailed construction were recovered from fills of a timber-lined well (16731); the backfills date from *c* AD 150. Very small fragments broken principally from the bottom unit of a shoe of nailed construction (SF 13469) came from a deliberately backfilled deposit (16586). The nature of the remains suggests that the shoe had already been incorporated in the material used as backfill and not freshly discarded at the time of backfilling. Two shoes of single-piece construction (SFs 13468 and 13475) of cattle hide came from a silted layer (16597). They are heavily worn but show no sign of repair, the surviving fastening loops toward the toe end of each shoe are plain with tooled edges. There is no reason to suggest that they were originally a pair though it is possible. One (SF 13468), worn on the right foot, appears to be of a size to fit an adolescent or child.

The bottom unit of a shoe of nailed construction of adult size was found in fill 16090 of well 16516. The fill, representing an early silting deposit, dates to *c* AD 140/50. What survives of the nailing pattern is suggestive of a type commonly found on shoes of late 1st and 2nd century date elsewhere. The shoe appears to lack constructional thonging, a feature used to hold the individual bottom unit components together during manufacture and commonly found on shoes of late 1st century date onward.

Western Roman Complex

The remains of a right foot shoe of nailed construction of adult size (SF 20942) were found on the metalled surface 20212, a Roman roadway thought to be a track leading to the Ebbsfleet river. The metalled surface cannot be closely dated within the Roman period but may be linked with another surface that can be dated to AD 120–200. The nailing pattern surviving on the fragments of shoe bottom unit recovered is compatible with this date.

Saxon Water Mill

A triangular piece of cattlehide with rounded corners (SF 11779) was found in a mixed deposit of re-deposited natural 12260 backfilled into cut 12258 after the construction of the Saxon water mill. The leather has no stitching and the grain surface is unworn but there is the suggestion of foot-shaped contours on the grain surface. The shape of the piece and the contours suggest that it may be a middle sole from a sandal with a distinctive broad toe. The width of the toe indicates a date from the 2nd half of the 3rd into the 4th century (van Driel-Murray 2001, fig 27). The mill was built in AD 692 and was in use for a period of approximately 30 years (see Vol 1 Chap 6). The extreme rarity of vegetable-tanned leather from Saxon contexts of this early date in England is testament that it was not a material in common use during this period (Mould *et al* 2003, 3428–9), though skin products preserved by other methods were certainly employed. It is most unlikely that this vegetable-tanned leather (SF 11779) is associated with the mill. The leather seems to be of Roman date and residual in its context.

Catalogue of leather
(not illus)

1. SF13439. Leather shoe of nailed construction for the left foot frags of bottom unit. a) largest surviving piece being greater part of insole with toe, exterior tread, and seat areas missing and much of edges broken off. Tread tapers slightly to waist area and seat, no distinct waist present. Appears to have single line of nailing around perimeter with second line at exterior tread and at seat, decorative infilling at tread, and nail at centre of waist. No constructional thonging visible. Insole surviving length: 177+ mm; width tread: 75+ mm; waist: 54+ mm: seat 51 mm. Leather bovine 1.96 mm thick. b) four small frags broken from edge of insole or middle. c) seven frags broken from edge of sole with double row of iron hobnails with straight shanks present including area from edge of sole seat. Hobnails diam: 10 mm; total length: 12 mm; shank width: 8 mm. Adult size, context 16387, sub-group 16516. Mid-Roman.
2. SF 13469 Leather scrap fragments, probably from shoe of nailed construction. a) three small frags compacted leather with all edges broken. Largest has small hole with iron corrosion present suggesting nail-hole. Leather bovine. 44 x 27 x 2.9 mm; 30 x 29 x 2.7 mm; 19 x 16 x 3.04 mm. b) Small triangular frag with all edges broken. Leather bovine. 18 x 11 x 1.11 mm. Context 16586, sub-group 16731. Mid-Roman.
3. SF13468 Leather fragmentary shoe of single-piece construction for right foot. a) back part of shoe with toe and tread area missing, lower tread and seat area of sole section present. Irregularly torn away across lower tread with large hole worn through seat area but no sign of repair present. Small area of seat seam and back seam survives on each side. Edge/flesh whip-stitched seam at seat, grain/flesh whip-stitched back seam. Fastening loops torn off, small frag of loop with tooled edges and plano-convex section survives on left side. Leather cattle hide 3.1 mm thick seam. Surviving length: 118+ mm; max width: 86 mm. b) frag with small fastening loop broken from edge of shoe. Loop: 42 mm long; loop arm width: 4 mm. c) Eight small frags broken from forepart area including small frag of fastening loop 24 x 5 x 2.27 mm. Adolescent/child size, context 16597, sub-group 16731. Mid-Roman.
4. SF13475 fragmentary shoe of single-piece construction. a) left 'heel area' with back seam starting with edge/flesh seam changing to grain/flesh seam *c* 25 mm above seat seam, stitch length: 6–7 mm. Seat seam is broken. Leather cattlehide 2.88 mm thick, delaminating on the flesh side. Surviving length: 50 mm; height: 45+ mm. b) right 'heel area' and frag of sole area with heavily worn edge/flesh seat seam and edge/flesh back seam changing to grain/flesh seam 20 mm above seat seam. Leather cattle hide. Surviving length: 105+ mm; height: 47+ mm. c) frag of forepart sole area with remains of small fastening loops with tooled edges. Leather worn cattle hide 2.57 mm thick. Surviving length: 105+ mm; width: 54+ mm. d) frag with delaminated fastening loop present 70 x 40 mm. e) frag 57 x 40 x 2.89 mm. Context 16597, sub-group 16731, Mid-Roman.
5. SF 20942 Fragmentary shoe of nailed construction for right foot. a) waist and seat area of insole with middle sole adhering. Middle sole is significantly smaller than insole leaving distance of *c* 10 mm around edge to take upper lasting margin. Nail-holes (no iron nailing present) suggest single line of nailing around perimeter with single nail at waist and infilling at seat in 'tear-drop' shape. Thong slot with frag of thong present from constructional thonging is present at centre of seat. Insole leather cattle hide 3.98 mm thick. Insole with middle sole 8.85 mm thick. Surviving length: 112+ mm; width waist: 50 mm; seat: 55 mm. b) insole frag broken from edge of forepart 57 x 24 x 3.42 mm. c) insole frag broken from edge of forepart probably joining to b) 40 x 38 x 3.81 mm. d) fragment of heel stiffener, grain inward to foot with area of nailed lasting margin present, all edges broken. Leather bovine. 67 x 47 x 4 mm. e) folded frag broken from lasting margin area of upper. 37 x 28 mm. f) three other associated frags with all edges broken. Adult size, Context 20212, Roman.
6. SF11779 triangular piece possible sandal bottom unit component. Triangular piece with rounded corners and cut edges. No stitching present. Grain surface unworn. Profile retains contours suggesting impression of foot on grain surface, suggestive of left foot sandal bottom unit component for an adolescent/child. Leather cattle hide 1.43 mm thick. Length: 148 mm, width max: 75 mm; min: 20 mm. Context 12260, E Wetlands, Saxon mill.

Chapter 13
Worked Bone

by Leigh Allen

The Springhead Sanctuary Site

A total of 52 worked bone objects was recovered from the Sanctuary site at Springhead (ARC SPH00). The assemblage includes a large number of pins, or fragments from pins (40), as well as other personal items such as bracelet fragments (2), needles (2), a bead and a handle. The majority of the objects were recovered from contexts associated with or in the area of the Sanctuary complex.

The Assemblage

Pins
There are a number of different types of pin represented in the assemblage and, based on the typology devised by Crummy (1983, 19–25), it has been possible to identify the presence of types 1–3 on the site. Pins of type 1 and 2 both have slender tapering shanks with conical heads; type 1 has a plain head, type 2 has a plain head with transverse grooves (most commonly two) below. This form of pin dates from the late 1st–2nd centuries; at Colchester the type 2 pins have a terminal date of *c* AD 200 whereas type 1 carries on in use into the later Roman period. Crummy's type 3 pins are a more robust form than the earlier types with a more or less spherical head and a characteristic swelling of the shaft. At Colchester this type does not appear before *c* AD 150 and continues in use into the 3rd–4th centuries. There is only one example of a pin with a more elaborate head. This has collars and grooves of differing widths surmounted by a plain sphere with a small cone on the top. The widest collar is decorated with incised grooves in a cross-hatched pattern. A similar example recovered from Aldborough, North Yorkshire is described as being an elaborate form of a Crummy type 2 pin (Bishop 1996, 21, fig 11, nos 68–70).

The collection of pins recovered includes 26 that have the head intact; there are nine examples of type 1 pins, 14 of type 2 pins, and three of type 3. There are also 14 broken shaft fragments, all straight-sided (none display a swelling along the shaft), and these are probably from types 1 or 2 pins. There are only seven complete examples; five are type 1, one is a type 2 and the last is a type 3 pin.

The 14 shaft fragments from type 1 and 2 pins have been analysed to ascertain if there are any patterns in the way that they have broken. There are nine fragments where the lower part of the shank survives but not the head and five mid-shaft fragments where both the tip and the head are missing. The nine tip fragments include five examples that have less than half of the lower section of the shank surviving, ranging in length from 26 mm to 48 mm. The break is angled in all cases. The remaining four appear to have most of the shank remaining, and range in length from 74 mm to 90 mm; again all the breaks are angled. A discussion of the nature and possible significance of the pin breakage is given below, following the description of the Roadside settlement (ARC SHN02) assemblage.

Needles
The remains of two needles were recovered. One has a pointed head and a sub-rectangular eye that has a bevelled edge at the top and bottom; an identical (and more complete) example was recovered from the Roadside settlement. Needles with pointed heads are classified by Crummy as type 1 needles and parallel the early hairpins (types 1 and 2) in design and date. The second fragment is broken across the eye but it does have a bevelled edge surviving at the base of the eye.

Bracelets
There are parts of two bracelets. That from context 5691 (pit 5781) comprises two joining fragments from a slender plain bracelet with a rectangular cross-section. There is no surviving evidence for a fastening. The fragment from context 3036 (pit 3199) is from a more robust form with a D-shaped section; this is also undecorated. One broken edge has the remains of a V-shaped notch for the rivet that would have held the fastening in place. Unfortunately no trace of the fastening itself remains.

Hinge component
A unit from a loop hinge was recovered from colluvial deposit 5215. It is cylindrical with a slightly flared base. In the side (roughly central) is a lateral perforation. Opposite this hole, on the inside surface of the cylinder, is a circular indentation, either from when the perforation was made or from the peg that would have been inserted into the hole. These individual units were combined in continuous series to provide pivots for cupboard doors or lids for chests (MacGregor 1985, 203). The hinge is decorated with three sets of double

incised grooves at the base, middle, and near to the top. A similar (undecorated) example was recovered from Colchester (Crummy 1983, 121, fig 132, no 4096).

Handles
There are three handles. That from context 2264 (pit 2214) is a simple, circular-sectioned handle for a whittle-tang knife (although only a small stub of the blade survives). Fashioned from a sheep metatarsal, the handle flares slightly at the butt-end and is highly polished. The example from context 2831 ('Viewing platform' 400046) is a one-piece rectangular handle pinched in at the lower end. The two faces are slightly concave with a raised central rib running the length of each face. This type of handle is Claudian–Neronian in date (Crummy 1983, 107–9, fig 110, nos 2925–6). The third handle comprises two tongue-shaped bone plates almost completely obscured by iron corrosion, possibly the scales from a scale tang knife.

Bead/die
A small rectangular tubular bead was recovered from context 3502 (pit 3501). It is highly polished and has incised decoration on all four faces and on the two perforated ends. One face has two grooves across it (one straight, the other angled), the second face has three straight grooves, the third has a faint pair of grooves at each end, and the fourth has very faint traces of an incised circle possibly from a ring-and-dot motif. One of the perforated ends has one groove across it and the other has two. It is possible that this object is a parallelepiped die (MacGregor 1985, 129–31).

Offcut
A roughly octagonal fragment of bone was recovered from context 3193 ('Viewing platform' 400044). It is a flat piece, probably cut from the shoulder blade of a large mammal. The upper face is plain apart from a small indentation at the centre (which could be a lathe mark). The back has lines scored on it at the edges, across the centre, and across the corners (where triangles of bone have been removed to make a square into an octagon). It was obviously in the process of being made into an object, but exactly what is unclear.

Distribution

Pre-Sanctuary
Seven pins (one complete and the rest fragmentary) come from contexts pre-dating the construction of temple 400035 within the Sanctuary complex. Of these, two type 1 and five type 2 pins come from a series of dumped deposits (400027) overlying the early Roman road. These deposits post-date the clay-floored circular structure and rectangular building but pre-date the construction of the temple.

Sanctuary
Eighteen objects are from contexts associated with the Sanctuary complex. The assemblage comprises 15 pins or fragments, a needle, a handle, and fragments from a bracelet or armlet. Pins of all three types are represented, but types 1 and 2 dominate. A type 1 pin was recovered from ritual shaft 2856 at an entrance to the area around the Sanctuary complex. Two type 2 pins and two straight-sided shaft fragments from type 1 or type 2 pins were all recovered from within the temple structure (400035). None of the examples is complete but one has an elaborate head. This, the second pin with a surviving head, and one of the shank fragments come from the clay floor (context 5938) of temple 400035, the other fragment coming from a shallow drainage ditch (5935). Features to the rear of the temple produced incomplete examples of pins of all three types and a Crummy type 1 needle. The pins are from a rectangular clay-lined tank (5917) and the needle from a fence line enclosing the Sanctuary (post-hole 2976). Pits at the north-east and north-west ends of a line of pits to the north (400023) produced a type 2 pin, type 1 or 2 shank fragment and a handle. Another type 2 pin and two examples of type 3 pins were recovered from destruction deposits associated with the temple (context 5683) and a robber trench for a column base (feature 5815). Pit 5781 (300050) cutting the top of enclosing ditch 300046 produced an example of a type 1 pin, a shank fragment from a type 1 or 2 pin and the remains of a bracelet.

Post-Sanctuary
Only five objects come from post-Sanctuary contexts, four pins (or fragments) and a needle. Only one pin has the head surviving; it is a type 1 pin from context 2945, a spread of dark soil which overlay rectangular structure 300157. The remaining three pins are represented by shank fragments only; two are from the same context as the type 1 pin, and the third is from a chalk rubble destruction deposit, perhaps from a structure later than 300157. The needle was recovered from cobbled surface 2670.

Other contexts
Eighteen bone objects were recovered from contexts not immediately associated with the Sanctuary (five are unstratified). These comprise 13 pins or fragments, 2 handles, a hinge component, a bead, a bracelet fragment, and a partially worked piece. The pin assemblage includes six examples with the head still present. They are all examples of type 1 and 2 pins, and the seven shank fragments are also from these earlier types. 'Viewing platforms' 400044 and 400046 produced two pins (only one has the head still present), a handle, and the partially worked octagonal piece. Pits towards the southern end of the site (3641 and 3540) produced a type 2 pin and a pin fragment. The remaining pins and pin fragments come from pits (2203, 2420, and 3228).

Discussion

The majority of the objects recovered from the Sanctuary site are pins, and types 1 and 2 (the earlier forms) dominate. Pre-Sanctuary contexts produced only type 1 and type 2 pins and the majority of those recovered from the Sanctuary itself are also early (and therefore possibly residual or heirlooms). The very small number of later type 3 pins came from destruction deposits associated with the Sanctuary. The bone pins together with the early type 1 needle, therefore, support the suggestion that the Sanctuary was in use predominantly during the 2nd half of the 2nd century.

The distribution of the pins across the site indicates that roughly the same number come from contexts associated with the Sanctuary as from non-Sanctuary contexts and, in fact, more broken fragments come from outside the central part of the complex than from within it. A similar pattern was noted at Higham Ferrers, Northamptonshire, where roughly the same number of bone pins was recovered from within the shrine as without (Scott 2009). Further parallels and a discussion of the significance of the pins is given below.

Catalogue of worked bone objects
(Fig 150)

1. Pin, plain conical head. SF 293, context 2139, L 106 mm. (Crummy type 1). Early Roman.
2. Pin, conical head, two transverse grooves below. SF 871, context 5599, L 93 mm. (Crummy type 2). Early Roman.
3. Pin, conical head, two transverse grooves below. SF 732, context 5637, L 110 mm. (Crummy type 2). Early Roman.
4. Pin, spherical head, lower half of head hemispherical/elliptical, upper half conical. shank slightly swollen. SF 818, context 5820, L 87 mm (Crummy type 3). Mid-Roman.
5. Pin, elaborate head with collars and grooves of differing widths surmounted by plain sphere with small cone on top, Widest collar decorated with incised grooves in cross-hatch pattern. SF 883, context 5938, L 92 mm. Mid-Roman.
6. Cylindrical unit from loop hinge. Base slightly flared, body decorated with three sets of double incised grooves at base, middle, and near top. Lateral perforation for peg. SF 679, context 5215, L 44 mm. Late Roman.
7. One piece handle. Rectangular, pinched in at one end. Faces are slightly concave with raised central rib running along length of each. SF 565, context 2831, L 67 mm. Early Roman.
8. Bead/die. Small, highly polished rectangular tubular bead. Incised decoration on all faces and both perforated ends. ?parallelepiped die. SF 1664, context 3502, L 18 mm. Early Roman.

The Roadside Settlement

A total of 95 worked bone objects was recovered from the Roadside settlement at Springhead Nursery (ARC SHN02). A large number of the objects are pins or fragments from pins (70) but the assemblage also includes needles (10), handles (4), counters (2), a scoop/spoon, a scabbard chape, a hinge component, a peg, and various pieces of cut antler (3). The objects were recovered from across the site, from contexts associated with properties 2–5 and 10–12. The greatest concentration is from property 2 where there was a structure interpreted as a temple, and it is from here that the largest number of pins and pin fragments was recovered.

Distribution

Property 2
Just over a third of the worked bone objects (32) were recovered from property 2. They comprise 26 pins or pin fragments, two needles, a small scoop or spoon, a scabbard chape, and two antler tine fragments. The collection of pins includes 13 complete examples with a range of head types represented. The pins have been recorded according to the Colchester typology (Crummy 1983, 19–25).

A single example with a conical head and two transverse grooves below (type 2) was recovered from context 12555, a charcoal layer underlying the temple that could be associated with an earlier insubstantial phase of structure. Crummy dates this form to the 1st–2nd centuries AD. The most common form recovered has a more-or less-spherical head (type 3), all ten examples of which came from contexts (12000, 12308, and 12411) associated with a layer of general overburden or demolition deposit broadly overlying the temple. This pin type first appears in Colchester around *c* AD 150 and continue in use into the 3rd–4th centuries. The type 3 pins can be further sub-divided into types A (globular or elliptical head) and B (semi-circular or elliptical lower half with slightly conical upper half). Type 3B dominates with eight examples compared to two of type 3A. The shaft of this form of pin displays a degree of swelling at the centre, and is in general more robust than the earlier forms (types 1 and 2). It also has a great variation in length among the complete examples (65–103 mm). Four fragments from pin shanks display the characteristic swelling of this later form. Three of these were recovered from the same general context as type 3 and the fourth from context 12166, the upper fill of a pit to the south-east of the temple. A further nine shank fragments display no swelling and could be from any of the other forms of pin categorised by Crummy.

Two pins with slightly more elaborate heads were also recovered from property 2. A pin with a facetted cuboid

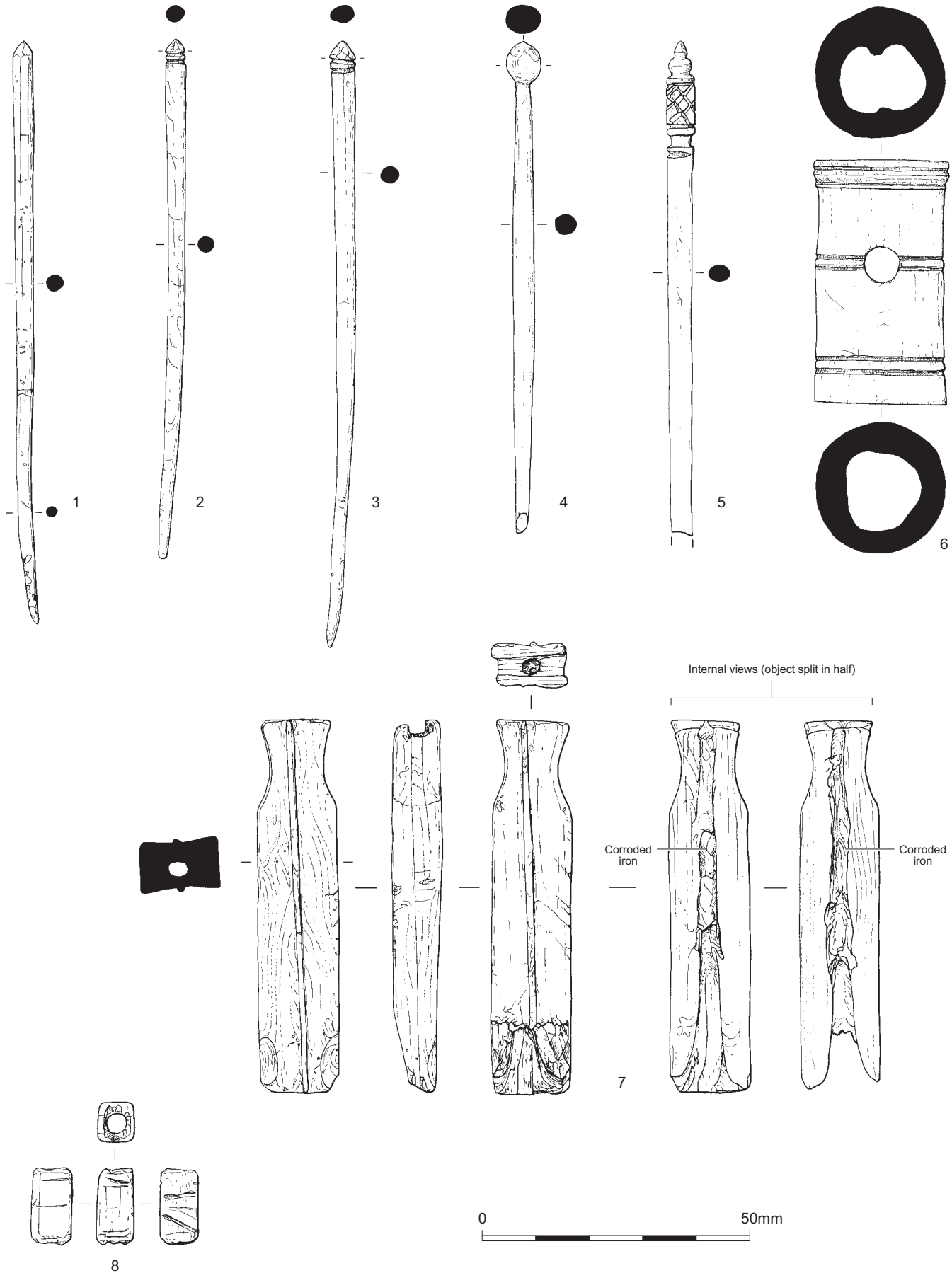


Figure 150 Springhead: Sanctuary worked bone 1–8

head (Crummy type 4) is from context 12378, an upper demolition deposit in the north-east room of the temple. Examples with this form of head tend to be less common than other forms as it is quite difficult to produce an exact cuboid (they are more generally manufactured in jet). This example appears to be well made although not entirely symmetrical. The form dates from the mid-3rd century to the late 3rd and 4th centuries. The second, more elaborate example, recovered from context 12555, has a head decorated with two reels and a narrow bead below. It is similar (but not identical) to Crummy type 6 pins, which date to the late 3rd–4th centuries. Crummy notes that a handful of examples of this type have been recovered from earlier contexts and this could push the appearance of this form back to *c* AD 200 (Crummy 1983, 24–5).

Two incomplete needles, both broken across the eye, were recovered from contexts 12312 (general overburden) and 12390 (the charcoal layer underlying the temple). One appears to have a rectangular eye with a bevelled lower edge. The other has a curved base to the eye which could be the remains of a circular/oval eye or figure of eight-shaped eye but the exact form is unclear.

A further implement recovered from the general overburden (context 12000) is a rather crude scoop/spoon. The shaft is incomplete and the scoop-end is the same width as the shank (*cf* Allason-Jones and Miket 1984, 51–3, no 2.110–12).

The back plate from a bone scabbard chape was recovered from contexts 12409 and 12411 (general overburden). It has slightly tapering sides, chamfered edges, and a marginal groove running down one edge; the ends are very slightly shaped and each has two notches cut in it. During the late 2nd and 3rd centuries bone chapes were issued as part of standard military equipment (MacGregor 1985, 163, fig 86, c–e). An almost identical chape was recovered from South Shields (Allason and Miket 1984, 47, no 2.78).

Two antler tines were recovered from contexts 12380 and 12470 (demolition deposits); both are sawn at the base but otherwise are unworked.

Property 3

The bone assemblage (25 objects) from property 3 comprises 17 pins or fragments (only seven with the head present), five needles, a handle, a toggle, and a possible hinge component. Whereas type 3 pins dominated in the adjacent property 2, here there is only one complete example and only two shaft fragments with the characteristic swelling. There are two examples (both incomplete) of pins with plain conical heads (type 1: late 1st–4th century) and four examples (three complete) with conical heads with one or two transverse grooves below (type 2: 1st–2nd century.

The small group of needles includes a number of different forms, none of them complete. A near-complete example (only the very tip is missing) from context 17759 has a pointed head and a figure of eight-shaped eye (type 1). An incomplete example from post-hole 17921 has the same eye shape although most of the head and the tip of the shank are missing. The fragment is stained green (possibly by vegetable dye or copper); this staining is also seen on early bone pins (Crummy 1983, 20). A second form of needle was recovered from context 17832. It has a flat spatulate head and a rectangular eye (type 2), and was in use throughout the Roman period (Crummy 1983, 65). The remaining two needle fragments (from contexts 17668 and 19081) are broken across the eye.

A lathe-turned disc with a large central perforation was recovered from context 17896; there are two fine concentric grooves close to the edge on the upper surface. The disc is almost identical to examples from Colchester which are identified as the terminal ends of a composite wood and bone hinge, held in place by an ornamental peg through the central perforation (Crummy 1983, 89, fig 93, no 2224).

A decorated and polished handle for a whittle tang implement was recovered from context 16687. It is rectangular with a square section and a zigzag pattern of fine grooves incised on all four surfaces. It is almost identical (except for the absence of a transverse hole at each end) to a Saxon example from Thetford (Rogerson and Dallas 1984, fig 201, nos 111–13). Finally a crude toggle, formed from the astragulus of a sheep or goat with a small circular hole drilled (anterial/proximal) through it, was recovered from context 17913.

Property 4

The bone assemblage from property 4 is significantly smaller than from the previous two properties, as only seven bone objects were recovered: six pins or fragments and an antler tine fragment. Three of the pins still have their heads and can be identified; two are type 1 (contexts 16022 and 17710) and the third type 2 (context 16840 in pit 16831). The remaining three, non-conjoining, fragments (context 16022) are from pin shafts. The antler tine fragment (main branch), also from context 16022, is sawn at both ends and drilled longitudinally through the centre. The natural outer surface is intact.

Property 5

The three objects from property 5 comprise two pins and a possible handle fragment. An incomplete example of a type 3B pin was recovered from context 16657 (a probable midden deposit) and an incomplete example of a type 1 pin comes from context 17380, a fill of pit 17385. The possible handle fragment also comes from the probable midden deposit (context 16641) and is a cut length from a large mammal long bone split longitudinally, and with the remains of circular perforations in both ends.

Property 10

The four bone objects recovered from property 10 are all from dene hole 16286. They comprise two complete pins (one type 3A, the other type 3B), a pin shank broken into two pieces, and a bone counter. The counter is plain, circular, and highly polished (Crummy (1983)

type 1; Kenyon (1948, 266, fig 91) type A); the edge is bevelled and there is an indentation from the lathe centre on the obverse. Counters of this type are found throughout the Roman period (Crummy 1983, 91–2, nos 2226–63). Also from property 10 is a single flat (curved) fragment of antler, from context 11332. The piece has been cut longitudinally from a large tine and the natural outer surface is still visible on the outside edges. Antler was commonly used in the manufacture of composite combs; flat sections were cut from the lower part of the tine to form sections of the tooth plate (MacGregor 1985, fig 42, no 7).

Property 11
The small number of bone objects recovered from property 11 all came from pit fills. They comprise four pins or fragments, a needle, a handle fragment, and a crude peg. Only two of the pins are identifiable: one is an incomplete type 2 pin from context 10551 (pit 10547) and the other a type 6 pin with a single reel head from context 10414 (pit 10408). A pin shank fragment from context 10202 (pit 10201) has a swelling at the centre, while a very fragmentary shank from context 10326 (pit 10324) appears to have been burnt. Notable is the small crude peg from context 10297 (pit 10201); this has a bulbous head and a straight shank, on both of which rough knife cuts are clearly visible. This object may be a blank for a pin and the only evidence from the site for pin manufacture. The type 1 needle is nearly complete (just the tip of the shank is missing); it has a pointed head and a figure of eight eye (Crummy 1983, 65). Finally, the handle fragment from context 10312 (pit 10311) is designed for a whittle tang implement and is formed from the distal end of a sheep or goat metatarsal. It is highly polished and has four V-shaped notches down each side (it is broken across the 5th notch).

Properties 11–12
Two pins and two needles were recovered from a large brickearth quarry (300370) on the boundary between properties 11 and 12. The pins are both small examples of type 3B. The needles include one complete example of a type 1 needle with a pointed head and a rectangular eye (bevelled at the top and bottom edge) and a shaft fragment broken across the eye. This eye also appears to have been rectangular and has a bevelled bottom edge.

Property 12
The six bone objects from property 12 comprise five pins or fragments and a counter. The pins includes two type 1 (one complete and one incomplete) from gully 11415, an incomplete example of a type 2 pin with a single transverse groove below a conical head from context 10103 (pit 10097), and a near complete example of a type 3B pin from grave 10151. The 5th pin is a shank fragment from context 11909 (SFB 300384). The counter, also from gully 11415, is of a similar type to that in property 10. It is plain, the upper surface is countersunk with an indentation in the middle marking the lathe centre, and the edge is slightly bevelled (Crummy type 1; Kenyon type A).

Bone objects not from properties
Six identifiable objects from unstratified contexts comprise two pins, three pin shank fragments, and the head from a medieval–post-medieval stylus. The two pins, one of which is complete, are both of type 3B. The stylus fragment has a globular head and a single collar below; it is lathe-turned and highly polished.

Discussion

The worked bone assemblage from the Roadside settlement is large and includes an impressive collection of Roman hair pins ranging in date from the late 1st–4th century. The majority were recovered from property 2, where the structure interpreted as a temple was located, and from property 3 adjacent to the temple site.

Pins
The collection of pins includes 37 that have the head intact, comprising seven examples of type 1, eight of type 2, 19 of type 3, two of type 4, and one type 6. There is also a large number (33) of broken shaft fragments, seven of which display a swelling along the shaft and can therefore be identified as a later Roman type (Crummy types 3– 6) but the majority appear to come from type 1 and 2 pins. These early types, with their long and slender form, were susceptible to breakage at any point along the shaft (Crummy 1983, 20). The more robust swollen shank of the type 3–6 pins was probably developed as an attempt to remedy this design fault and it is noticeable at the Roadside settlement that there are more complete examples of type 3 pins in the assemblage than of the other types (14 = 73%), but only three complete examples of type 1 and 2 pins out of a total of 15 (20%).

Breakage patterns
The 26 shaft fragments from type 1 and 2 pins have been analysed to ascertain if there are any patterns in the way that they have broken. There are 19 fragments where the tip survives but not the head and seven mid-shaft fragments where both the tip and the head are missing. The tip fragments include ten examples that have less than half of the lower section of the shank surviving, ranging in length from 38 mm to 52 mm. The broken surface is angled in all cases. There are a further six tip fragments where more than half of the shank survives, ranging in length from 59 mm to 80 mm; three have angled breaks and three have straight flat breaks across the shank. The remaining three examples each consist of two fragments, with total lengths 92–96 mm. The broken tip component measures 50–59 mm and the breaks are all angled.

The main pattern seems to be that either the shaft is broken just over halfway along and the upper half,

including the head, is missing, or the shaft is broken at the tip and the majority of the pin is missing. The presence of the mid-shaft fragments, however, and the near-complete shanks in two parts, implies that, more commonly, the shank breaks into three parts, just below the head and just above the tip. When inserting pins into hair formed into a bun, or through material as a fastening, the greatest pressure would be exerted on the area just above the tip and just below the head, so it is possible that the pins were broken through use. Considering the large numbers of broken examples from the site, however, it is alternatively possible that these pins were deliberately broken before they were deposited. At Higham Ferrers in Northamptonshire there was evidence for the ritual 'killing' of bone pins (Lawrence and Smith 2009), as the shaft of one pin had splintered due to the pressure exerted on it, but was still attached. This example and many of the others from Higham Ferrers were broken at roughly the central point along the shank. One of the easiest ways to break a pin or similar object with a long slender shank is to hold it at either end and exert pressure with the thumbs just below the head and above the tip, this results in a break roughly half way along the shaft. More difficult to achieve is a break at the top and bottom of the shaft, this cannot be done with a single movement, you have to deliberately exert pressure in two places.

Evidence for pin manufacture on site

A single, small, crude peg, possibly a pin blank was recovered from context 10297 (pit 10201). It has a bulbous head and a straight shank; rough knife cuts are clearly visible on the shank and head. Unfortunately no other supporting evidence for manufacture, such as the splinters or off-cuts as seen at Winchester, Colchester, and London (Crummy 2000, 97–109), was recovered. Concentrations of bone blanks, as well as partly shaped and finished pins are, however, reported to have come from previous excavations at Springhead (Goodburn *et al* 1978, 472). It is tempting to suggest that the blank possibly originated from there.

Distribution of pins across the site

The greatest number of pins or fragments of pins were recovered from property 2 and nearly all the identifiable ones (with the exception of a single type 2 pin) are examples of late Roman types. There are ten type 3 pins, one type 4, and one type 6. In addition, there are a further four fragments with swollen shanks from pins of late Roman date. Nine of the type 3 pins from this property are intact as are the type 4 and type 6 examples. The majority of the assemblage was recovered from the general overburden/demolition deposits overlying the temple, demolition deposits in the porch of the temple, or upper demolition deposits in the north-east room of the temple. This contrasts with the date of the pin assemblage recovered from adjacent property 3, where only one example of a type 3 pin and two swollen shaft fragments were recovered, but a total of six pins of early–mid- Roman date were found: two type 1 and four type 2. This is also the case in property 4, where the identifiable types comprise two type 1 and one type 2, and no examples of later types or fragments from later shafts.

The numbers of pins recovered from properties 5 and 10–12 are small. Properties 10 and 11/12 each have two examples of the later type 3 pins. Property 12 has three examples of the earlier types of pin and properties 5 and 11 have early and late examples, including an elaborate type 6 pin from property 11 with a with a single reel head. A further three examples of type 3 pins were recovered from contexts not relating to specific properties.

Previous excavations at Springhead in the 1950s and 1960s carried out by W S Penn recovered 'many pins and fragments of pins of Antonine date' (Penn 1957, 101). All the forms discussed above seem to have been identified in these earlier excavations, namely 'plain pointed', 'biconical', 'circular knob', and those 'decorated with incised lines'. Unfortunately exact numbers of items recovered are not recorded so a more detailed comparison is not possible from the published evidence. Large assemblages of bone pins have also been recovered from other temple sites. At Nettleton, Wiltshire, 79 pins were recovered, 36 of them directly associated with the shrine, most of them broken (Wedlake 1982, 201). Kings Meadow Lane, Higham Ferrers, Northamptonshire, produced 41 pins, divided roughly equally between the shrine and the settlement (Scott 2009), while Great Chesterford, Essex, produced 39 pins and Lydney Park, Gloucestershire, 30 pins (A Smith 2001, 196 and 201). Pins are generally believed to have related to the healing functions of the cults at these sites (*ibid*, 155).

Catalogue of worked bone objects

(Fig 151)

1. Pin, plain conical head (tip of shank missing). SF 18359, context 11415, L97 mm (Crummy type 1). Early Roman.
2. Pin, three transverse grooves below conical head (tip of shank missing). SF 18755, context 19074, L 112 mm. (Crummy type 2). Mid-Roman.
3. Pin, more or less spherical head. Lower half of head sem-icircular/elliptical, upper half slightly conical. Shank slightly swollen, tip missing. SF 15934, context 16290, L 92 mm. (Crummy type 3). Late Roman.
4. Pin, more or less spherical head. As no 3. SF 15865, context 12411, L 84 mm. (Crummy type 3). Late Roman.
5. Pin, globular head. SF 15985, context 16863, L 73 mm (Crummy type 3A). Late Roman.
6. Pin, faceted cuboid head, slightly swollen shank. SF 15650, context 12378, L 68 mm. (Crummy type 4). Late Roman.
7. Pin. Head has two reels and narrow bead below. Shank swollen, tip missing. SF 15892, context 12555, L 70 mm (Crummy type 6). Late Roman.

8. Peg, small, crudely worked. Head bulbous, shank straight, tip missing. Rough knife cuts visible on head and shank. Possibly a pin blank. SF 15122, context 10297, L 44 mm. Mid-Roman.
9. Needle, pointed head, rectangular eye with slight groove above and below. SF 15237, context 10251, L 107 mm. (Crummy type 1). Mid-Roman.
10. Needle, pointed head, figure of eight shaped eye. Tip of shank missing. SF 15229, context 11421, L 94 mm. (Crummy type 1). Early Roman.
11. Needle, flat spatulate head, rectangular eye with slight groove above and below. Tip of shank missing. SF 18746, context 17832, L 74 mm. (Crummy type 2). Mid-Roman.
12. Scabbard chape, two pieces, tapering sides, champhered edges, marginal groove running down one edge. Ends slightly shaped, each has two notches. SF 20184 and 20185, contexts 12409 and 12411, L 65 mm. Late Roman.
13. Lathe turned disc, large central perforation. Two fine concentric grooves close to edge on upper surface. Possibly terminal end from composite wood and bone hinge. SF 18754, context 17896, D 29 mm. Roman.
14. Plain counter. Upper surface countersunk with indentation in middle marking lathe centre. SF 15191, context 11415, D 22 mm. (Kenyon type 1). Early Roman.
15. Plain counter, highly polished. Indentation in middle of one face marking lathe centre. SF 15936, context 16296, D 19 mm (Kenyon type 1). Mid-Roman.

Worked Bone Objects from Northfleet

A total of 25 worked bone objects was recovered from the excavations carried out at Northfleet, Ebbsfleet Sports Ground (ARC EBB 01). The assemblage includes a wide variety of objects dating from the Roman and Saxon periods.

The Assemblage

Pins

Nine pins (or fragments) were recovered from Roman and Saxon contexts. Colchester type 1 and type 3 pins (Crummy 1983) have been identified. Two near complete examples of type 1 were recovered from contexts 10060 (dark organic layer) and 10875 (tertiary fill of a possible quarry pit). The first (SF 10097) is a slender example with a sharply pointed conical head, the second (SF 13418) has a flatter more rounded head; both are highly polished. A complete example of a type 3 pin (SF 30908) was recovered from context 3971013 (primary fill of SFB 3971016). It has a crudely cut flattened spherical head with visible rough knife marks, the shank is short (66 mm) but displays the characteristic swelling. Two other type 3 mid-shank fragments (SF 11551) were recovered from contexts 10290 and 10415 (deliberate backfill). Three tip fragments (SFs 11102, 11685, and 13508 (which could come from any type of pin)), were recovered from contexts 10272 (backfill of SFB 10271), 15170 (fill of beam-slot 15147), and 10772. SF 11685 is stained green, probably by vegetable dye (Crummy 1983, 20). SF 13433, from context 10140 (fill of 15142) has a distorted head and a crudely worked shank, the upper part of which is not rounded off but retains flat faces. This is obviously an unfinished piece and implies manufacture on or near to the site.

Bracelet

A section from a plain bone bracelet/armlet was recovered from context 15768 (fill of quarry pit 15766). The curved fragment has a flattened oval section. A surviving terminal is cut straight and there is an iron rivet through it. According to Clarke's (1979, 313–5) bracelet typology Lankhills this is a type 2 (plain terminals joined with a plain cylindrical sheath, each end fixed by a single iron rivet) of 4th century date.

Antler tine fragments

Three fragments of antler came from contexts 19042 (foreshore of the eastern wetlands), 10402 (demolition layer), and 11663 (alluvial layer). The first is a large tine from a red deer antler, sawn at the base with rough knife cut marks along it; much of the outer surface survives. The second (SF 11539) is smaller, the outer surface has been removed, and the tine is smoothed and polished, the base is partially cut through. The third (SF 11719) is a rectangular sheet cut from a large tine.

Disc

A perforated circular disc (SF 11790) with a chamfered edge was recovered from context 12618 (finds reference). It has been cut from a red deer antler, the upper and lower faces are flat, and there are two incised grooves running around the edge. It is possibly a spindle whorl as it has a perforation through the centre, but may also be a decoration from a box or chest.

Handle

A simple handle for a whittle tang implement (SF 11733) made from a sheep metatarsal comes from context 12212. The distal end is intact but the proximal end has been removed. The cut end is rounded and the shaft is highly polished along its entire length.

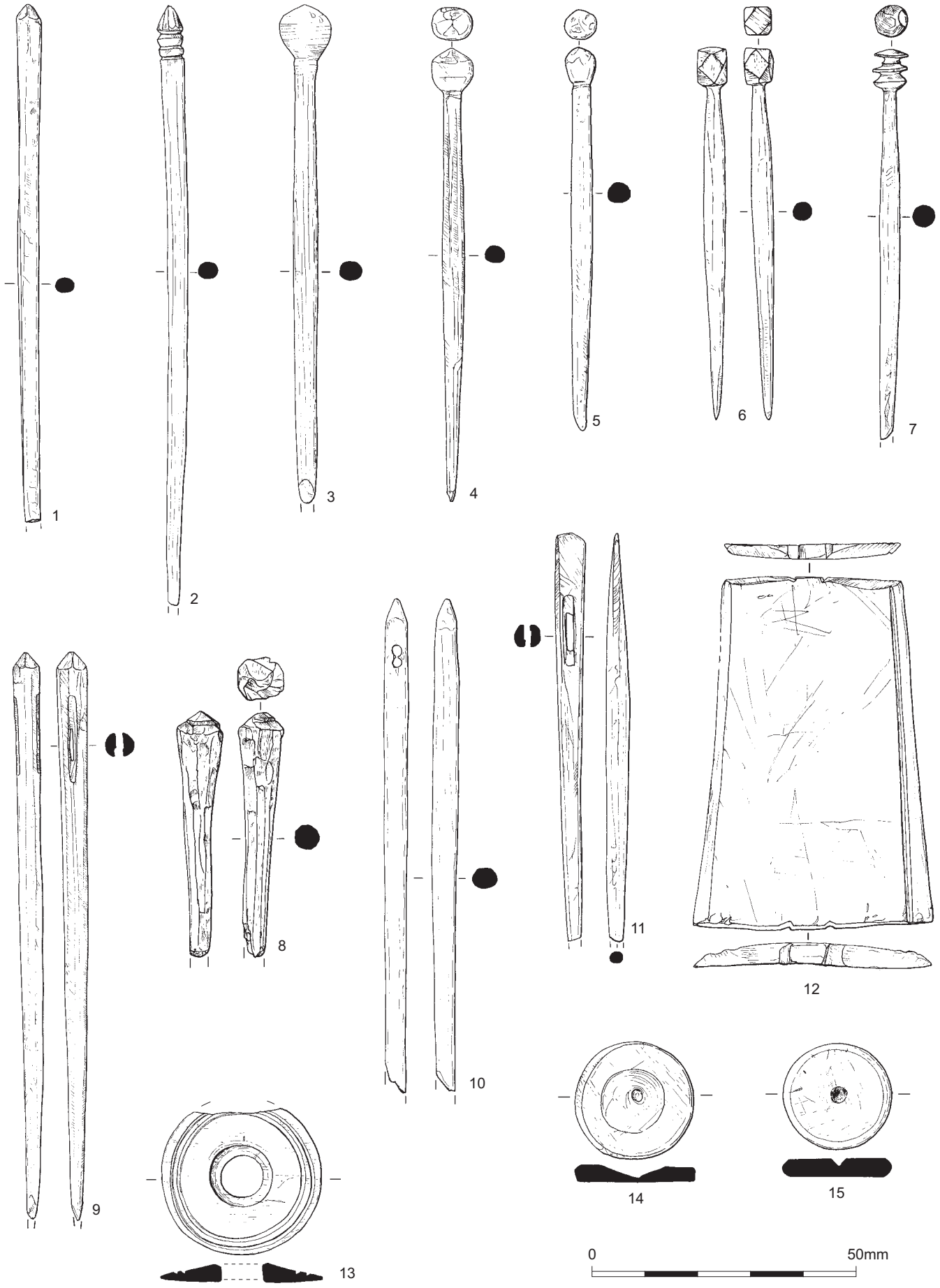


Figure 151 Springhead: Roadside Settlement worked bone 1–15

Awl

An awl (SF 20937) made from a splinter from a sheep/goat metapodial was recovered from context 20212. It has a long needle like point that is rounded in section. The whole object is highly polished.

Discussion

Eight objects were recovered from Roman contexts. They comprise four hairpins/fragments, a bracelet fragment, antler tine fragments, and a worked antler disc. The two complete hairpins are both examples of type 1 dating from the late 1st–2nd centuries. There is also a single shank fragment that could also be from this early type. The fourth pin is the unfinished piece. The bracelet fragment is of a type in current use in the 4th century.

Three type 3 pins (one complete and two fragmentary) with the characteristic swollen shank and dated 2nd–4th centuries were recovered from Saxon contexts. The unstratified objects included an awl, a handle, and a pin. The slender awl with its needle like point is probably Iron Age in date. The pin fragment has a swollen shank of type 3, late Roman in date.

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by Susan Vaughan

Illustrations are denoted by page numbers in *italics* or by *illus* where figures are scattered throughout the text. Places are in Kent unless indicated otherwise.

This volume, the second of four, presents specialist reports on the Late Iron Age and Roman artefacts recovered from Springhead and Northfleet.

These include over 2 tonnes of pottery, 1756 coins and tokens, over 2500 other metal small finds (many possibly votive objects recovered from the Ebbsfleet at Springhead) and 3000 nails. The metal finds include items of personal adornment and dress, household utensils and furniture, objects for weighing and measuring, pieces of toilet or medical equipment, tools associated with manufacture and agriculture, military equipment, and religious objects, including two lead *Fortuna* figurines. Quantities of iron slag, ceramic building material, wall plaster and woodwork, 95 rotary querns, and at least two pipeclay Venus figurines, along with glass, leather shoes, and objects of bone are also reported.

The finds assemblage from Springhead in particular emphasises the juxtaposition of ritual and domestic life in a small but important roadside settlement (partly reconstructed above) on Watling Street, on the route between the coast and London. Although the main building of the Northfleet villa complex, originally investigated in the early 20th century, was avoided by the route of High Speed 1, high-status finds recovered from elsewhere in the estate, such as a seal-box, marble flooring and fragments of an imported theatrical mask provide further evidence that the villa was occupied by members of the local elite.

Collectively the substantial High Speed 1 finds assemblage helps paint a vivid picture of domestic, economic and religious life, and death, for both town and country dwellers within the Ebbsfleet Valley during the Romano-British period.

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