ADS Supplement – More Buildings Facing the Palace

(Sussex Archaeological Collections 144)

Part 2 – building materials

Building Stone – by David Bone (fig.65)

Brief descriptions of the stones

Mixen: a foraminiferal limestone from the offshore reef at Selsey. None of the specimens found in this excavation support a popular hypothesis that the Mixen was actively quarried. Many of the pieces appeared to be waterworn, some with marine borings and one piece with a barnacle attachment, but all suggesting collection from the foreshore or intertidal outcrop.

Malmstone (Upper Greensand, Cretaceous): pale grey, calcareous, glauconitic sandstone from the northern foot of the South Downs escarpment. It is noticeably less dense and lighter in weight than the other building stones.

Hythe Formation sandstone: yellow/brown non-calcareous sandstone from the Lower Cretaceous outcrop in the Midhurst to Petworth area to the north of the South Downs.

Sandstone: various non-calcareous, glauconitic sandstones that appear to have a variety of sources that could include areas such as Dorset, the Isle of Wight or Kent. These could include Tertiary (Eocene), Cretaceous (Upper & Lower Greensand), or Jurassic sources.

Chalk: a white chalk (Upper Cretaceous), probably of local origin.

Bognor Rock: calcareous sandstone (Eocene, Tertiary), comprising three pieces of thinly bedded rubble of a type that occurs within Chichester Harbour and adjacent areas. One substantial block, with many fossil *Glycymeris brevirostris*, is typical of the Bognor Rock reef that outcrops on the foreshore at Bognor.

Erratic pebbles: these are often recovered from excavations as they appear different from the usual mix of flint and building stone. Erratics are quite common in the beaches and Quaternary sediments around the area and range in size from small pebbles to boulders weighing several tonnes. Brought into the area by drifting ice during the Ice Age, their origins have yet to be identified but suggestions principally include Brittany, the Channel Islands and south-west England. The erratics found during these excavations are all pebbles that would have been collected with local flint pebbles during building works. Examples include a siltstone, chert, two limestones and an unidentified igneous rock. There appears to be no reason to suggest the alternative theory of ship's ballast to account for these, especially as so few specimens are represented.

Tufa: two small fragments, origin indeterminate.

The ornamental stones

Purbeck marble: a number of small fragments of worked stone and rubble that may have broken off larger ornamental pieces. One large slab was, unfortunately, not from a dateable context.

Marbles: three small fragments of different polished foreign marbles.

Hard, white chalk: found as *opus sectile.* Generally pieces of a hard, white variety that may have been imported from further afield or may be of local origin (e.g. Dell Quay in Chichester Harbour is a possibility, where there is a small outcrop of hard chalk).

Other stones

Calcite crystals: three small pieces of crystal masses of indeterminate origin.

Fossil belemnite: indeterminate fragment that may have simply fallen out of a block of Chalk and may not be of any great significance.

Red mudstone: recorded in Cunliffe (1971) as foreign, probably Mediterranean origin but recent work by Mike Fulford (pers. comm.) suggests that it may actually be burnt Kimmeridge Clay from Dorset. (Allen, J. R L**.** & Fulford, M. G**.** 2004)

Yellow/brown ochre – two pieces from late Roman/post Roman context that may have been used a colouring material.

General observations

Pieces of mortar and fired ceramic, included in the stone specimens, have been excluded from this report. Similarly the occasional flint has been excluded. It is assumed that flints were common throughout the excavation and that the few examples included in the stone specimens were mistakenly believed to be something different.

Some specimens labelled by excavators as "worked stone", including a number of small finds, were quite clearly natural stone fractures and these specimens should be classified as simple building stones.

🕮 Table 51: Stone samples by context (see separate spreadsheet)

Phase CA1

- **Early ditch silts:** only two pieces of stone recorded, both of which are ubiquitous sandstones with one from the Hythe Formation.

Phase CA2

- **Occupation?:** no stone specimens.

Phase CB

- **Early ditch capping:** one small piece of sandstone only.

Phase CC1

- **Above early ditch:** a large piece of red mudstone and a fragment of fossil belemnite. No building stones.
- **Early gully or pit:** two pieces of Hythe Formation sandstone, the first true indication of the presence of building stone but may still be contamination from higher levels.
- **CC1 postholes:** only four specimens comprising two sandstones (one Hythe Formation), one piece of chalk, and one small calcite crystal mass. The latter is probably better recorded as a small find as it is not a building stone.
- **First phase gullies:** the first significant indication of the presence of building stone, with three pieces of Hythe Formation, one Mixen and one piece of chalk.

Phase CC2

- **Big circular pit:** one piece of Hythe Formation only.
- **Timber building:** two pieces of Hythe Formation, one piece of Mixen.
- Second phase gullies: no stone specimens.

Phase CC3

- **Third phase gullies:** no stone specimens.

Phase CD

- **Northern pits:** three pieces of stone. One is a piece of malmstone, which is recorded as a bifacial tile but there appears to be no real evidence of working. One specimen is a large block of Bognor Rock of the type that occurs in the foreshore reef at Bognor. The other specimen is a small fragment of Purbeck marble.
- **Stone spreads:** 41 pieces of stone (excluding several pieces of flint), predominantly comprising Mixen and Hythe Formation sandstone (17 and 18 pieces, respectively). Other specimens include glauconitic sandstones, Bognor Rock (Chichester Harbour type) and erratic pebbles.
- **Midden; oyster gully:** two pieces of sandstone and one piece of Mixen.
- **Above timber building:** 28 pieces of stone, predominantly comprising Mixen, malmstone and Hythe Formation sandstone (11, 7 and 5 pieces, respectively). Other specimens include glauconitic sandstones, Bognor Rock (Chichester Harbour type) and erratic pebbles. This is the first significant appearance of malmstone in the building stone record.
- **General southern spreads:** 17 pieces of stone (excluding fired ceramic fragments and flint), predominantly comprising Mixen, malmstone and Hythe Formation sandstone (5, 4 and 2 pieces, respectively). Other specimens include two pieces of chalk, two pieces of glauconitic sandstone, one piece of tufa and one erratic pebble.

Phase CE

- **Rubbish pit:** no building stone.
- **Under building 4:** one piece of Hythe Formation sandstone only.

Phase CF

- **Ground associated with building 4:** one piece of malmstone, one piece of Mixen.
- **Tiles and gully:** no building stone.

- **Mostly flint postholes:** six specimens comprising two malmstone, one Hythe Formation sandstone, one Mixen, one glauconitic sandstone and one piece of chalk.
- **Building 4:** one piece of malmstone only.

Phase CG

- **Robbing of Building 4:** one piece of malmstone only.

Phase CH

- **Mole drain:** no stone specimens.

Late Roman / post Roman

Only 19 actual building stone specimens are recorded, comprising a similar mix of materials to that from the phased contexts. The only notable additions are:

- One piece of a small calcite crystal mass.
- Four pieces of red mudstone.
- Two pieces of orange-brown ochre.
- One small piece of tufa.
- One small piece of Lavant stone. This phosphatic chalk is well known from medieval contexts, with some use recorded from 3rd/4th C contexts in the Chilgrove valley villas and Bignor. It is not known from Fishbourne and it is interesting to consider whether this piece is mediaeval or represents the first known piece in Roman context from Fishbourne.

🕮 Small finds of stone by context (see separate spreadsheet)

Phases CA to CB

- **Early ditch silts:** two flint pebbles from context CA1, both recorded as '?smoother'. Certainly the flat surfaces appear to show polish and they may well have been used in this fashion.

Phase CA2

- **Occupation?:** no specimens.

Phase CB

- **Early ditch capping:** no specimens.

Phase CC1

- **Above early ditch:** no specimens.
- **Early gully or pit:** One piece of Mixen (building stone) and three pieces of dark glauconitic sandstone, the latter forming a piece of probable column base.
- **CC1 postholes:** one very small fragment of slate.
- **First phase gullies:** no specimens.

Phase CC2

- **All contexts:** no specimens.

Phase CC3

- **All contexts:** no specimens.

Phase CD

- **Northern pits:** no specimens.
- **Stone spreads:** three opus sectile pieces in hard white chalk, one sandstone quern fragment.
- **Midden; oyster gully:** one piece of 'concrete', one piece of Mixen. The latter is recorded as worked but the surfaces appear to be natural fractures.

- **Above timber building:** one piece of malmstone (building stone), three fragments of Purbeck marble (of which two are dressed), a small crystal mass of calcite and a stone bead made from a fossil *Porosphaera* sponge from the Chalk.
- **General southern spreads:** two pieces of Purbeck marble (one piece dressed), one piece of imported grey marble and opus sectile in hard, white chalk.

Phase CE

- **Rubbish pit:** many small fragments of grey lava, recorded as a 'quern stone'.
- **Under building 4:** Purbeck marble stone slab.

Phase CF

- **Ground associated with building 4:** one fragment of polished foreign marble.
- **Tiles and gully:** no specimens
- **Mostly flint postholes:** one piece of Hythe Formation sandstone (building stone) and one fragment of Purbeck marble.
- **Building 4:** one piece of Mixen (building stone), recorded as worked but fractured surfaces are natural.

Phase CG

- **Robbing of building 4:** no specimens.

Phase CH

- **Mole drain:** no specimens.

Late Roman / post Roman

A few pieces of Mixen, malmstone and Hythe Formation sandstone are recorded as worked but fractured surfaces are natural breakages in pieces used as building stone. Two pieces of Purbeck marble (one with evidence of being worked) and one fragment of polished foreign marble and an opus sectile in hard, white chalk are examples of ornamental stone. Three small fragments of slate also occur.

Small finds conclusions:

Phases CA1 to CA2: two flint pebbles that may have been used as smoothing stones. No other specimens.

Phase CB: no specimens

Phases CC1 to CC3: the only item of note is a discarded column base of dark glauconitic sandstone in context CC1.

Phase CD: some building stones are recorded as small finds but there is also evidence of ornamental stone use (foreign and Purbeck marble and opus sectile in chalk). These occur particularly in the 'above timber building' and 'general southern spreads' contexts.

Phase CE: A couple of small finds comprising a quern stone fragment and a large slab of Purbeck marble. No other finds.

Phase CF: a couple of building stones are recorded as small finds but there is also evidence of ornamental stones (foreign and Purbeck marble).

Phases CG to CH: no specimens.

Late Roman /post Roman: a similar mix of building stone to that in the earlier phases, the pieces of foreign and Purbeck marble and the opus sectile in white chalk all suggest Roman material.

📖 - Two Tables (51,52) giving details of 166 stone samples and 44 stone small finds.

Ceramic Brick and Tile – by Derek Turner

Tegulae

Of the retained material, 126.819kgs (12.35%) was identified as roof tile and is referred to as *tegula* throughout the report. Firm identification was made on the basis of one or more of the following features -

(a) a flange or evidence that a flange had been present
(b) a finger groove consonant with the grooving at the base of a flange
(c) a cut-out
(d) a characteristic 'signature' in the form of a semicircle or concentric semicircles.

Fragments of tile with no diagnostic features are listed as brick.

The spread of tegulae thicknesses recorded from confirmed fragments varies from 17mm (C1005) to 37mm (C1008) and 39mm (C1066); the 17 and 39mm fragments were confirmed by identifiable flanges while the 37mm fragment had an identifiable flange and cut-out. J-P Adam (1994) has already pointed out that there is no standardisation of Roman roof tile; it is not safe to attempt to classify fragments as tegula on the basis of thickness alone. There will be a significant quantity of unidentifiable roof tile fragments in the brick and discarded material.

Flanges. In 1995 a record was made of 18 flange variants; these are shown in fig.35. In subsequent years some of the variants, such as O and P, have not been recorded while S may simply be an infrequent variant of R. Some variants – in particular type A appear to have been finished with a tool – possibly a simple wooden straight edge or knife – while others like B and H appear to have been smoothed off with a hand stroke. The B form and B with an H type lip are the most common forms noted.

Flange type	Number	Percentage (of all)	Percentage (of identified)
A	19	3.36	4.87
A variants	27	4.77	6.92
B	231	40.81	59.23
B variants	53	9.36	13.59
C	6	1.06	1.54
C variants	4	0.71	1.03
D	14	2.47	3.59
D variants	4	0.71	1.03
E	2	0.35	0.51
F	8	1.41	2.05
F variant	2	0.35	0.51
G	3	0.53	0.77
G variant	1	0.18	0.26
H	8	1.41	2.05
J	1	0.18	0.26
K variant	1	0.18	0.26
L variant	1	0.18	0.26

M	1	0.18	0.26
M variant	1	0.18	0.26
Q	3	0.53	0.77
Unidentifiable	176	31.09	0.00
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	566	100	100

Table 53: Tile flanges: numbers and percentages

Cut-outs. Of the seven types of cut-out shown in fig.35, types D and F are uncommon. Type G, made with a knife, is the commonest. While the evidence of the tiles found at Fishbourne does not negate Rook's (McWhirr 295-301) suggestion that tegula could be produced using a fairly sophisticated mould and 'cheese cutter' technique, it is clear that only the most basic tools/formers were used for the Palace tiles.

Cut-out	Number	Percentage
A	5	7.46
A variant	1	1.49
B	2	2.99
B variant	2	2.99
C	1	1.49
D	4	5.97
E	2	2.99
F	1	1.49
G	43	64.18
G variant	5	7.46
Unidentifiable	1	1.49
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	67	100

Table 54: Tile cut-outs: number and percentages

Discussion. A total of 566 fragments were categorised as tegula; 5 of the thinner (less than 19mm) fragments are possibly half box flue tile but some similar thickness fragments carried both flange and cut-outs so it is not safe to automatically dismiss thinner section flanged fragments. In the 2002 sample the average thickness was 24.84mm (δn – 5.52mm) with an average flange height (measured from the bottom surface) of 46.5mm. (δn – 10.25mm). The average thickness compares well with the 1995-9 sample but the average flange height is some 6mm less – this latter is due to the fact that 221 of the flange fragments were truncated and therefore 'under sized'. When the incomplete flanges were removed from the calculation the average became 51.86mm (δn – 7.78) with a noticeable clustering (70.23% of the total) between 48 – 58mm values.

In so far as it is safe or sensible to talk about 'standard' *tegulae* it seems that a typical Fishbourne roof tile is likely to be 25mm thick with a 52mm (measured from the tile base) high, type B, 'hand' finished flange and a type G, knife cut, cut-out.

Imbrex

A total of 45.215kgs of confirmed imbrex material was examined. A small sandy fragment from C1011 had a shallow longitudinal groove but there were no diagnostic features on any of the identified fragments.

Brick

For convenience brick material has been once more categorised in thickness bands of
(i) less than 28mm,
(ii) 29-32mm,
(iii) 33-37mm,
(iv) 38-40mm
while tile fragments of thickness greater than 40mm or having specific diagnostic features are individually listed. The thickness range is from 12mm to 78mm (14 to 82mm in 1995-9).

Some of the thinner tile fragments will be unidentifiable *opus spicatum, tegula, imbrex ,*flue tile, string course and wall bonding fragments. In the range c.30 – 48mm the lower end may represent *bessales* or *lydia* (hypocaust *pilae* tiles and wall bonding bricks respectively), the mid range may be *pedales* (*pila* capping tiles) and the upper range *sesquipedales* and *bipedales* (extra large tiles used to bridge hypocaust *pilae*). A complete *pedalis* (295 x 285 x 45mm) was found in Context 1066.

All fragments (26 in total) of *tegula mammata* have been individually reported. Where possible the *mammae* have been classified as one of five local categories (A1-3, B1, B2) and one of 8 positions (A-H) on the tile; this is however somewhat imprecise and of limited diagnostic value. Of more interest are the occurrences of *mammae* overlying combing (C1011 and SF 15898 from C1030). This has been noted on other fragments from excavations in the Fishbourne area

Hobnail impressions and a thumbprint were noted on SF 18151 (C1030) and a dog paw print on SF 18169. Several other fragments carried fingerprints; one fragment from C1098 carried both fingerprints and an unidentified paw print. A paw print was noted on SF 18187 (C1119). There is a possible tally mark on SF 18188, a grogged fragment found in C1119.

At least three fragments of underfired brick were found; the example from C1066 would have been unfit for its intended purpose and was probably a discard. This strengthens the probability that there was at least one brick/tile kiln on site.

Flue Tile

Positively identified flue tile represented 1.45% of the ceramic building material (CBM) retained. A significant quantity of box flue tile fragments is likely to be 'lost' in the unidentifiable thinner section bi-facials.

Positive identification was normally made on the basis of 'keying' (roller impressed, combed or scored) but it is possible to identify double box certainly, box and half-box tiles probably, even when keying is not present. Thermal stress is reduced by 'filling' the clay and one would expect flue tile in the Fishbourne area to be rather sandy – sand being a readily available filler. It is not, however, sensible to reverse the argument and assume that sandy thinner section CBM is necessarily flue tile or even tile subject to *in situ* thermal.stress.

Roller impressed flue tile was found in the following six contexts:

Context		SF No
1007		14514
1010		14918
1011		14371, 14926, 14929, 14950, 18081
1044		16029
1049	Robber trench	15852
1100		16956

The roller impressed tile SF 14371 from C1011 was noticeably fragmented and poor quality – possibly a waster. This would suggest that flue tile was being fired on site.

All roller impressed tile has been sent for specialist examination by E. W. Black and recording in the national data-base where appropriate.

A number of flue tile fragments were identified as half-box type – of the 17 found 13 were thought to be half box and 4 possibly fragmented box flue tile. This total may be an under estimate, for example three of the 'A' flange thin *tegulae* were noted as suspect box flue. As the half-box tile can be made on an open former like roof tile it would be possible for them to show a finger groove at the flange angle. Full box tiles formed round a squared timber baulk of timber can show longitudinal marking but not finger grooving.

Cunliffe's excavation had apparently produced no examples of the early half-box tile (Cunliffe 1971b, 45-60); this was noted by Black (1987, 12). It is possible that the type was present but not recognised and retained. Half-box flue material was found in:

Context	Fragments
1005	3
1007	4
1010	1
1011	2
1030	2
1066	1
1083	1

1098	1
1119	2

Four fragments were identified as double box flue tiles (*ie* Cunliffe's 'Box tiles with central divider' (Cunliffe 1971b, 45)).

A large fragment of combed tile (SF16732) was found in Context 1066; four edges were present giving an overall dimension of 530 x 347 x 29mm. The thickness suggests it was a re-used wall tile.

Water pipe

None of the 18 fragments of water pipe were found *in situ.* Cunliffe (1971b, 44) places water pipe in the Flavian period and they appear as primary structures in the late first/early second centuries but could have been re-used at any subsequent period.

Other

The 'Other' category contains a number of items of interest including *opus spicatum.*

Opus spicatum floor tiles are associated with first period levels (Cunliffe (1971b, 44). In total 40 complete or fragments of, *opus spicatum* tiles were identified. The most interesting were the seven examples found in association with, and packing, post-hole C1191. Of the seven, four were complete tiles, one had lost only one corner and another was a half-tile. Examination in the field indicated that at least one of the tiles was Dell Quay fabric allowing us to suggest that the tilery in the Copperas/Dell Quay area (Rudling, 1987) was in production during the second half of the first century. Forty of these small tiles (either intact or as recognisable substantial fragments) were found in the following contexts:

Context		Fragments
1001		2
1005		3
1006		1
1010		2
1011		4
1012		1
1023		2
1024		3
1026		4
1028		5
1029		1
1044		1
1076		2
1112		1
1123	Gully	1
1191	Post hole	7

Fabric

There is nothing significant to add to the comments on fabric in the 1995-9 report. Sand is the most readily available filler and some fragments were grogged.

Discussion

It is normally difficult to use tile or brick to provide dating evidence. There are exceptions of course – thin walled roller impressed flue tile is one and *opus spicatum* another (in Fishbourne contexts). A wooden roller stamp has a finite life and identifiable damage patterns; it is possible to closely date some patterns and also trace the movements of itinerant tilers from site to site.

At Fishbourne *opus spicatum* (small 'herring-bone' tile) has only been found in first period levels associated with the proto-palace bath suite (*c*. AD 65). Herring-bone tiles are also associated with Room II (probably the *frigidarium* of the bath suite) in Wigginholt Roman Villa (Winbolt and Goodchild, 1937, 21 – 22); the floor in this room was probably laid in the early second century (*c.* AD 125) and survived the whole life of the villa. Herringbone floors have also been found at Wood Street (London), Silchester, Wroxeter, Ashstead and Verulam

The deposition of flue tile and herring-bone tiles is probably due to the early third period (early second century) relocation of the bath suite from the south-east to north-east corner of the palace. Some flue tile appears to have been re-used in the new bath suite but not the small tiles.

Three contexts (1005, 1010 and 1011) contained both *opus spicatum* and half-box tile. These are large 5m square contexts; none of the smaller contexts contained both. Nevertheless it would be reasonable to conclude that half-box flue tiles were used in the 1st Phase bath suite.

Given that there was less interest in unmarked Roman tile at the time of the first Fishbourne excavation it is not surprising that there is no record of half-box flue tile among the finds. However its presence in what appears to be destruction debris from the phase 1C bath suite affects Black's comment (Black, 1987, 12) about the absolute dating of the first century villas in Sussex depending on the date of that phase. Half-box tiles were used in the legionary baths at Exeter as early as *c.* 60-65 AD (Black, 1987, 12), a date consonant with Cunliffe's dating of phase 1C.

Post-hole C1191 was tile packed and unusual due to the high proportion of herring-bone tiles in the packing. The tiles appeared minimally damaged; it is possible that they were laid on edge, close fitting, and dry mortar was brushed into the interstices. Over several excavations enough of these small tiles have been found with traces of mortar adherent to indicate that they had been used rather than being a builder's stock-pile. The original source is unlikely to be other than the phase 1C bath suite. On balance they seem likely to be destruction debris and suggest the post-hole dates from no earlier than the early Second Century when the North Wing baths were constructed.

🕮 Table 55 – Weight of ceramic brick and tile by context

Relief-patterned tile – by Ernest Black

i) Context 1007 SF 14514 70 x 50 x 21 mm. Very abraded surface. Probably die 40.

ii) Context 1010 SF 14918 85 x 59 x 19 mm. Die 48.

iii) Context 1011 SF 14371 Seven fragments with relief-patterned keying surviving on one surface; four scraps with incomplete thickness and no keying surviving. The largest fragment measures 82 x 54 x 20 mm. One fragment has slight traces of *opus signinum* on the keyed surface. The unkeyed (inner) faces of the fragments are burnt. Two fragments join each other and a third joins SF 14950 and SF 14929, both also from context 1011. Die 48.

iv) Context 1011 SF 14926 66 x 50 x 18 mm. Burnt on unkeyed (inner) face. Die 48.

v) Context 1011 SF 14929 84 x 50 x 21 mm. Burnt on unkeyed (inner) face. Die 48. This fragment joins SF 14950 and one fragment of SF 14371, both also from context 1011.

vi) Context 1011 SF 14950 61 x 39 x 21 mm. Burnt on unkeyed (inner) face. This fragment joins SF 14929 and one fragment of SF 14371, both also from context 1011. Die 48.

vii) Context 1011 SF 18081 70 x 40 x 17 mm. This fragment joins SF 15852 from context 1049. Die 48.

viii) Context 1044 SF 16029 81 x 49 x 20mm. Probably die 22.

ix) Context 1049 SF 15852 59 x 59 x 18 mm. This fragment joins SF 18081 from context 1011. Die 48.

x) Context 1100 SF 16959 48 x 39 x 14 mm. Heavily burnt on keyed surface and through the body of the tile. Possibly die 13.

The 2002 assemblage includes two probably fragments of London-Sussex dies (SF 14514 and SF 16029), probably manufactured in the late first/early second century. The majority of fragments are keyed with die 48, associated with the Period 3 baths in the east wing of the palace. These baths were robbed in the last decade of the third century (Cunliffe 1971, 189 and 220) and the occurrence of fragments of relief-patterned box tiles deriving from the baths in late second/early third century contexts in the excavations of 1995-1999 suggests that there may have been alterations at that time. No dies previously unknown at the site are represented in the 2002 assemblage.

Tesserae – by Derek Turner

Table 56a: Tesserae distribution by context

Context	Total	%	White	Red	Black	L. Brown	D. Brown	Grey	Yellow
1001	23	7.1%	8	12	1			2	
1002	4	1.2%	1		3				
1005	8	2.5%	1	6	1				
1006	8	2.5%		7		1			
1007	5	1.5%		2		2	1		
1008	5	1.5%		4			1		
1010	35	10.7%	21	9		4		1	
1011	33	10.1%	24	4		2		3	
1012	45	13.8%	27	7		5	1	5	
1021	1	0.3%	1						
1024	3	0.9%		1		1	1		
1025	9	2.8%		7			2		
1026	7	2.1%		3		1	1	2	
1027	6	1.8%		5		1			
1030	34	10.4%	27	4				2	1
1030.2	2	0.6%	1	1					
1031	13	4.0%	8	3				1	1
1034	3	0.9%	2				1		
1037	4	1.2%	2					2	
1039	7	2.1%	4					3	
1040	16	4.9%	16						
1040.2	2	0.6%	2						
1044	4	1.2%		1		2			1
1049.3	1	0.3%		1					
1057	1	0.3%		1					
1065	6	1.8%				2	4		
1066	1	0.3%		1					
1075	2	0.6%	1	1					
1080	1	0.3%	1						
1081	4	1.2%	3	1					
1082	1	0.3%	1						
1098	13	4.0%	11	1				1	
1098.2	7	2.1%	7						
1100	6	1.8%	2	1				3	
1121.2	1	0.3%				1			
1124.2	1	0.3%				1			
1130	1	0.3%				1			
1134	2	0.6%		1		1			

Total		White	Red	Black	L. Brown	D. Brown	Grey	Yellow
	100.0%							
325		171	84	5	25	12	25	3

100.0%	52.5%	25.8%	1.5%	7.7%	3.7%	7.98%	0.9%

Size

In the main the red *tesserae* were the large red tile-derived cubes associated with corridors and the mosaic borders hidden under wall plaster. Sizes ranged from a small 7 x 7 x 6mm red *tessera* to a large 46 x 38 x 28mm red *tessera.* A rectangular tile fragment (SF 14621) 93 x 40 x 26mm in size may represent a blank from which two 'corridor' *tesserae* might be derived. The size range by colour was as indicated in Table 56b:

Colour	Smallest (mm)	Largest (mm)
White	8 x 5 x 9	15 x 15 x 28
Red	7 x 7 x 6	46 x 38 x 28
Grey	9 x 8 x 6	19 x 18 x 20
Light brown	10 x 10 x 6	18 x 14 x 14
Dark brown	9 x 9 x7	18 x 13 x 26
Black	8 x 8 x10	15 x 15 x 16
Yellow	7 x10 x 13	13 x 12 x 11

Table 56b

The distribution of tesserae by colour and distribution by contexts are shown in figs. 37 and 38.

Material

Chalk (Upper and Lower) gave the whites and yellows (baked). Tile provided most of the red with fragments of *tegula* being noticeable. Soft shaley ironstone gives brown but pot was also used (SF15878) and tabular flint rectangles (SF 14846). Grey-blue is offered by lias limestone; SF 14690 was cut from greensand. Two grey tesserae contained fossil shell imprints (SFs 17314 and 16804).

All glass fragments were reviewed but there is no evidence of glass having been used as a source material. The five black *'tesserae'* appear to have been cut from coal – it may however be significant that four were found in the topsoil/spoil heap and the other in the layer immediately below the topsoil.

Blue Frit – by Susan Clegg, Andrew Cundy and Christopher Dadswell

Background

The first synthetic pigment, known as blue frit, was manufactured by Egyptian artisans during the third millennium BC. Samples of this blue pigment were found in large flat-bottomed containers by Sir Flinders Petrie in the late 1800s in the ancient city of Tel el Amarna in Middle Egypt at a 'factory'site. These samples, the colours of which varied from a dark to a pale blue, were examined in great detail by Spurrell (1895) and consisted of a crystalline compound resulting from the fusion of copper ore, silica and an alkali.

During the first century BC, in the Campanian city of Puteoli (at that time, Rome's primary port) Vestorius introduced from Egypt, and perfected, the technique of manufacturing blue frit (Ling, 1992). According to Vitruvius the procedure involved the mixing of very fine copper filings, finely ground silica and flowers of soda into a water-based paste which was then rolled into small pellets. The pellets were allowed to dry naturally, then placed in earthenware pots and finally placed in an oven and, according to Vitruvius … 'As soon as the copper and sand grow hot and unite under the intensity of the fire, they mutually receive each other's sweat, relinquishing their peculiar qualities, and having lost their properties through the intensity of the fire, they are reduced to a blue colour' (Book VII, 219:1). The resulting blue crystalline compound was coarsely ground before use and applied to damp lime mortar using a variety of different binding materials such as beeswax, walnut and linseed oils.

Blue frit was widely used by the ancient artisans throughout the Roman world to decorate interior walls and has been found on many samples of blue painted wall-plaster from Fishbourne Roman Palace (a fine example being the fragment of a second century AD wall painting of a balcony scene, found in the north wing, and now on display in the Palace's museum).

Materials and Methods

Twelve blue pellets were obtained from the 2002 excavation at Fishbourne Roman Palace, near Chichester, West Sussex. They varied in colour, size, shape and texture. The samples were examined under a MEIJI Techno RZ zoom Stereomicroscope with a fibre-optic light source to study fine detail. All pellets made available for the study were photographed and photomicrographs were subsequently taken at magnifications of up to times 40 using a Nikon Coolpix 950 digital camera. Because the pellets are never homogeneous their colours, identified with use of the Munsell Book of Color (Matte Finish Collection) 1973, should be considered as a guide only.

All samples were analysed using LA-ICP-MS. This technique has a number of distinct advantages over other geochemical analytical methods, including its ability to determine the concentrations of a wide range of elements, low cost, minimal sample damage, rapid turn over, and good precision and accuracy. In addition, when undertaking LA-ICP-MS there is less risk of the sample becoming contaminated

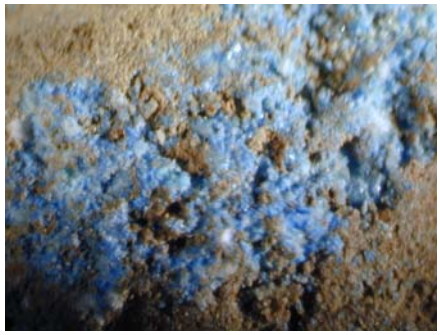
because the sample remains intact within its original matrix throughout the whole procedure. (Speakman & Neff 2005).

Samples were characterised using an Agilent 7500ce ICP-MS equipped with a New Wave Research Merchantek UP-213 Laser Ablation System, operated in scanning mode. Operational parameters were as follows: Argon gas was used throughout at a flow rate of 1·25 litres/min; laser ablation spot size was 10 μm, with a pulse frequency of 10Hz, a scan speed of 10 μm/sec and an energy density of 3J/cm2. Data presented here are qualitative, and intended to show the general elemental composition of the blue frit. Analysis of the pellets is ongoing, and fully quantitative compositional data will be presented in a later paper.

Results

Below are photographs, together with a magnified view, of the pellets found at various sites at Fishbourne Roman Palace during the excavation season of 2002. Beneath each photograph is a printout of the LA-ICP-MS scan obtained for each pellet.

Pellet ID Number: 1005/14174

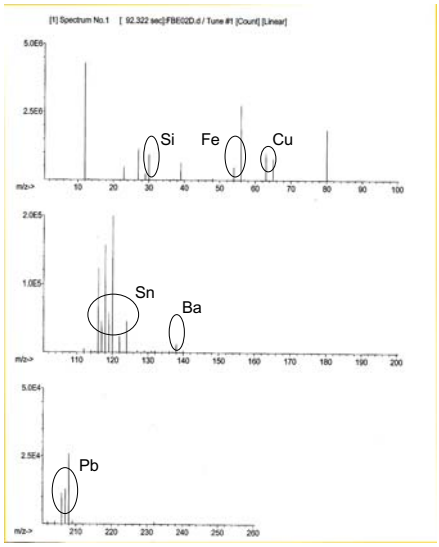


Weight: 1.19 g

Dimensions: 9.5 x 12 x 14 mm

Munsell No: 10 B 8/4

LA-ICP-MS



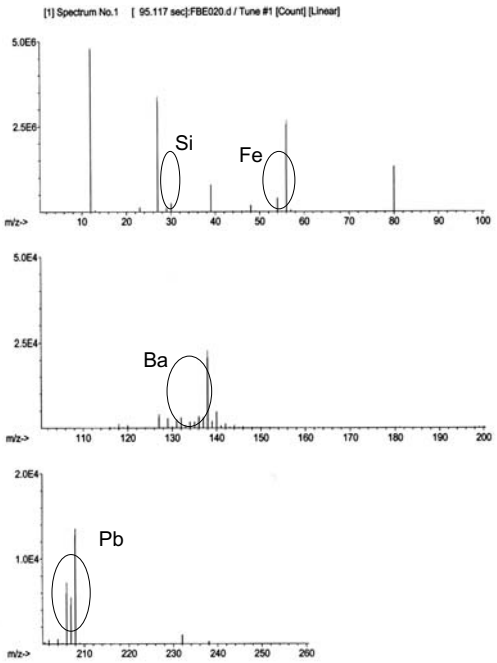
Pellet ID Number: 1005/14454

Weight:0.17 g

Dimensions: 5 x 7 x 8 mm

Munsell No: 10 B 7/4

LA-ICP-MS



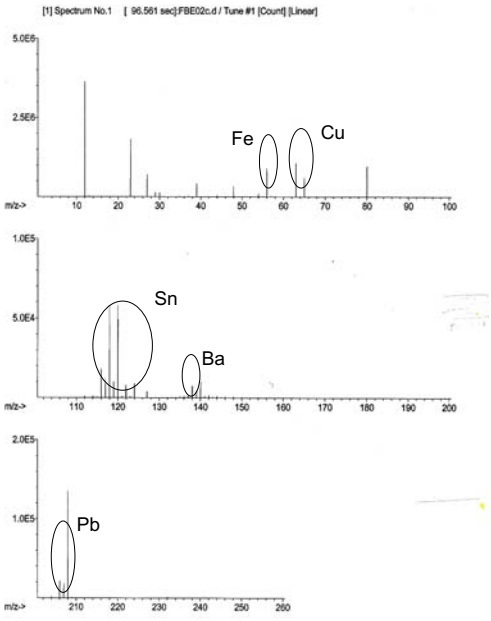
Pellet ID Number: 1005/14448

Weight:0.53 g

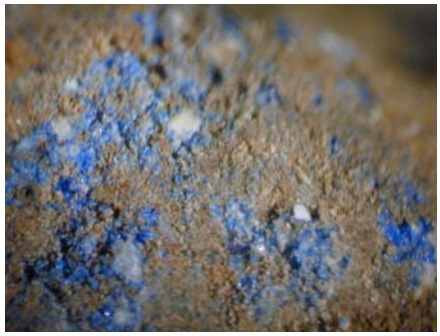
Dimensions: 8 x 8 x 9 mm

Munsell No: 10 B 6/6

LA-ICP-MS



Pellet ID Number: 1006/16512:

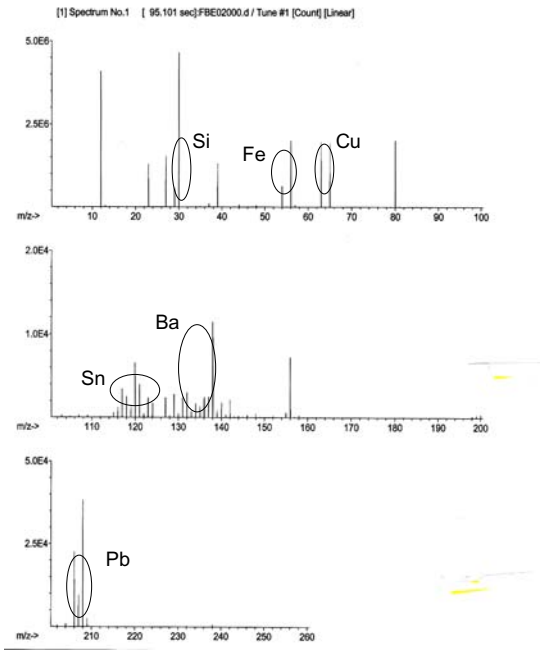


Weight: 2.28 g

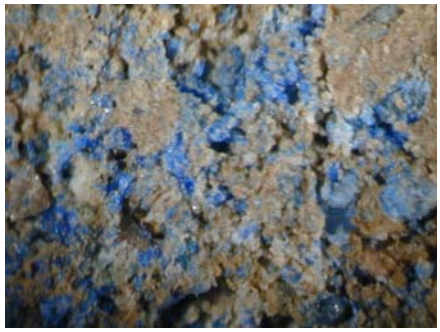
Dimensions: 12 x 13 x 16 mm

Munsell No: 10 B 7/6

LA-IPC-MS



Pellet ID Number: 1010/14932

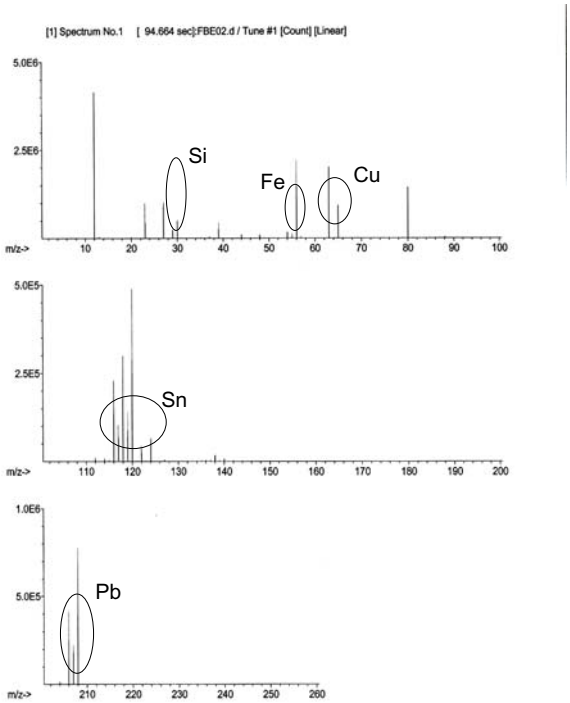


Weight: 1.95 g

Dimensions: 13 x 15 x 18 mm

Munsell No: 10 B 7/4

LA-ICP-MS



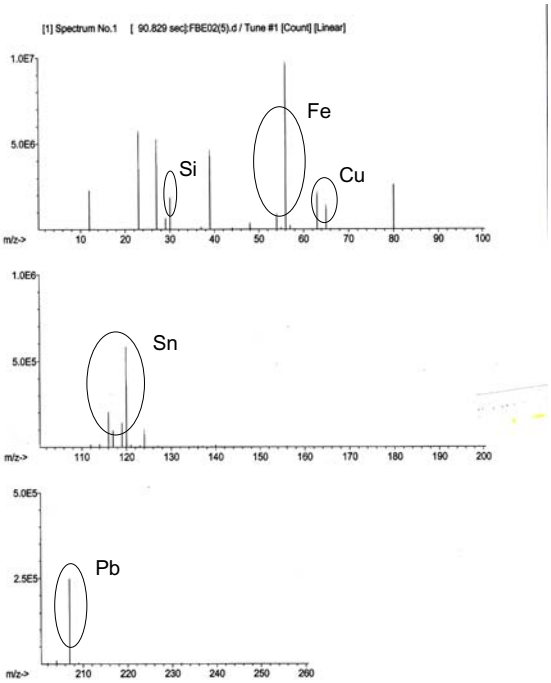
Pellet ID Number: 1013/14376

Weight: 1.52 g

Dimensions: 12 x 13 x 15 mm

Munsell No: 10 B 7/6

LA-ICP-MS



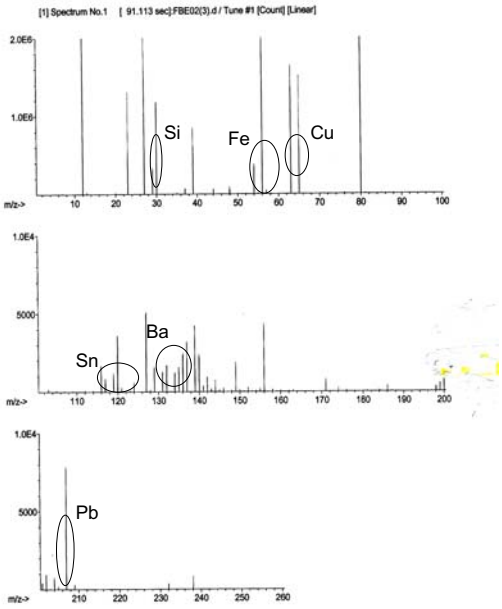
Pellet ID Number: 1024/15353

Weight: 0.71 g

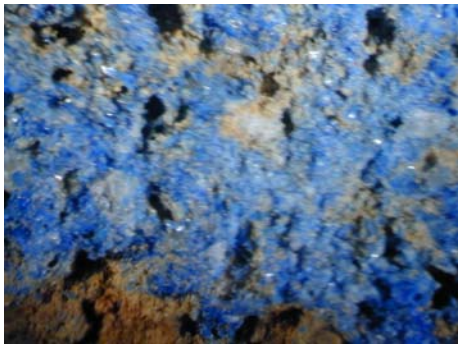
Dimensions: 8 x 10 x 12 mm

Munsell No: 10 B 6/6

LA-ICP-MS



Pellet ID Number: 1029/16203

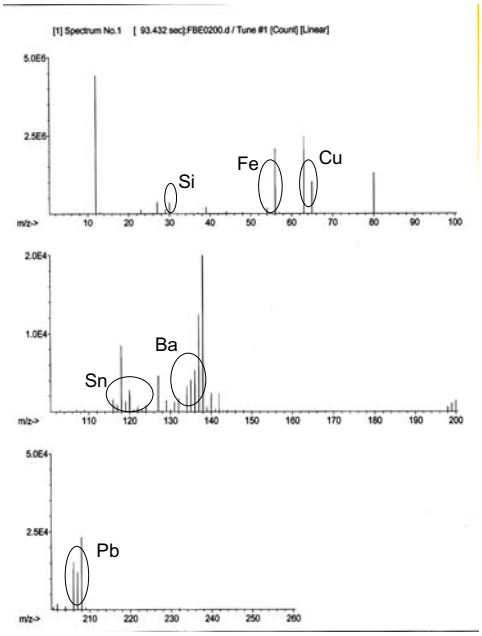


Weight: 1.67 g

Dimensions: 10 x 13 x 17 mm

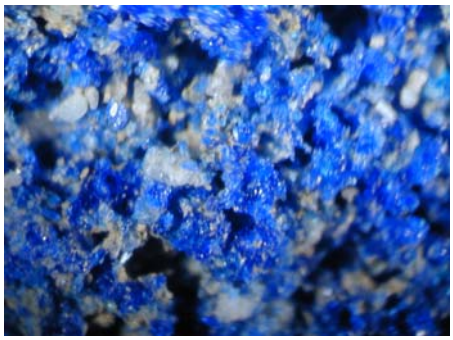
Munsell No: 10 B 6/6

LA-ICP-MS



Pellet ID Number: 1071/17421

(a)

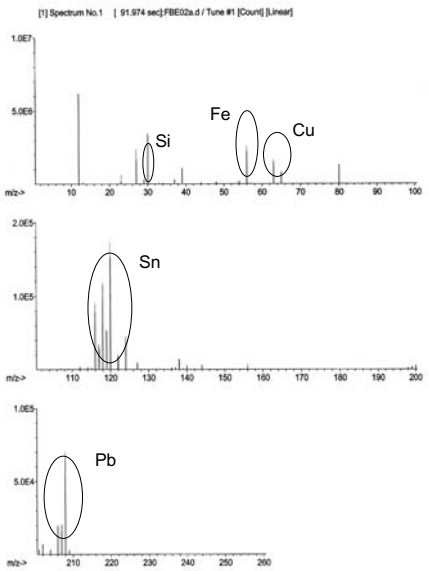


Weight: 12.09 g

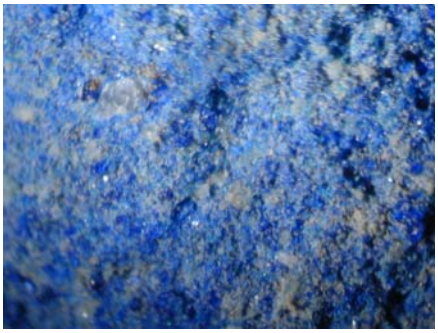
Dimensions: 21 x 26 x 31 mm

Munsell No: 5PB 5/8

LA-ICP-MS



(b)

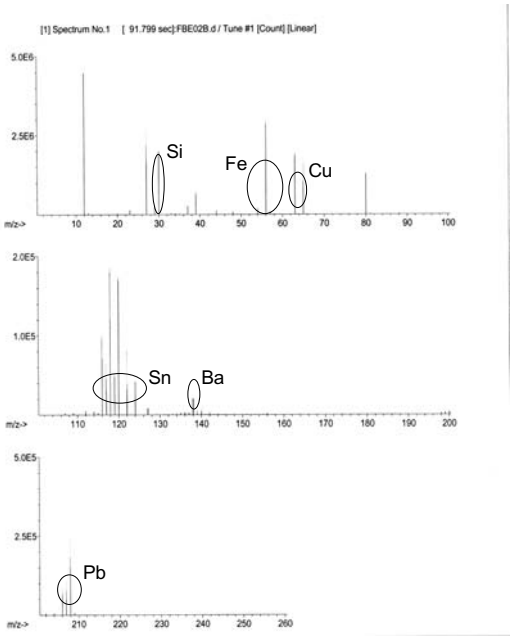


Weight: 17.62 g

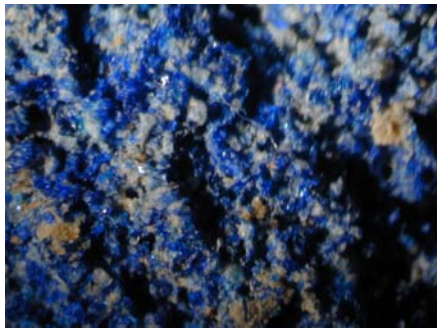
Dimensions: 15 x 32 x 40 mm

Munsell No: 5PB 6/8

LA-ICP-MS



Pellet ID Number: 1139/17463

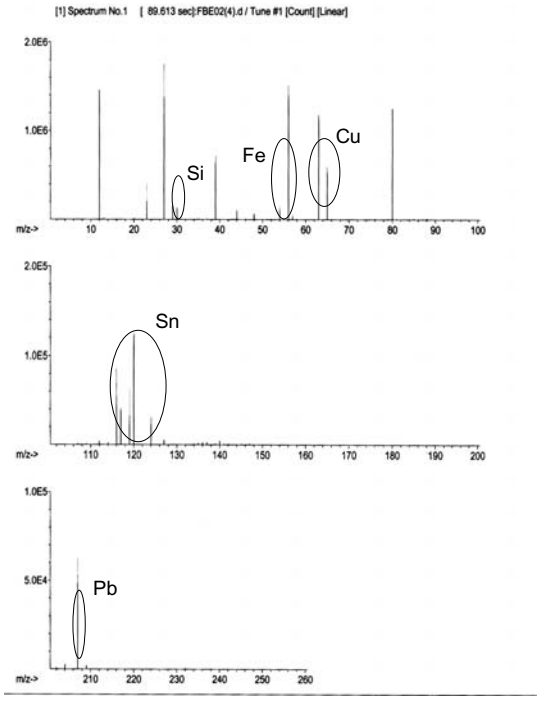


Weight: 0.46 g

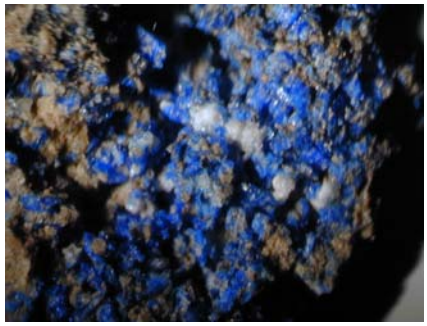
Dimensions: 6 x 11 x 13 mm

Munsell No: 5PB 5/6

LA-ICP-MS



Pellet ID Number: 1145/17632



Weight: 0.95 g

Dimensions (largest piece): 9 x 11 x 12 mm

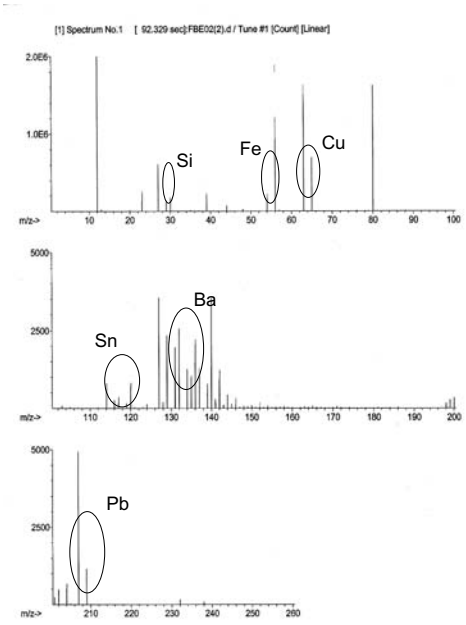
Munsell No: 5PB 3/8

Weight: 0.38 g

Dimensions: (second largest piece): 6 x 9 x 10 mm

Munsell No: 5PB 3/8

LA-ICP-MS



Part 3 – the finds

The coins – by David Rudling

Catalogue of the Roman and Post-Roman coins

This catalogue is arranged by date and also provides context and Small Find (SF) numbers. For a distribution of principal coin finds see fig.40.

a. Roman

All reference numbers with prefix RIC are to be found in the relevant volume of *Roman Imperial Coinage* (eds Mattingly, Sydenham, Sutherland, Carson, Webb, Bruun, Pearce and Kent 1923ff).

i, Republican

Issued by Pub. Crepusius, *c*. 82 BC. Silver denarius. 3.6g.
Obverse: Laureatte head of Apollo right, sceptre over shoulder, control letter C behind, control symbol or letter below chin missing (perhaps off flan).
Reverse: Horseman galloping right and hurling spear, P. CREPVSI in exergue. The control number behind the horseman is missing (worn/off-flan).
Reference: Type as Sydenham (1952) 738a; Crawford (1974) 361/1c.
SF 16686: Context 1081.

ii Imperial

Claudius I, AD 41-54. Ae As. 26 mm. AD 41-50. Worn/corroded.
Obv.: TI CLAVDIVS CAESAR AV]G P M TR P IM[P, bare head left.
Rev.: Minerva advancing right, brandishing javelin and holding round shield on left arm, S-C. in field.
Ref.: RIC 100.
SF 15984: Context 1030.

Another. 25 mm.
SF 16042: Context 1030.

Another. 25 mm.
SF 14578: Context 1011.

Another. 25 mm.
SF 15666: Context 1040.

First century. Illegible As. Possibly Claudius I. 24 mm. Very corroded.
Obv.: Bare head left. Rev.: Illegible.
SF 14011: Context 1002.

Nero, AD 54-68. Ae Sestertius. 33 mm. AD 67. Lugdunum. Issue V.
Obv.: IMP] NERO CAESAR AVG P MAX [TR P P P], laureatte head right.

Rev.: ANNO[NA AVGVSTI] CERES, S.C. Ceres on right, seated left, holding corn-ears, her feet on a stool, facing Annona standing right, between them is a modius on an altar.
Ref.: RIC 569.
SF 17405: Context 1098.

Vespasian, AD 69-79. Denarius. AD 69-71. Rome.
Obv.: IMP CAESAR VESPASIAN AVG, laureatte bust right.
Rev.: COS ITER FORT RED, Fortune standing left, holding rudder and cornucopiae.
Ref.: RIC 4.
SF 16771: Context 1098.

Domitian, AD 81-96. Ae Dupondius. Rome. AD 87-95/96
Obv.: IMP] CAES DOMIT AVG GERM CO[S XIII/XVII CENS PER P P, bust right.
Rev.: F]OR[TVN]AE [AVGVSTI, S.C., Fortuna, draped, standing left, holding rudder in right hand and cornucopiae in left.
Ref.: Type as RIC 349.
SF 16593: Context 1080.

Marcus Aurelius, AD 161-180. Denarius. Rome. AD 162-3. Few signs of wear.
Obv.: IMP M ANTONINVS AVG, bare head right.
Rev.: PROV DEOD TR P XVII COS III, Providentia standing left, holding globe and cornucopiae.
Ref.: RIC 70.
SF 14178: Context 1002.

Helena, mother of Constantine I. Ae 14 mm. Commemorative issue struck after her death. AD 337-340. Trier.
Obv.: [FL IVL HE]LEN[AE] AVG, diademed and draped bust right.
Rev.: PAX PV[BLICA], ·TRP· in exergue, Pax standing left, with branch and sceptre.
Ref.: RIC Trier 63.
SF 16474: Context 1006.

House of Valentinian, AD 364-378. Ae 17 mm. Eroded surfaces.
Obv.: Illegible legend, diademed bust right.
Rev.: Illegible legend [GLORIA ROMANORVM] and mint-mark, emperor advancing right, dragging captive and holding labarum.
Ref.: Type as RIC Trier 5.
SF 14010: Context 1002.

b. Medieval (including identification of a coin from the 1961-1969 excavations)

John, 1199-1216. Silver cut halfpenny. Short Cross coinage, Class 5c: 1204/5-*c*. 1209.
Rev.:]ON·LVND, i.e. minted at London.
Ref.: North (1994, 221) 971.
1961-1969 excavations: plough-soil.

John or Henry III. Silver cut farthing. Short Cross coinage, Class 5 or 6: 1204/5-1217.
Rev.:]NDE, i.e. minted at London.
Ref.: North (1994, 221-222) 968/4 - 971; 974/1 - 977.
SF 14867: Context 1002.

Short Cross coinage, 1180-1247. Illegible cut farthing.
SF 14975: Context 1001.

c. Post-medieval

William III, 1694-1702. Copper halfpenny. 1695-1701. Type and date illegible.
SF 14003: Context 1002.

George I, 1714-1727. Halfpenny. Type 2. Dated 1720.
SF 14004: Context 1002.

George II, 1727-1760. Halfpenny. Old Head: 1740-1754. Date illegible.
SF 14010: Context 1002.

Table 57: Summary lists of coins, token and jetons from the 1961-69, 1987-88, 1983, 1985-86 and 1995-2002 excavations at Fishbourne

Period of Issue	1961-69 Total	1987-88 Total	1983 Total	1995-2002 Total	1985-86 Total	Grand Total
Carthaginian (late third/ early second century BC)	-	-	1	-	-	1
Late Iron Age (late first century BC/early first century AD)	-	-	-	3	2	5
Republican (late third-late first century BC)	5	-	2	4	1	12
Augustus, 27 BC-AD 14	1	-	-	-	-	1
Tiberius, AD 14-37	2	-	-	-	-	2
Agrippa (struck by Caligula)	1	-	-	1	-	2
Caligula, AD 37-41	1	-	-	-	-	1
Claudius I, AD 41-54	66	-	1	8	7	82
Nero, AD 54-68	17	-	1	3	3	24
Vespasian, AD 69-79	30	1	3	6	6	46

Titus as Caesar, *c.*AD 77-78	1	-	-	-	1	2
Domitian, AD 81-96	4	-	1	4	3	12
Nerva, AD 96-98	1	-	-	3	-	4
First century/Flavian	1	-	-	3	1	5
First-second century	7	1	3	8	6	25
Trajan, AD 97-117	4	1	-	1	1	7
Hadrian, AD 117-138	4	-	1	-	-	5
Antoninus Pius, AD 138-161	-	-	-	1	-	1
Faustina II (Junior) Wife of M. Aurelius	1	-	-	-	1	2
Marcus Aurelius, AD 161-180	3	-	-	1	-	4
Lucilla, daughter of Marcus Aurelius	-	-	-	1	-	1
Lucilla or Crispina (wife of Commodus, AD 177-192)	1	-	-	-	-	1
Septimus Severus, AD 192-211	1	-	-	-	-	1
Julia Domna, wife of Septimius Severus	1	-	-	-	-	1
Severus Alexander, AD 222-235	1	-	-	-	-	1
First-third century	-	-	-	1	1	2
Gallienus, AD 253-268	6 (or 8)	-	-	1	-	7
Salonina, wife of Gallienus	-	-	-	1	-	1
Postumus, AD 259-268	1	-	-	-	-	1
Claudius II, AD 268-270	9	-	1	3	-	13
Victorinus, AD 268-270	3	-	-	1	-	4
Tetricus I, AD 270-273	14	-	-	-	-	14
Tetricus II, AD 270-273	6	-	-	-	-	6
Carausius, AD 287-293	5	-	-	3	-	8
Allectus, AD 293-296	1	-	-	1	-	2
Radiates, *c.* 260-280	28	-	3	8	2	41
Maximian, AD 286-310	1	-	-	-	-	1

*c.*294 - 310	-	-	-	-	1	1
Third or fourth century	4	-	-	4	1	9
Constantine I, AD 307-337	3	-	-	5	-	8
Constantine II, AD 317-340	-	-	-	3	-	3
Constantine II or Constantius II, AD 324-361	-	-	-	1	-	1
Helena, mother of Constantine I	-	-	-	3	-	3
Urbs Roma, *c.*330-337	1	-	1	-	-	2
Commemorative issue *c.*337-40	-	-	-	1	-	1
Constans, AD 333-350	-	-	-	4	-	4
Constans or Constantius II	-	-	-	3	-	3
Fallen horseman type, *c.*348-64	-	-	-	1	-	1
Magnentius, AD 350-353	1 -	- -	- -	- 1	- -	1 1
House of Valentinian AD 364-378						
Gratian, AD 367-383	1	-	-	-	-	1
Fourth century	-	-	-	2	-	2
First-fourth century	-	-	-	3	-	3
Possible Roman coin fragments	-	-	2	-	-	2
Kings of England:						
Short Cross coinage, 1180-1247		-	-	2	-	2
John, 1196-1216	1	-	-	1	-	2
Henry III, 1216-1272	-	-	-	2	-	2
Edward I or II, *c.*1305-1310	-	-	-	2	-	2
Edward III, 1327-1377	-	-	-	1	-	1
Henry VI, 1422-1471	1	-	-	-	-	1
Henry VII (1485-	1	-	-	-	-	1

1509) or Henry VIII (1509-1547)						
Philip and Mary, 1554-1558	-	-	-	1	-	1
Philip II of Spain (husband of Mary)	1	-	-	-	-	1
Commonwealth, 1649-1660	-	1	-	-	-	1
William III, 1694-1702	2	-	-	2	-	4
George I, 1714 – 1727	1	-	-	1	-	2
George II, 1727-1760	2	-	1	3	-	6
George II or III	-	-	-	2	1	3
George III, 1760-1820	7	-	1	2	-	10
Victoria, 1837-1901	2	-	2	1	-	5
Edward VII, 1901-1910	-	-	1	-	-	1
George V, 1910-1936	-	-	3	-	-	3
George VI, 1936-1952	-	-	1	-	-	1
Illegible	-	-	-	1	-	1
Jettons/Tokens:						
Early Medieval	1	-	-	-	-	1
15th-16th century	6	2	-	-	-	8
17th-18th century	1	1	-	-	2	4

The pottery – by Malcolm Lyne

2. Methodology

All of the assemblages were quantified in a similar manner to those from the 1995-99 excavations (Lyne 2005B) using the same fabric codings, with additions. New fabrics are as follows:

F.30. Hard silt-tempered grey-black wheel-turned fabric with micaceous brown surfaces.

F.31. Sandfree grey fabric with up-to 1.00mm soft red ferrous inclusions and external reddened patches. Possibly a product of the Chapel Street kilns in Chichester (Down 1978) and represented by just one butt-beaker fragment (Fig.11).

Sandy cream to orange fabric C12 has now been subdivided into C12A with profuse up-to 2.00mm and C12B with profuse up-to 1.00mm multi-coloured quartz filler.

3. The Assemblages

3.1. Phases CA1 to CC1. Late Iron Age – c.AD.60

Assemblage 1. From the lowest levels of occupation above natural and the clay back-fill of the early ditch (Contexts 1047, 1082, 1083, 1130, 1131, 1143 and 1144).

The problem with this large 757 sherd (6410gm) assemblage is that much of it comes from poorly sealed ill-defined contexts and includes later pre-Flavian and Flavian sherds. Nevertheless, its importance lies in the fact that it should also incorporate pottery from both the occupation associated with the Late Augustan ditch and the earliest Claudian military activity.

The pottery tends to be quite heavily broken up but includes four sherds of pre-Flavian South Gaulish Samian, a fragment from a ?Tiberian Arretine cup of Conspectus Form 14 and three other cup sherds. The 73 Gallo-Belgic sherds include fragments from a CAM3 platter in TR1A fabric (c.15BC-AD.25), a CAM51B cup in TR1C (c.10BC-AD,25), a CAM3 platter (c.AD.1-45) and indeterminate cup sherds in TR2, and ovoid and girth-beaker fragments in TR3 fabric. Two different Gallo-Belgic Whiteware butt beakers, of Stead and Rigby (1989) Types IA1 (c.15BC-AD.10) and 2B2 (c.AD.10-40) can be distinguished: the latter is represented by 42 fresh sherds from Context 1082. One sherd each from two CAM1 platters in highly micaceous Central Gaulish Terra Rubra and Terra Nigra are also present (c.0-AD.20)

Local Southern Atrebatic and 'Overlap' sherds in fabrics C2, C3, C4A, C6, C11B, C11D and C29 make up 18% of the entire assemblage.

Much of this material clearly relates to Late Augustan activity associated with the early ditch but some, and in particular the TR3 girth beaker and Gallo-Belgic Whiteware Type 2B2 butt-beaker sherds, could easily belong to Phase CC1. The impression is, however, given that there are far more pre-Conquest fineware imports than Claudian ones in this assemblage

3.2. Phase CC1. c.AD.43-60

Assemblage 2. From the fill of the pit beneath the oyster gully (Context 1098.5).

The 96 sherds (884gm) of pottery from this feature include the following:

Fig.45: No. 1. Handmade jar in grey fabric C11A with additional up-to 3.00mm calcined flint

filler. Ext.rim diameter 200mm. The form, but in a sandy greyware without flint, is paralleled in the pottery assemblage from the lower fill of the Claudian military ditch at the Chichester Cattle Market site (Down 1989, Fig.21.2-41). c.AD.30-50

2. Another example of similar diameter and fabric but without the undercut rim.
3. Bowl of CAM 58A form in polished orange TR2 fabric. Ext rim diameter 120mm. c.AD.15/20-60.

The assemblage also includes fragments from a Terra Nigra platter of CAM 7 form (c.AD.40-80), a South Gaulish Samian Dr 15/17 platter (Tiberian), Conspectus 12 and 15 Arretine vessels (Tiberian), two Dressel 20 amphorae and one bead-rim jar each in 'Overlap' fabrics C6 and C8 (c.AD.30-60). A c.AD.30-50/60 date is indicated for this assemblage.

Assemblage 3. From the fills of Post holes 1052 (1050), 1102 (1078), 1105 (1104), 1118 (1091), 1157 (1138), 1159 (1129), 1167 (1107) and 1168 (1106)

The 57 sherds from these various postholes include nothing which need be later than AD.50/60: the fragments include a rim sherd from a jar of Type 161 (c.AD.50-150), a fragment from a Type 72 beaker in micaceous fabric F22 (PH 1052, c.AD.43-70) and two sherds from a lid-seated bead-rim jar in grey fabric C13 (PH 1167, c.AD.50-80). Several handmade Rowlands Castle greyware fragments in fabric C11D and in 'Overlap' fabric C4A are also present, as is a sherd in micaceous Central Gaulish fabric C25A (PH 1105).

Assemblage 4. From the fill of north-south Gully 1062 and associated Pit 1063 (Contexts 1048, 1061 and 1114)

The nine sherds (63 gm) of pottery from the fill of Pit 1063 (Context 1048) include one rim fragment and six bodysherds from the following vessel:

4. Small handmade jar with undercut bead-rim in rough grey fabric C10C. c.AD.43/50-60.

The 50 sherds (352gm) from the fills of Gully 1062 include a bodysherd from a closed form in Gallo-Belgic Whiteware (c.AD.43-80) and sherds from the following three vessels:

5. Handmade necked jar in rough dirty-grey fabric C13. Ext.rim diameter 160mm.
c.AD.50-60. Context 1061
6. Similar but tournette finished vessel in similar fabric. Ext.rim diameter 180mm.
c.AD.50-80. Context 1061
7. Narrow-necked jar with stubby everted rim in red-cored black fabric C29. Ext.rim diameter 120mm. Paralleled in the lower fills of the Claudian military ditch at the Chichester Cattle Market site (Down 1989, Fig.21.2-26). AD.43-70. Context 1061

A date-range of c.AD.43-60 is indicated for this assemblage.

Assemblage 5. From the fill of Gully 1162 (Context 1123)

The 26 sherds from the fill of this feature comprise a basal sherd from a Terra Nigra platter (c.AD.43-80), a lumpy handmade sherd in calcined-flint and sand tempered fabric C4A (Late Iron Age – AD.50), a basal sherd from an open form in polished handmade 'Overlap' fabric C8 (Late Iron Age-AD.60), a closed form fragment in Wiggonholt fabric F12 (c.AD.50-150), four sherds in handmade Ro wlands Castle fabric C11D (L.I.A.-AD.60), seven sherds in Hardham greyware fabric C10A and a necked-jar fragment in fabric C13 (c.AD.50-80). Four fragments in 'Overlap' fabric C6 (L.I.A.-AD.60), two in fabric C14, a flake of South Gaulish Samian and three miscellaneous chips of pottery are also present and together indicate a date range similar to that of Assemblage 3

Assemblage 6. From the fill of the possible beamslot cut into the red clay capping of the early ditch (Context 1120)

The 134 sherds from this feature constitute a large enough assemblage for quantification by numbers of sherds and their weights per fabric:

Table 58

Fabric	No of sherds	%	Weight in gm	%
C4A	11	8.2	143	9.7
C8	1	0.7	4	0.3
C10A	13	9.7	78	5.3
C11D	42	31.3	242	16.4
C22	25	18.7	95	6.4
C26	10	7.5	168	11.4
F30	20	14.9	118	8.0
F31	1	0.7	9	0.6
MORT	6	4.5	542	36.7
CAM184	2	1.5	36	2.4
DR20	2	1.5	26	1.8
GAUL	1	0.7	14	0.9
	134		1475	

The largest single component of this c.AD.43-60 dated assemblage by sherd count is handmade Rowlands Castle greyware fabric C11D (Late Iron Age-AD.60), followed by miscellaneous greywares and sherds in sand and calcined-flint tempered fabrics C4A and C26 (L.I.A.-AD.50). The following forms are present:

8. Handmade necked jar in Rowlands Castle greyware fabric C11D. Ext.rim diameter 160mm.
9. Handmade lid in grey fabric C26 fired black. Ext.rim diameter 240mm.
   A bead-rim jar fragment in similar 'Overlap' fabric is also present.
10. Bowl of Marsh Type 44 (1978) in hard grey-black fabric F30 with micaceous brown surfaces. Ext.rim diameter 180mm.
11. Butt-beaker in sandfree grey fabric F31 with red patches and up-to 2.00mm red ferrous inclusions. Paralleled at the Chichester Chapel Street kilns (Down 1978, Fig.10.3-1.1). Ext.rim diameter 120mm. c.AD.50-60

Mortarium in friable cream fabric with minute quartz and flint trituration grits. Ext.rim diameter 360mm. c.AD.50-85. Import from the north of Gaul (Hartley 1998,75-6)

Other sherds include fragments from a CAM 184 amphora (c.AD.43-150), a Baetican DR 20 example and a Gauloise 4.

3.3. Phase CC2. c.AD.60-70

Assemblage 7. From the base of the tile oven within the timber building (Context 1066)

This feature yielded 150 sherds (1875gm) of pottery:

Table 59.

Fabric	No of sherds	%	Weight in gm	%
C4A	1	0.7	4	0.2
C6	1	0.7	16	0.9
C10A	53	35.3	458	24.4
C11D	30	20.0	232	12.4
C12A	14	9.3	296	15.8
C12B	7	4.7	50	2.7
C13	2	1.3	16	0.9

C14	24	16.0	202	10.8
C22	6	4.0	30	1.6
F5A	5	3.3	44	2.3
F27	1	0.7	10	0.5
TR3	1	0.7	1	0.1
DR20	5	3.3	516	27.5
	150		1875gm	

The most significant fabric in this assemblage is a tournetted patchy grey/buff/ black version of fabric C10A, although its importance is overstated due to the presence of a large number of sherds from the following vessel:

12. Necked jar of Fishbourne Type 181.6 with girth groove. Ext.rim diameter 160mm. c.AD.50-100

Handmade Rowlands Castle greywares in fabric C11D account for another fifth of the assemblage and include eight fresh sherds from the following jar.

13. Necked jar in handmade Rowlands Castle fabric C11D. Ext rim diameter 160mm. Paralleled in pre-Flavian context at Chapel Street, Chichester (Down 1978,Fig.10.8-43). c.AD.30-60

Other wares include eight fresh sherds from a bowl of Type 86.1 in rough cream fabric C12A (c.AD.50-100), a sherd from a pink Type 109 flagon in fabric F27 (c.AD.50-120),a fragment from a girth beaker in TR3 fabric (AD.10-60) and five sherds from a South Gaulish Samian Dr 18 platter (c.AD.43-70)

3.4. Phase CD. C.AD.70-130/150

Assemblage 8. From the midden and oyster gully fills (Contexts 1098, 1098.2, 1098.3, 1098.4 and 1189)

The 1475 sherds (19023gm) pottery assemblage from this feature is large enough for quantification by Estimated Vessel Equivalents (EVEs) based on rim sherds:

Table 60

Fabric	Jars	Bowls	Dishes	Beakers	Store-jars	Others	Total	%
C3					0.08		0.08	
C4A	0.15						0.15	0.5
C6	0.10				Lid	0.05	0.15	
C10A	2.60	0.02	0.06	0.12	Flask	0.19		0.9
					Lid	0.10	3.09	
C11B			0.06				0.06	0.9
C11C	3.51	0.05	0.23		Lid	0.07	3.86	
C12A	0.07	1.15			Lids	0.39		
					Mort	0.23	1.84	18.4
C12B		0.08				0.07	0.15	
C13	0.74				Flagon		0.74	0.4
C14	0.16		0.29			0.08	0.53	
C15A	0.23				Lid		0.23	23.0
C22	0.69		0.03	0.18		0.15	1.05	
C27	0.15				Lids		0.15	
C29	0.14						0.14	10.9
TR						0.02	0.02	
F 2A			P				P	0.9

F5A			0.94		Flagon	1.29	2.23	
F6				0.40			0.40	4.4
F7					Cups	0.67	0.67	
F9B				0.06			0.06	3.2
F10A	0.27			0.30	Flask		0.57	
F25						0.16	0.16	1.4
F22				0.23			0.23	
Dr 2.4						0.25	0.25	6.2
					Flagon			0.9
					amph			0.8
								0.1
								13.3
								2.4
								4.0
								0.4
								3.4
								0.9
								1.4
								1.5
	8.81 (52.4%)	1.30 (7.7%)	1.61 (9.6%)	1.29 (7.7%)	0.08 (0.5%)	3.72 (22.1%)	16.81	

Lids	5.0%
Flasks	5.1%
Flagons	1.5%
Cups	7.6%
Mortaria	1.4%
Amphorae	1.5%

This quantification reveals an assemblage with a wide variety of fabrics but having Arun Valley grey wares in fabric C10A making up 18% and Rowlands Castle greyware fabrics C11B and C11C a further 23%. Atrebatic and 'overlap' fabrics C3, C4A, C6, C27 and C29 make up a mere 4% of the assemblage; reflecting their residual nature in an assemblage dating between AD.70 and 90. Most of the jars are necked but 18%, from a variety of sources, are bead-rimmed and for the most part pre-Flavian in date.

Coarse oxidised fabrics C12A and C12B of local origin account for a further 12% of the assemblage and C14 with coarse angular black inclusions for 3% more of it. Alice Holt/Farnham greywares are also present in small quantities (1%) and

represented by a bead-rim jar (c.AD.50-90+) and at least one indeterminate necked-jar.

The majority of the fine wares (13% of the assemblage) are in South Gaulish, La Graufesenque Samian and include platter forms Dr.15/17, Dr 18 and Dr 18R as well as Dr 24/25, Dr 27 and Dr 33 cups. Most of these vessels date to before AD 70 and there is nothing which need be later than AD.80. Other finewares include Type 73 (c.AD.50-100) and 79 beakers (c.AD.50-70) in cream Wiggonholt fabric F6 (2%), a Central Gaulish beaker in fabric F9B (c.AD.60-140), a beaker in black fabric F22 (c.AD.50-85+) and a flask or disc-mouthed flagon in ?local fabric F7.

14. Greater part of necked bowl of Fishbourne Type 181 in grey fabric C11C with burnished vertical line decoration on its body. Ext rim diameter 140mm. c.AD 50-100. Context 1098.2
15. Slack-profiled jar in similar fabric. Ext rim diameter 140mm. Context 1098.2
16. Everted-rim jar in similar fabric. Ext.rim diameter 200mm. Context 1098.2

Fig.46; No.17. Narrow-necked jar in similar fabric. Ext.rim diameter 100mm. Context 1098.2

18. Bead-rim bowl in similar fabric. Ext.rim diameter 130mm. Context 1098.2
19. Lid-seated bead-rim jar of Type 167 in similar fabric. c.AD.50-75. Context 1098.3.
20. Everted rim jar of Type 170.1 in grey fabric C10A. Ext.rim diameter 160mm. c.AD.50-200. Context 1098
21. Girth beaker copy of Type 63 in similar fabric. Ext rim diameter 120mm. Another example but with latticed body decoration came from a c.AD.70-80 dated pit at Chapel Street, Chichester (Down 1978,Fig.10.9-82). c.AD.50-75. Context 1098.3
22. Bowl of Type 86 in patchy fired cream/grey fabric C12A. Ext rim diameter 220mm. c.AD.50-100. One of three examples. Context 1098.2
23. Everted rim beaker of Type 66 in polished micaceous black fabric F22 variant. Ext rim diameter 80mm. c.AD.50-85+. Context 1098.2

Mortarium in hard bricky orange-brown variant of fabric C12A. Ext rim diameter 320mm. Hartley regards this vessel as being of local origin and dates it to c.AD.43-70/80. Context 1098

Amphora sherds comprise four Baetican Dressel 20 fragments, one Dressel 7-11 handle (50BC-AD.150), 23 Dressel 2-4 sherds and 15 Rhodian type fragments (AD.43-150).

Assemblage 9. From the fill of Pit 1161 (Contexts 1124 and 1124.2).

This 203 sherd assemblage is unsuitable for any kind of quantification as it includes 141 fresh fragments from the following two vessels:

24. Most of beaker of Fishbourne Type 79 in pink-orange fabric C12A with black surface smudges. Ext rim diameter 80mm. c.AD.50-75. Context 1124
25. Complete beaker of Type 73 in grey fabric F10A with black external slip over dot-barbotine rosettes. Ext rim diameter 95mm. c.AD.50-100. Context 1124.

Other, more fragmentary, forms include a flanged dish of Type 102 (c.AD.50-75) in fabric C10A, a bead-rim jar in the same fabric (c.AD.50-80) and two simple lids in fabric C29. This suggests a date of c.AD.50-80 for the assemblage.

Assemblage 10. From the water-laid silt (Context 1044) above and to the south of the timber building:

The 302 sherds (2886gm) of pottery from this silt date the destruction of the timber building and form a large enough assemblage for basic quantification: Table 61.

Fabric	No of sherds	%	Weight in gm	%
C3	1	0.3	8	0.3
C4A	1	0.3	21	0.8
C9	1	0.3	14	0.5
C10A	31	10.4	272	10.6
C11B	1	0.3	35	1.4
C11C	101	33.4	1195	46.5
C13	6	2.0	34	1.3
C19	4	1.3	5	0.2
C22	46	15.2	255	9.9
F5A	13	4.3	36	1.4
F6	26	8.6	45	1.7
F8	13	4.3	31	1.2
F12	6	2.0	27	1.0
F19	5	1.7	26	1.0
F24	1	0.3	3	0.1
TR2	2	0.7	3	0.1
MISC	37	12.3	116	4.5
AMPH	1	0.3	16	0.6
DR20	5	1.7	359	14.0
GAUL4	1	0.3	76	2.9
	302		2577gm	

The most significant single fabric in this assemblage is now wheel-turned Rowlands Castle ware (C11C), which accounts for one-third of the pottery by sherd count and includes fragments from perhaps four Type 316.1 jars (c.AD.100-150), a flanged dish of Type 216.1 (c.AD.70-150), a lid of Type 187 (c.AD.50-300) and a bead-rim jar of indeterminate type: a fragment from a storage jar in the fabric C11B variant with additional sparse calcined-flint is also present.

Arun Valley products in greyware fabric C10A and the oxidised Wiggonholt variants F6 and F12 account for a further 21% of the assemblage and include fragments from a cup of Type 47 (c.AD.50-70), at least five badly broken up necked-jars and a bead-rim jar in fabric C10A: the cream Wiggonholt products include a Type 77 beaker (c.AD.50-75). This Arun Valley material is more heavily broken up than that from the Rowlands Castle kilns but this may be due to the relative softness of the fabrics.

None attributable quartz-sand tempered greywares account for a further 15% of the pottery: the forms suggest that they could also be Arun Valley products and include fragments from a Type 261 carinated cup (c.AD.70-100) and a Type 189 lid (c.AD.50-75).

Vessels in minority fabrics include fragments from a dish of Type 216.2 in fine grey fabric F8 (c.AD.70-150), a bead-rim dish of Type 217 in BB1 fabric C9 (c.AD.110-140) and a pinch-neck flagon of Frere type 580 (1972) in rough, off-white Verulamium Region Whiteware fabric F19 (c.AD.100-200). The South Gaulish Samian includes fragments from two Dr 33 cups and Dr 18/31 and Dr 36 platters and ranges in date between c.AD.70 and 110.

This assemblage includes much late-first century material but goes on until c.AD.130/150: it suggests that the timber building beneath went out of use towards the end of the first century

3.5. Phase CF. c.AD.130/150+

Assemblage 11. From contexts relating to Building 4 (Wall contexts 1020, 1032, 1149, 1096, 1097 and 1172: Posthole contexts 1016, 1018, 1038, 1069, 1070, 1072, 1073, 1074, 1075, 1077, 1078, 1092, 1110, 1125, 1151 and 1182: Miscellaneous context 1068).

Nearly all of the 260 sherds from these various contexts are abraded and residual but dark, circular area 1068 yielded a BB2 pie-dish fragment of Monaghan type 5D1.6 (1987, c.AD.120-180) and wall context 1172 produced a fresh fragment from a small polished necked-jar in brown-black Vectis ware with a profile similar to that of Tomalin beaker type 15 from the Isle of Wight (1987,c.AD.80-140).

Building 4 has to be later than AD.130 and these sherds suggest that it was constructed soon after that date.

The amphorae – David Williams

Catalogue of amphorae sherds; [context number] ; small find number

[1001] 14124
Dressel 20 bodysherd 48gms

[1001] 18208
3 Dressel 20 bodysherds 278gms

[1005] 18163
Undesignated bodysherd 18gms

[1005] 18164
Dressel 20 bodysherd 10gms

[1006] 18166
Undesignated rim 32gms

[1006] 18165
Dressel 20 rim 66gms [cf. Martin-Kilcher, 1987, Beilage 1C, no. 33, *c*.A.D. 50-70]

[1006] 16744
3 Dressel 20 bodysherds 890gms

[1007] 14206
Rhodian style rod handle 42gms

[1007] 14459
Dressel 20 bodysherd 100gms

[1007] 14292
Dressel 20 handle 402gms

[1007] 18219
Dressel 2-4 bodysherd 70gms

[1007] 14270
Dressel 2-4 bodysherd 486gms

[1007] 14444
12 Dressel 2-4 bodysherds 338gms

[1007] 18220
Dressel 2-4 bodysherd 90gms

[1007] 18167
Dressel 20 bodysherd 40gms

[1007] 18191
Dressel 20 bodysherd 38gms

[1007] 18190
Southern Spanish bodysherd 66gms

[1007] 18222
Gauloise series bodysherd 70gms

[1007] 18190
5 Dressel 20 bodysherds 162gms

[1008] 15029
Dressel 20 rim 100gms [cf. Martin-Kilcher, 1987, Beilage 1C, no. 38, *c*.A.D. 50-70]

[1008] 14667
Southern Spanish bodysherd 22gms

[1008] 15084
Undesignated bodysherd 26gms

[1008] 15178
Dressel 2-4 bodysherd 28gms

[1010] 14710
Dressel 20 bodysherd 396gms

[1010] 14664
Dressel 20 handle 248gms

[1010] 15195
Southern Spanish bodysherd 66gms

[1010] 14139
Undesignated bodysherd 22gms

[1010] 14923
Undesignated bodysherd 32gms

[1010] 18194
Dressel 20 bodysherd 22gms

[1010] 14703
Dressel 20 bodysherd 12gms

[1010] 15056
Dressel 20 bodysherd 368gms

[1010] 18196

Dressel 2-4 bodysherd 26gms

[1010] 18193
Dressel 2-4 bodysherd 38gms

[1010] 14724
2 Dressel 2-4 bodysherds 114gms

[1011] 18206
Undesignated bodysherd 18gms

[1011] 14309
Dressel 20 bodysherd 112gms

[1011] 14344
2 Dressel 20 bodysherds 352gms

[1011] 15841
2 Dressel 20 bodysherds 184gms

[1011] 14618
2 Dressel 20 bodysherd 62gms

[1011] 18199
Dressel 20 bodysherd 44gms

[1011] 14230
Dressel 20 rim 278gms [cf. Martin-Kilcher, 1987, Beilage 1C, no. 47 or 48, *c*.A.D. 50-70]

[1011] 14738
5 Dressel 20 bodysherd 248gms

[1011] 14288
Dressel 20 bodysherd 162gms

[1011] 15838
Dressel 20 bodysherd 100gms

[1011] 14405
Dressel 20 bodysherd 12gms

[1011] 14216
Dressel 20 bodysherd 88gms

[1010] 18202
2 Gauloise series bodysherds 34gms

[1011] 18203
Gauloise series bodysherd 138gms

[1011] 18205
Gauloise series bodysherd 30gms

[1011] 18204
Dressel 2-4 bodysherd 94gms

[1011] 18198
Dressel 2-4 bodysherd 94gms

[1011] 18197
Dressel 2-4 bodysherd 26gms

[1011] 18200
Dressel 2-4 bodysherd 34gms

[1011] 14611
Dressel 2-4 rim 40gms

[1012] 18241
Undesignated rim 30gms

[1012] 15116
Southern Spanish bodysherd 116gms

[1012] 18239
Undesignated bodysherd 30gms

[1012] 15025
Dressel 20 bodysherd 144gms

[1012] 14834
Dressel 20 handle 114gms

[1012] 14572
Dressel 20 bodysherd 88gms

[1012] 18240
Gauloise series bodysherd 34gms

[1013] 18255
Dressel 2-4 bodysherds 30gms

[1015] 18242
Dressel 20 bodysherd 50gms

[1021] 15514
Undesignated handle 74gms

[1021] 18243

Dressel 20 bodysherd 26gms

[1024] 15851
Dressel 7-11 bodysherd 86gms

[1024] 18244
2 Gauloise series bodysherd 58gms

[1024] 18245
Dressel 2-4 bodysherd 42gms

[1025] 18246
Dressel 20 bodysherd 28gms

[1025] 16698
Dressel 7-11 bodysherd 16gms

[1025] 16646
Dressel 7-11 bodysherd 8gms

[1025] 16692
Dressel 7-11 bodysherd 86gms

[1025] 16699
Dressel 7-11 bodysherd 86gms

[1025] 16700
Undesignated bodysherd 4gms

[1025] 16698
Undesignated bodysherd 76gms

[1025] 16893
Dressel 2-4 bodysherd 24gms

[1025] 16786
2 Dressel 2-4 bodysherds 44gms

[1025] 16892
Dressel 2-4 bodysherd 98gms

[1025] 16664
Dressel 2-4 bodysherd 46gms

[1026] 15439
Rhodian style rod handle 54gms

[1026] 15481
2 Southern Spanish bodysherds 30gms

[1026] 15501
Undesignated bodysherd 66gms

[1026] 15486
3 undesignated bodysherds 162gms

[1026] 18249
Gauloise series bodysherd 14gms

[1026] 18251
Gauloise series bodysherd 10gms

[1026] 18251
Gauloise series bodysherd 24gms

[1026] 18248
Gauloise series bodysherd 8gms

[1026] 15220
Dressel 2-4 bodysherd 26gms

[1026] 15253
Dressel 2-4 part-bifid handle 40gms

[1026] 15429
3 Dressel 2-4 bodysherds 50gms

[1026] 15422
Dressel 2-4 bodysherd 60gms

[1026] 15403
Dressel 2-4 bodysherd 372gms

[1026] 18250
Dressel 2-4 bodysherd 24gms

[1026] 18250
Dressel 2-4 bodysherd 10gms

[1027] 15601
Dressel 2-4 rim 16gms

[1027] 18257
4 Dressel 2-4 bodysherd 862gms

[1026] 18256
Dressel 2-4 bodysherd 38gms

[1027] 15848
Dressel 2-4 bodysherd 22gms

[1027] 15601
Dressel 2-4 bodysherd 22gms

[1026] 18253
5 Dressel 20 bodysherds 100gms

[1026] 18247
Dressel 20 bodysherd 20gms

[1026] 16374
Dressel 20 bodysherd 158gms

[1026] 15327
Dressel 20 bodysherd 108gms

[1026] 16395
Dressel 20 bodysherd 82gms

[1026] 15260
Dressel 20 bodysherd 80gms

[1026] 15474
Dressel 20 bodysherd 262gms

[1026] 15060
Dressel 2-4 bodysherd 38gms

[1026] 18254
Dressel 2-4 bodysherd 184gms

[1026] 18252
3 Dressel 2-4 bodysherds 64gms

[1027] 15765
Dressel 2-4 bodysherd 12gms

[1027] 15765
Southern Spanish bodysherd 8gms

[1027] 16905
Dressel 20 bodysherd 390gms

[1027] 15578
Dressel 20 rim 82gms [cf. Martin-Kilcher, 1987, Beilage 1C, no. 36, *c*.A.D. 50-70]

[1027] 1556
Gauloise series bodysherd 8gms

[1027] 15599

Gauloise series bodysherd 10gms

[1028] 17028
5 Dressel 20 bodysherds 400gms

[1028] 18210
Dressel 20 bodysherd 104gms

[1028] 15361
Dressel 2-4 spike 1,074gms

[1029] 18260
Undesignated bodysherd 10gms

[1029] 16460
Dressel 20 handle 190gms

[1029] 18264
6 Dressel 20 bodysherds 198gms

[1029] 16264
Dressel 20 handle 332gms

[1029] 18258
Dressel 20 bodysherd 24gms

[1029] 16108
21 Dressel 20 bodysherds 3,858gms

[1029] 18217
Dressel 2-4 bodysherd 50gms

[1029] 18216
Dressel 2-4 bodysherd 224gms

[1029] 18263
Dressel 2-4 bodysherds 232gms

[1029] 16053
Dressel 2-4 handle 194gms

[1029] 16206
Dressel 2-4 bodysherd 10gms

[1029] 18261
Dressel 2-4 bodysherd 10gms

[1029] 18265
8 Dressel 2-4 bodysherds 254gms

[1029] 16108
Dressel 2-4 bodysherd 16gms

[1029] 16108
Gauloise series bodysherd 20gms

[1029] 18262
2 Gauloise series bodysherds 54gms

[1029] 18259
Gauloise series bodysherd 20gms

[1030] 18212
Undesignated bodysherd 50gms

[1030] 16128
Dressel 20 bodysherd 106gms

[1030] 18235
2 Dressel 20 bodysherds 36gms

[1030] 16018
2 Dressel 20 bodysherds 66gms

[1030] 18274
3 Dressel 20 bodysherds 102gms

[1030] 18267
5 Dressel 20 bodysherds 74gms

[1030] 18215
Dressel 20 bodysherd 84gms

[1030] 16703
Dressel 20 bodysherd 102gms

[1030] 16963
6 Dressel 20 bodysherds 186gms

[1030] 16976
Dressel 20 rim 116gms [cf. Martin-Kilcher, 1987, Beilage 1B, no. 20 or 23, *c*.A.D. 30-50]

[1030] 17734
Dressel 20 bodysherd 20gms

[1030] 15977
Dressel 20 handle 219gms

[1030] 11213

Dressel 20 bodysherd 148gms

[1030] 15949
Dressel 20 handle 168gms

[1030] 16070
Dressel 20 bodysherd 156gms

[1030] 16960
Dressel 20 bodysherd 434gms

[1030] 16131
Dressel 20 rim 126gms [cf. Martin-Kilcher, 1987, Beilage 1B, no. 20 or 23 *c*.A.D. 30-50]

[1030] 18230
Dressel 20 bodysherd 14gms

[1030] 16127
Dressel 20 bodysherd 30gms

[1030] 18273
4 Gauloise series bodysherds 60gms

[1030] 18272
Gauloise series bodysherd 18gms

[1030] 18213
2 Dressel 2-4 bodysherds 416gms

[1030] 18268
2 Dressel 2-4 bodysherds 76gms

[1030] 18214
Dressel 2-4 bodysherd 60gms

[1030] 18281
2 Dressel 2-4 bodysherds 38gms

[1030] 18230
Dressel 2-4 bodysherd 34gms

[1030] 16212
Dressel 2-4 bifid handle 94gms

[1030] 16965
Dressel 2-4 bodysherd 28gms

[1030] 18271
2 Dressel 2-4 bodysherds 42gms

[1030] 16167
3 Southern Spanish bodysherds 146gms

[1030] 16252
Southern Spanish bodysherd 32gms

[1030] 18266
Southern Spanish bodysherd 22gms

[1030] 15904
2 Undesignated bodysherds 66gms

[1030] 15931
Undesignated bodysherds 18gms

[1030] 18269
Undesignated bodysherd 22gms

[1030] 15869
Undesignated handle 30gms

[1030] 16219
Undesignated bodysherd 60gms

[1031] 15970
Undesignated bodysherd 64gms

[1031] 15921
Dressel 20 bodysherd 20gms

[1031] 15988
Gauloise series bodysherd 22gms

[1032] 18276
Dressel 20 bodysherd 24gms

[1037] 15642
Southern Spanish bodysherd 34gms

[1037] 15650
Southern Spanish bodysherd 22gms

[1037] 18277
Gauloise series bodysherd 20gms

[1037] 18280
2 Dressel 20 bodysherds 126gms

[1037] 18238

2 Dressel 20 bodysherds 116gms

[1039] 17297
Haltern 70 bodysherd? 68gms

[1039] 18279
Undesignated bodysherd 26gms

[1040] 17141
Dressel 20 bodysherd 270gms

[1040] 18209
Dressel 20 bodysherd 48gms

[1040.2] 17841
Dressel 20 bodysherd 8gms

[1040.2] 17758
5 Dressel 2-4 bodysherds 311gms

[1043] 16226
Southern Spanish bodysherd 26gms

[1043] 16985
Undesignated bodysherd 26gms

[1043] 16991
2 Dressel 20 bodysherds 102gms

[1044] 18282
Undesignated bodysherd 16gms

[1044] 16072
Dressel 20 bodysherd 292gms

[1044] 18283
Dressel 20 bodysherd 28gms

[1044] 16073
Gauloise 4 rim 76gms

[1045] 16316
5 Dressel 2-4 bodysherds 770gms

[1045] 15976
Dressel 2-4 bodysherd 416gms

[1049] 18284
Dressel 20 bodysherd 44gms

[1057] 18287
5 Dressel 2-4 bodysherds inc. handle stub 540gms

[1057] 18286
Dressel 2-4 bodysherd 54gms

[1057] 18290
2 undesignated bodysherds 62gms

[1057] 18285
Undesignated bodysherd 10gms

[1057] 18291
2 Southern Spanish bodysherds 34gms

[1057] 16992
Southern Spanish bodysherd 20gms

[1057] 16274
Dressel 20 bodysherds 54gms

[1057] 16329
Haltern 70 handle 170gms

[1057] 16217
Rhodian style bodysherds 18gms

[1057] 18289
Dressel 20 bodysherd 84gms

[1057] 18288
2 Dressel 20 bodysherds 58gms

[1065] 18211
Dressel 2-4 bodysherd 66gms

[1066] 16868
4 Dressel 20 bodysherds 462gms

[1066] 16861
Southern Spanish bodysherd 54gms

[1068] 18292
2 Dressel 20 bodysherds 38gms

[1076] 18296
2 Dressel 20 bodysherds 80gms

[1076] 18299
4 Dressel 20 bodysherd 64gms

[1076] 18298
4 Dressel 2-4 bodysherd 40gms

[1076] 18297
2 Dressel 2-4 bodysherd 44gms

[1076] 18300
7 Dressel 7-11 bodysherds inc. a handle 138gms

[1076] 17001
Dressel 2-4 bodysherd 48gms

[1076] 18293
2 Dressel 2-4 bodysherds 40gms

[1077] 16568
2 Dressel 20 bodysherds 136gms

[1080] 16993
Rhodian style bodysherd 28gms

[1082] 17033
Dressel 20 bodysherd 100gms

[1082] 18294
3 Dressel 20 bodysherds 46gms

[1083] 18295
4 Dressel 20 bodysherds 130gms

[1084] 17506
Dressel 7-11 rim 122gms

[1086] 16993
Dressel 2-4 bodysherd 40gms

[1091] 16589
2 Southern Spanish bodysherds 348gms

[1092.2] 18212
Dressel 20 bodysherd 96gms

[1094] 18301
Gauloise series bodysherds 6gms

[1094] 16838
Gauloise series handle 112gms

[1098] 18308

Dressel 20 bodysherd 258gms

[1098] 17376
Dressel 7-11 handle 68gms

[1098] 18302
10 Rhodian style bodysherds 258gms

[1098] 18302
10 Dressel 2-4 bodysherd 180gms

[1098] 18303
4 Dressel 2-4 bodysherd inc. rim sherd 164gms

[1098] 18305
2 Dressel 2-4 bodysherd 24gms

[1098] 16763
Dressel 2-4 bodysherd 28gms

[1098] 16759
Dressel 2-4 bifid handle 114gms

[1098] 16813
Dressel 20 bodysherd 64gms

[1098] 18307
4 Dressel 20 bodysherds 70gms

[1098] 18306
2 Dressel 20 bodysherds 56gms

[1098.2] 17360
Dressel 2-4 bodysherd 714gms

[1098.2] 17435
Dressel 2-4 bodysherd 36gms

[1098.2] 18309
4 Rhodian style bodysherds 82gms

[1098.2] 17377
Rhodian style bodysherds 40gms

[1098.2] 17472
Dressel 20 bodysherd 12gms

[1098.2] 17429
Dressel 2-4 bodysherd 38gms

[1098.3] 17362
Dressel 2-4 bifid handle 118gms

[1098.3] 17366
Dressel 2-4 bifid handle 140gms

[1098.3] 18312
2 Dressel 20 bodysherd 68gms

[1098.4] 18311
Southern Spanish bodysherd 34gms

[1098.5] 17528
Dressel 20 bodysherd 44gms

[1098.5] 17523
Dressel 20 bodysherd 46gms

[1098.5] 18310
2 undesignated bodysherds 38gms

[1100] 16762
Dressel 2-4 spike 322gms

[1100] 18314
3 Dressel 2-4 bodysherds 132gms

[1100] 17212
Dressel 20 bodysherd 90gms

[1104] 18315
Dressel 20 bodysherd 56gms

[1108] 18316
Dressel 20 bodysherd 48gms

[1112] 16778
Undesignated handle 38gms

[1112] 18317
2 Dressel 20 bodysherds 52gms

[1112] 18317
Rhodian style bodysherd 20gms

[1115] 18318
Dressel 20 bodysherd 28gms

[1119] 18323
Carrot bodysherd 40gms

[1119] 18320
Dressel 2-4 bodysherd 22gms

[1119] 18322
4 Dressel 2-4 bodysherd 64gms

[1119] 17026
3 Dressel 2-4 bodysherd 116gms

[1119] 18321
Dressel 2-4 "black sand" bodysherd 20gms

[1119] 18319
Dressel 20 bodysherd 124gms

[1119] 17730
Dressel 20 bodysherd 40gms

[1119] 17731
2 Dressel 20 bodysherd 76gms

[1119] 17060
Rhodian style rim 50gms

[1120] 18326
Gauloise series rim 14gms

[1120] 18324
Dressel 2-4 bodysherd 36gms

[1120] 18325
2 Dressel 20 bodysherd 26gms

[1120] 17287
Rhodian style rim 38gms

[1121] 18327
5 Dressel 20 bodysherds 36gms

[1124] 17613
Dressel 20 bodysherd 184gms

[1124] 18328
Dressel 2-4 bodysherd 34gms

[1124] 17587
Dressel 2-4 bodysherd 110gms

[1124] 17549

Dressel 2-4 bodysherd 282gms

[1124] 17702
3 Dressel 2-4 bodysherds 122gms

[1124] 18329
Gauloise series bodysherd 10gms

[1130] 18330
Undesignated bodysherd 136gms

[1130] 18331
Haltern 70 bodysherd? 22gms

[1131] 18332
2 Dressel 20 bodysherds 100gms

[1134] 18334
Dressel 2-4 bodysherd 58gms

[1134] 18335
Undesignated bodysherd 76gms

[1138] 17286
2 Dressel 20 bodysherds 102gms

[1141] 17374
Dressel 2-4 shoulder sherd 112gms

[1145] 17624
Dressel 20 bodysherd 162gms

[1145] 17627
Dressel 20 bodysherd 356gms

[1145] 17650
Southern Spanish bodysherd 28gms

[1145.2] 17741
Haltern 70 bodysherd? 24gms

[1172] 17691
Dressel 20 bodysherd 130gms

[1176] 17212
Dressel 20 bodysherd 6gms

[1176] 17868
Dressel 20 bodysherd 10gms

[1179] 17935
Dressel 2-4 bodysherd 34gms

[1179.2] 18608
Dressel 2-4 bodysherd 322gms

[1179.2] 18014
Dressel 2-4 bodysherd 46gms

[1189] 18024
3 Dressel 2-4 bodysherds 124gms

[1189] 18025
3 Dressel 2-4 bodysherds 1132gms

[1190] 18063
15 Dressel 20 bodysherds 1,454gms

NON-AMPHORA

[1001] 18207

[1007] 18221

[1007] 18221

[1011] 18201

[1026] 15457

[1027] 16905

[1027] 15541

[1027] 15643

[1028] 17015

[1029] 16160

[1029] 16113

[1029] 18218

[1030.2] 17011

[1030] 16228

[1030] 16001

[1043] 16225

[1043] 16224

[1075] 16452

[1076] 16436

[1119] 17036

[1145.2] 17695

The Mortaria – by Kay Hartley

Fabric examined with hand lens at X20 magnification. NB 'right facing' and 'left facing' when applied to stamps indicates the relation of the stamp to the spout looking at the mortarium from the outside. Figure 47.

CC1 Immediately post AD43
1120 SF17131 (see fig.47)
Diameter 360mm. 19% Four joining sherds in fine-textured, friable, cream fabric; self-coloured. Inclusions: some, ill-defined black fragments visible. The trituration grit consists of tiny to small quartz and flint fragments, evenly scattered in a band, 1-2cms wide, immediately below the bead on the inside and combined with concentric scoring; below this area both grit and scoring have been progressively worn away. The grit and scoring scoring were continued over the upperside of the flange. The surface of the fabric shows very fine cracking due to chemical weathering, but telltale traces of the scoring survive. This form and fabric combination is typical of unlocated potteries probably situated in the north of France (see Hartley 1998, 206-209, Group I(iii); Tomber and Dore 1998, 75-76). There is abundant evidence to show that these mortaria were coming into Britain in the pre-Flavian and early Flavian periods, c. AD50-85.

?CC3-CD Late first/early second century (midden, oyster gully)
1098 SF16755 (see fig.47)
Diameter 320mm 6% Diameter base 160mm. Hard, dense, brick-like orange-brown fabric; self-coloured. Inclusions: ill-sorted, moderate to fairly frequent, mostly quartz, some red-brown (occasionally up to 18 mm). Worn smooth inside; some very slight burning. There is some cracking under the flange but this is in no sense a waster). Probably local and pre-Flavian possibly to early Flavian in date.

1076i SF18162 (see fig.47)
Fine-textured, cream fabric; self-coloured. Inclusions: very moderate, small, ill-sorted, quartz, opaque black and red-brown material. Two flint trituration grits survive. There are quartz and flint grits scattered over the flange; these were probably combined with concentric scoring, but none of this survives on the sherd. The fabric is a variant of that used for 1120 above. The mortarium is from a similar source in northern France to 1120 and of similar date.

1076ii SF18162 (see fig.47)
Incomplete rim-section of a mortarium in similar fabric to 1076i and perhaps similar form; it could be from the same vessel.

CE-CF ground associated with building 4
1057 SF18161 Base/body sherd in typical Verulamium region fabric (greyish-cream throughout). Inclusions: abundant quartz, rare black, probably flint. The inside is worn and the outside pitted by weathering. AD50-130. Not part of any other vessel present.

CF 2nd half of 2nd century

1092 SF16691 Two joining body sherds in fine-textured, cream fabric; self-coloured. Inclusions: few, ill-sorted quartz, small black streaks and tiny black specks. Trituration grit: tiny quartz scattered overall the inside. Probably Lyon AD50-80.

Other Contexts

1012 SF14746 (see fig.47)
Incomplete rim-section in drab, buff-cream fabric. Inclusions: frequent, fairly well-rounded quartz, some black and a lot of black staining. Trituration grit: transparent, white and pinkish quartz, flint, and black, all tiny to medium sized, well-mixed and packed closely together. The gritting ends in a neat line c5mms below the bottom of the bead. All the grit is completely worn away in the bottom section of the vessel and part of the body fabric also, indicating extremely heavy or/and wear over a long time. There is no indication of concentric scoring either inside or on top of the flange. There are three grooves at wide, but varying intervals on top of the flange. The fabric is not unlike Verulamium region fabric, but does not fit happily in any of the known variant fabric-types and the gritting techniques are abnormal for the major production period of these potteries (AD50-130). Nor does it readily fit known sources in Gaul. There have been earlier finds from Fishbourne which had a superficial similarity to Verulamium region products (eg FB61/21 2 joining FB61/20 3 in circle, 143) and comparison with such sherds could help to indicate the source. The form would fit production in the pre-Flavian period and perhaps the early Flavian period and on present evidence local production is a possibility.

1026 SF15219 (see fig.47)
Diameter 270mm. 22% Three sherds making up about one quarter of a mortarium fired to cream at the surfaces, but pink throughout the rest of the fabric. Inclusions: abundant, fairly well-sorted quartz with rare opaque black material. A band of up to one centimetre of trituration gritting survives below the bottom of the bead, this is combined with concentric scoring; the top of the flange is smooth. Below this point both grit and scoring have been worn away. The fragmentary potter's stamp which can reasonably be assumed to be left-facing, is very poorly preserved. It reads ALBIN[..] within chevron borders and is from one of the commonly used dies of Albinus.

Almost all of his mortaria are, like this example, in fabric characteristic of mortaria made at potteries in the Verulamium region (Bricket Wood, Brockley Hill, Radlett etc). None of his kilns have been located, but one namestamp of his was found on the kiln-site at Radlett (Page 1898, 266, stamp missing and die unknown). The LVGDVNVM or LVGVDVNVM mentioned in many of the counterstamps used by Albinus and some other potters is somewhere in this region. Counterstamps reading LVGD were used in the period AD 55-75 by Oastrius whose workshop was at Little Munden Farm, Bricket Wood (Hartley 1977), and by Ripanus (Castle 1974, 261-2, MS1-3) at Brockley Hill, which is believed to be the site of Sulloniacae. Equally the stamp of Albinus at Radlett could be significant (see above). It is highly probable that some of the potters in this area had workshops at more than one site. There is also evidence from Colchester that Albinus was active there for a short time (Hartley 1999, 198, S15, interestingly stamped with the same die as this example).

Albinus was the most prolific potter who ever stamped mortaria in Britain with about 440 mortaria recorded. He was active within the period AD 60-90, but this example could be earlier than AD 85. The neat gritting and scoring surviving on the inside was a normal practice during most of his activity; it almost certainly ceased during the decade AD 80-90 in potteries in the Verulamium region. There is no instance of his mortaria also having concentric scoring on the flange like the mortaria of Oastrius at Bricket Wood. It is worth noting that with the rim profile Fishbourne mortarium, with low bead, deep hook and the groove and swelling under the flange, is typical of his work.

1027 SF15505 (see fig.47)
Incomplete rim-section in self-coloured, cream fabric. Inclusions: small opaque black and rare red-brown material with black staining in the fabric. The fragment is from a mortarium of form Bushe-Fox 22-30 (1932, fig. 19, types 22-30). These mortaria were made in probably more than one pottery in northern France although the best evidence at the moment is from Noyon in the Département d'Oise (Redjeb, T Ben, 1992; Hartley 1998, 203-206, now personally examined; Tomber and Dore 75-76). It's production can be dated within the period AD70/80-150, but because it is an unstamped form, closer dating has not yet been possible despite the considerable variation in rim-profile (for more details see Hartley 1991, 198-203, Types TC30-40 in fabrics FC3-4, 189 now known to be from northern France).

Glass – by Denise Allen

Glass Catalogue

The assemblage from the 2002 excavations (see figs.48,49,50,51,52) comprised 284 Roman vessel fragments, 59 fragments of Roman window glass, fragments of 2 faience and 1 glass bead and another enigmatic piece of ?rod of glass or rock crystal (to add to those found in 1998 cat no 72).

Roman vessels: 67 vessel fragments have been catalogued or listed, and an additional 41 bottle fragments have been identified and listed. Two catalogued items (nos 15 and 44) may in fact be post-Medieval in date, but have been given the benefit of the doubt and described just in case – (a further 17 certainly post-Med fragments have been listed at the end of the report). There are, in addition, 138 indeterminate blue-green blown glass fragments, 27 indeterminate colourless and 11 strongly coloured, of which 4 are blue, 2 dark green appearing black, 1 dark brown appearing black, 2 yellow green, 1 green and 1 turquoise. One very small, thin-walled blue-green fragment came from a deposit of pre-conquest date , and can therefore be added to the small list of glass vessels known to have arrived in Britain at this time, of which very few are blown glass (Price 1996 53).

The vessel types found consolidate the range found during the 1997-1999 excavations, and indeed some fragments (particularly no 33) may turn out to be part of the same vessel of which bits were found in 1999. Several fine coloured vessels of pre-Flavian date are represented, including 3 fragments of cast polychrome glass (nos 1-3), the mottled blue and white amphorisk or jug (no 33), and possibly a cantharus (no 17). There is more good-quality colourless facet cut glass of the Flavian to Trajanic periods, both cast and ground (nos 8-10) and blown (no 18). There are a number of fragments of common first / earlier second century jugs or jars (nos 34-37), unguent bottles and flasks (38-48) and plenty of bottle fragments (nos 50 – 51 and a further 41 fragments listed). The only fragments which are likely to date later than the mid second century are the fragments which are probably from cylindrical cups with two concentric base-rings (nos 24-25 and 28), the commonest glass drinking vessel at this time.

Roman window glass: All 59 fragments are of the matt-glossy variety, in use until about AD300. The probable method of manufacture has been recently published on the web (www.romanglassmakers.co.uk) and in print (Allen 2002 102-112). The majority of fragments 47 in total) are blue-green as usual, 9 are colourless, 1 is pale green and 2 are intriguingly very blue, although there is no way of knowing whether this was deliberate or accidental, merely being the result of having a lot of blue glass in the batch that was melted for making into window glass.

In the catalogue the first number is the drawing number (on figs. 48,49,50), followed by the site notation (FBE02), context number, and lastly small finds number.

Vessel Glass
Cast and Ground

Polychrome

1. FBE02 1100 16774
   Base fragment of a bowl or plate of polychrome cast and ground glass; dark purple and opaque yellow pieces arranged in a mottled pattern. The opaque yellow has a cracked and 'crazed' appearance and the purple pieces stand a little proud of the level of the yellow. Part of a flat base and base-ring extant, the latter moulded from lower vessel wall rather than added as a separate ring (coloured pieces continue from on to the other, with no break); diam c 100 mm.

2. FBE02 1057 16300
   Rim fragment of a bowl of polychrome cast and ground glass; translucent blue ground with florets of opaque yellow with opaque white centres, ringed with dark purple. Straight, near-vertical rim, diam c 200 mm.

3. FBE02 1010 15282
   Small fragment of polychrome cast and ground glass; emerald green ground with small opaque yellow and slightly larger opaque white pieces, apparently randomly arranged.

Monochrome

Blue-green

4. FBE02 1030 16183
   Rim fragment of a ribbed 'pillar-moulded' bowl of blue-green glass; horizontal wheel-cut line around interior, just below rim. Extant profile suggests a deep bowl, diam c 190 mm.

5. FBE02 1030 16211
   Small rim fragment identical in profile and colour to no. 4 above – possibly from the same vessel.

6. FBE02 1115 17165
   Small fragment from the edge of a rim of a ribbed 'pillar-moulded' bowl of blue-green glass. Diam indeterminable.

7. FBE02 1001 14096
   Small lower body fragment of a ribbed 'pillar-moulded' bowl of blue-green glass. Part of three ribs extant, diam indeterminable.

Colourless

8. FBE02 1008 15244
   Rim fragment of a bowl of colourless glass, cast, wheel-cut and –polished. Broad, outsplayed rim with overhang which has been cut with a series of notches around the edge to produce alternating rounded and pointed ridges, the latter extending over the overhanging lip. Diam c 190 mm.

9. FBE02 1025 16845
   Rim fragment of a bowl similar to above, but less sharply cut, and with an extra hollow-ground ridge on underside of lip. Diam c 240 mm.

10. FBE02 1027 15606

Flat fragment from the underside of a plate of colourless glass. Inner surface rotary-polished, outer surface has part of three rows of oval facts, cut in quincunx; part of 10 facets extant.

11. FBE02 1010 14639
    Small base fragment of a bowl of colourless glass. All surfaces wheel-polished, with a low base-ring which may have been ground from the vessel wall, or may have been added and polished afterwards. Diam base-ring c 120 mm.

12. FBE02 1111 17099
    Small base fragment very similar to no. 10 above, but surfaces more opaquely weathered.

13. FBE02 1024 15792
    Fragment from the edge of a plain, rim, probably the flaring lip of a plate, all surfaces wheel-polished. Diam indeterminable.

14. FBE02 1100 16581
    Flat fragment of colourless glass with rotary-polishing on both surfaces, probably from a plate or bowl similar to those above.

These 14 fragments of glass all belong to the manufacturing category traditionally described as 'cast and ground', although this has long been known to be something of a misnomer. Recent experimental work in producing replicas of these vessels by glassmakers Mark Taylor and David Hill show that all the open forms not made by blowing are most likely to have been made by first producing a flat disc of glass, either polychrome or of a single colour, slumping it over a former, and finishing when cold by rotary-grinding and polishing. Their methods are clearly described and illustrated on their website www.romanglassmakers.co.uk.

The methods for producing a wide range of florets for the production of the polychrome bowls, as represented here by nos 1-3, are well-illustrated on the website. These three examples have popular colour combinations, and add to the relatively high representation of this good-quality mid 1st century AD glass at Fishbourne. The 'behaviour' of the opaque yellow glass within the matrix of the bowl on no 1 is interesting to note in view of the work done by Taylor and Hill – the lead content gives it a lower melting temperature, making it more difficult to control than the other colours, leaving the other colours standing higher on the surface; in addition, it often seems to weather differentially from other colours. Sometimes the base-rings are added as a separate piece and fused to the underside of the vessels, sometimes they are moulded from the vessel wall, as on no 1 here.

Taylor and Hill have, in addition, developed what is the most convincing method to date for the manufacture of ribbed bowls – commonly called 'pillar-moulded bowls', also clearly illustrated on their website. It involves the use of specially adapted pincers to pinch the ribs from the surface of a hot disc of glass before the slumping process, then finishing the rim and the inside surface by rotary-polishing when cold. These bowls, represented here by nos 4-7, totalling probably 3 vessels, are amongst the commonest 1st century glass vessels types, and a number of examples have been found previously at Fishbourne. Nos 4-5, which are likely to be from the same vessel,

both have a horizontal wheel-cut line just inside the rim, which is thought to indicate high quality and an early date, a feature noted previously on a Fishbourne find (Price and Cottam 1996 162, no 7).

The colourless 'cast and ground' fragments (nos 8-14) also add to a good corpus of previous finds of this type from the site. They represent good-quality finds of the Flavian-Trajanic periods, particularly the three fragments with cut decoration (nos 8-10). The two notched rims almost certainly represent two different vessels, as there are marked variations in their profiles. A similar rim, but with additional facet-cutting on the underside was found during excavations at Fishbourne in 1997 (cat no 8) and there were two fragments similar to nos 8 and 9 from the earlier excavations at the site (Harden and Price 1971, 334-6, nos 33-34, fig 138). The facetted fragment from the underside of a plate (no 10) may represent a third vessel here. A substantial part of a plate decorated like this was found at Wroxeter, from a deposit dated before AD125 (Charlesworth 1975).

Mould-blown glass

15. FBE02 1010 14729

Body fragment of thick, dark blue-glass; mould-blown. Outer surface has a pattern of a tri-branched device, above a horizontal ridge. I suspect that this piece might be from a modern bottle, because of its thickness, but can't be quite sure.

Cups and other forms of mould-blown dark blue glass were quite popular during the 1st century AD, and many of the designs incorporate patterns of foliage and other diagrammatic shapes. However, this piece is unusually thick, and the extant design resembles a fleur-de-lys. The suspicion remains that it is from a modern or Victorian bottle.

Blown Glass

Bowls and cups

16. FBE02 1011 14235

Rim fragment of a tubular-rimmed bowl of blue-green glass. Rim folded inward and downward, then outward and downward to form hollow tube; much distorted by fire therefore diam interminable.

Tubular-rimmed bowls were common during the later first and first half of the second centuries (Price & Cottam 1998 78-80) and a number of fragments have been found previously at Fishbourne (1997-99 cat nos 18-21).

17. FBE02 1057 16301

Rim fragment of a cup of blue-green glass. Slightly flaring rim, fire-rounded and thickened, with horizontal tooled ridge beneath. Diam of rim c 90 mm.

The cup form which most commonly has this rim profile is the cantharus, made in a variety of colours and decorations around the mid first century (c AD43-65; Price & Cottam 1998 68-70). If this identification is correct, then it is another example of a fairly rare, good quality drinking vessel present on the site at this time.

18. FBE02 1024 15256

Rim fragment of a cup of colourless glass, now milky and semi-opaque. Slightly flaring rim, outer surface wheel-cut and ground: two horizontal ridges beneath rim, another hollow-ground ridge further down side. Below this is a row of oval facets, with evidence of another row below of facets arranged in quincunx. Diam of rim c 120 mm.

Facet-cut cups of this type were popular drinking vessels during the late first and earlier second centuries AD (Price & Cottam 1998, 80-83). Two very similar examples came from earlier excavations at Fishbourne (Price & Cottam 1996 165, nos 56-7, fig 6.28).

19. FBE02 1098.2 17356 & FBE 1030 16045
Rim fragment of a cup of colourless glass. Rim nearly vertical, ground smooth, with hollow-ground ridge below, diam of rim c. 90 mm. Also, adjoining fragment from below the rim, with part of ridge extant.

20. FBE02 1025 17241
Rim fragment of a cup of colourless glass. Rim turned slightly inward, and ground smooth, with horizontal wheel-cut line beneath, diam of rim c 90 mm.

21. FBE02 1057 16328
Rim fragment from the same or a very similar vessel to no. 20 above.

22. FBE02 1011 14469
Rim fragment of a bowl or cup of colourless glass. Rim turned inward slightly and fire-rounded and thickened, diam indeterminable.

23. FBE02 1001 14155
Rim fragment of a bowl of colourless glass. Rim turned inward slightly and fire-rounded and thickened, diam c 260 mm.

24. FBE02 1028 16141
Rim fragment of a cup of colourless glass. Rim turned inward slightly and fire-rounded and thickened, diam c 110 mm.

25. FBE02 1007 14464
Rim fragment of a cup of colourless glass. Rim turned inward slightly and fire-rounded and thickened, diam c 100 mm.

26. FBE02 1001 14126
Rim fragment of a cup. Rim turned outward slightly and fire-rounded and thickened, diam indeterminable.

27. FBE02 1124 17326
Two body fragments from an indented vessel, probably a cup, of colourless glass. Part of two oval indents extant.

Fragments 21-27 represent a further 7 probable cups and 2 probable bowls of colourless glass. The forms of most cannot be identified closely, but nos 24 and 25 have profiles characteristic of cylindrical cups with fire-rounded rim and double base-

ring, common during the later second and earlier third centuries (price & Cottam 1998 99-101), and base fragment no 28 below is likely to be another example of this type. Several examples have already been found at Fishbourne (1997099 cat nos 31-35). No 27 is probably part of an indented cup, various types of which were popular during the first and second centuries (Price & Cottam 1998 85-88 and 93-4). Base fragment no 30 below also belongs to this general type.

Base fragments, most probably from bowls and cups

28. FBE02 1031 15934
    Base fragment of colourless glass, probably of a cup. Two concentric applied base-rings, diam of outer 38 mm.

29. FBE02 1010 14704
    Base fragment of greenish-colourless glass; tubular base-ring folded from wall of vessel, diam c 60 mm.

30. FBE02 1068 18180
    Base and body fragments, probably of an indented cup, yellow-green glass. Pushed-in open base ring, diam. c 40 mm.

31. FBE02 1012 14755
    Base fragment of colourless glass. Base-ring folded from vessel wall, diam c 40 mm.

32. FBE02 1040 15679
    ?Base fragment of colourless glass; possibly a base, applied to underside of vessel, diam of footring c 80 mm.

With the exception of no 28, none of the forms of these cups can be closely identified, but represent a good range of drinking vessels.

Jug, jar or amphorisk

33. FBE02 1028 16797, 17057 and 15137
    Three joining fragments from the side and base, probably of a jug, of dark blue glass decorated with opaque white marvered blobs. Pushed-in solid base-ring, folded from the vessel wall, diam 73 mm.

    Two more body fragments from the same context (1028) are almost certainly from the same vessel, although they do not join (17054 and 17040) and one tiny fragment, also blue with the trace of an opaque white marvered blob, may also belong (1066 16697).

Strongly-coloured glass decorated with marvered blobs was fairly popular, though never very common, during the mid first century. Fragments of the neck and body of vessel of the same colour were found during excavations in 1999 (cat no 45), perhaps even once forming part of the same vessel as this? There was also a fragment from the A27 excavations at Fishbourne (Price and Cottam 1996 164 no 36, fig 6.27). The shape of the body above the base of this piece suggests that it comes from a tall ovoid vessel rather than one which is very globular. This might suggest the form discussed by Price & Cottam as a convex jug with two handles (1998 147-148). However, the

folded base-ring is solid rather than open as on most of the examples they cite. The decoration suggests a date between c AD43 and AD65/70, and a vessel of fairly good quality.

Jugs or jars

34. FBE02 1008 14689
    Base fragment, probably of a large jar or jug, of blue-green glass. Pushed-in open base-ring, diam c 80 mm.

35. FBE02 1057 16404
    Base fragment, as above but thinner-walled, blue-green glass, diam c 80 mm.

36. FBE02 1119 17045
    Base fragment, as above, dark blue glass, diam c 80 mm.

37. FBE02 1012 15317
    Body fragment from a globular ribbed vessel, probably a jug or jar, of blue-green glass. Diam indeterminable.

Body fragments probably from this group of jars/jugs:

FBE02 1098 18181 Brown fragments
FBE02 1098 17353 Brown frags, including a flattened base, probably a jug
FBE02 1001 14075 Yellow-green ribbed body fragments

Handle fragments, from jugs or flasks or bottles:

FBE02 1001 14117 Lower handle attachment, blue-green, three-ribbed.
FBE02 1031 15994 Edge of a curved, flat-sectioned handle, blue-green.
FBE02 1010 14721 Edge of a flat-sectioned handle with central rib, blue-green
FBE02 1024 15350 Edge of handle shoulder attachment, blue-green

The three base fragments and one ribbed body fragment, nos 34-37, are likely to have come from globular jars or jugs of a type very common during the later first and earlier second centuries (Price & Cottam 1998 137-138 and 150-157) – body and base fragments might have come from either form. Some of the handle fragments are also likely to have come from jugs of this group, which were often made in strong monochrome colours. A number of fragments have previously been found at Fishbourne, and many examples are cited with reference to these (Price & Cottam 1996 164, nos 38, 42-3, 45-6, 52 and 1997-9 excavations cat nos 47-49).

Flasks and unguent bottles

38. FBE02 1026 15503
    Rim and upper neck of an unguent bottle of blue-green glass. Irregular rim, outflared and fire-rounded, diam 29 mm; cylindrical neck.

39. FBE02 1012 14845
    Rim fragment of an unguent bottle, as above, blue-green glass, diam c 40 mm.

40. FBE02 1001 14051

Base fragment of an unguent bottle of blue-green glass – base rounded and thick-walled, diam c 30 mm.

41. FBE02 1029 16119
    Base of an unguent bottle of blue-green glass, as above, diam indeterminable.

42. FBE02 1012 14708
    Base of an unguent bottle of blue-green glass, as above, diam interminable.

43. FBE02 1028 17027
    Two joining fragments from the lower body of an unguent bottle or flask of blue-green glass. Rounded-conical body, diam c 50 mm, flattened base.

44. FBE02 1005 14368
    Rim, neck and upper body of small unguent bottle or flask of blue-green glass. Rim outflared and fire-rounded, short cylindrical neck, apparently bulbous body. Diam of rim 22 mm. Possibly post-Med drug bottle?

45. FBE02 1026 15447
    Rim fragment of a unguent bottle or flask of blue-green glass. Rim fire-rounded and flattened outward to form horizontal lip, diam c 38 mm.

46. FBE02 1010 15003
    Rim fragment of a flask or jug, blue-green glass, lots of impurities and bubbles within. Rim folded outward, upward and inward to form sloping lip, diam c 30 mm.

47. FBE02 1005 18179
    Rim fragment of a flask or jug, as no 46 above, blue-green glass, diam. c 30 mm

48. FBE02 1007 14234
    Base fragment of a bulbous flask or jug, blue-green glass. Rounded body, flattened base, diam interminable.

Nos 38-42 are five examples of tubular unguent bottles (Price & Cottam 1998 169-170) or examples with rounded-conical bodies (op cit 172-174) which were common during the first and early second centuries. Mark Taylor and David Hill have recently been making these in large quantities for a Roman pharmacist re-enactor, and have found that the rims are quickly and simply finished by widening them with a wet stick after re-heating, causing them to partially fold over sometimes, as can often be observed in Roman examples. The use of a clay pontil during this process means that no pontil scar is left on the underside of the vessel. Some of the neck fragments listed below may also come from unguent bottles, or from larger jugs or flasks. Nos 46-47 and possible no 48 are probably from rounded conical or 'convex flasks' (Price & Cottam 1998 171-172) also common during the mid first century until about AD70.

Neck fragments, unguent bottles, flasks, jugs or bottles
    FBE02 1010 14862 Blue-green, cylindrical neck, diam c 30 mm, conical body
    FBE02 1010 14831 Blue-green, similar to above, diam c 30mm, conical body

FBE02 1011 14583 Blue-green, cylindrical, diam c 10 mm.
FBE02 1010 15811 Blue-green, cylindrical
FBE02 1081 17231 Blue-green, cylindrical
FBE02 1081 16882 Blue-green
FBE02 1057 16260 Blue-green
FBE02 1039 17178 Blue-green
FBE02 1006 16554 Yellow-green

49. FBE02 1024 15889
Thin, cylindrical fragment of blue-green glass, diam c 8 mm.

This cylindrical fragment is too narrow to be a vessel neck, but may be the spout of a vessel such as a funnel or a rhyton (drinking horn), examples of which have been found at in first century contexts at sites such as Colchester, London (London Museum 1970, 8 no 15) and Pompeii (Ciarallo and Carolis 1999 205 no 266 and 209 no 274).

Bottles

50. FBE02 1012 15117
Handle and shoulder fragment of a cylindrical bottle of blue-green glass. Angular, 6-ribbed handle; diam of body c 120 mm.

51. FBE02 1006 16471
Base fragment of a prismatic bottle of blue-green glass. Moulded design on base shows part of a triangular stop and the letters (probably) IN retrograde.

Bottles once again are the most numerous vessel finds on the site, totalling 43 fragments, of which 2 are cylindrical, 6 certainly square, and a further 19 are prismatic, therefore probably but not certainly square (some might be hexagonal, rectangular or octagonal). The types have been discussed extensively elsewhere (price & Cottam 1998 194-198) and were common during the first century, with the square continuing to be in common use throughout the second century too. Bases with moulded letters were made in a variety of forms – some have abbreviated names, thought to be the manufacturers of the vessels, others have been interpreted as places (eg CCPP for Cologne). No parallels immediately spring to mind for IN retrograde, but I will keep looking!

Beads etc

52. FBE02 1010 15123
Fragment of a melon bead of turquoise faience. Length 19 mm, diam c 22 mm.

53. FBE02 1024 15352
Fragment of a melon bead of turquoise faience. Length 10 mm.

Melon beads of turquoise faience are commonly found in first century contexts, and 21 examples have been found in previous excavations at Fishbourne (Harden & Price 1971 148, fig 69 nos 4-5 and Price & Cottam 1996 170 nos 173-8, fig 6.33.

54. FBE02 1029 16184

Fragment of a bead of dark blue glass; apparently cylindrical, but distorted somewhat by fire. Extant length 9 mm

55. FBE02 1026 153
    Thin, straight piece of ?colourless glass or ?rock crystal. Both have linear grains in the way in which they have broken. Max length 20 mm; maximum width 5 mm.

This appears to be another piece of the enigmatic glass or ?rock crystal found in 1998 (catalogue no. 72). They still cannot be explained!

Window Glass

56. FBE02 1065 17216 and 1012 14790
    Two fragments, not joining but almost certainly from the same piece of blue matt-glossy window glass- both with characteristic 'thumb' edges. They are catalogued here because of their unusual colour – definitely blue rather than blue-green or colourless – but there is no way of knowing whether this was intentionally or accidentally achieved.

A total of 59 fragments of matt-glossy window glass were found, of which 47 are blue-green, 9 colourless, 2 blue and 1 pale green. The two blue are the most interesting – streaks within the glass which are common to both fragments strongly suggest that they belong to the same pane, and it is tempting to think that they were deliberately made blue to match a decorative theme, but this cannot be proved. Coloured window glass is more or less unknown, or at least unrecorded, in Roman times.

Post-Medieval

FBE02 1001 14045 olive green frag
FBE02 1001 14049 olive green frag
FBE02 1001 14050 blue-green bottle base
FBE02 1001 14059 colourless
FBE02 1001 14142 olive green frag
FBE02 1001 14143 olive green frag bottle base
FBE02 1001 14144 olive green frag
FBE02 1001 14145 olive green frag
FBE02 1001 14164 olive green frag
FBE02 1001 14504 olive green frag
FBE02 1002 14034 olive green frag
FBE02 1002 14035 olive green frag
FBE02 1002 15170 olive green frag
FBE02 1002 17004 olive green frag
FBE02 1006 16600 colourless
FBE02 1006 16630 colourless
FBE02 1082 17713 olive green frag distorted by fire

Table 62: bottle glass

Context	SF no	Cylindrical	Square	Prismatic	Indeterminate	Description
1006	16471			1		Base, lettered
1007	14196		1			Body fr
1007	14293			1		Body fr
1007	14329				1	Neck fr
1007	14421			1		Body fr
1007	14461				1	Shoulder fr
1008	14574				1	Body fr
1008	14663			1		Base fr
1010	14735		1			Body fr
1011	14272				1	Body fr
1011	14476			1		Base fr
1011	14530				1	Shoulder fr
1012	14606			1		Body fr
1012	14688			1		Shoulder fr
1012	14854				1	Shoulder fr
1012	15117	1				Handle, shoulder
1012	15122				1	Handle fr
1012	15806				1	Shoulder fr
1026	15131				1	Handle fr
1026	15252				1	Shoulder fr
1026	15489				1	Shoulder fr
1027	15675			1		Body fr
1027	15680		1			Body fr
1027	15763			1		Body fr
1029	16040		1			Body fr
1029	17085			1		Body fr
1030	15999		1			Body fr
1030	16311			1		Body fr
1030	16545			1		Body fr
1030	16914			1		Body fr
1031	16005				1	Shoulder fr
1043	16334				1	Handle fr
1044	16046			1		Body fr
1057	16216				1	Neck fr
1057	16352			1		Shoulder fr
1057	16412			1		Body fr

1057	16428			1		Body fr
1098	17390				1	Handle fr
1100	16840				1	Shoulder fr
1108	18066		1			Body fr
1112	16777	1				Body fr
1112	16784			1		Body fr
1115	17343			1		Body fr

Table 63: window glass

Context	SF no	Blue-green	colourless	Other	Description
1001	14060	1			
1001	14072	1			
1001	14102	1			
1001	14128	1			
1001	14159	1			Thumb edge
1005	14246	1			
1006	16534	1			
1006	16570	1			
1006	16576	1			
1007	14180		1		
1007	14362	1			
1007	14465	1			
1008	15002	1			
1008	15045	1			
1008	15492	1			
1010	14777	1			
1010	15164	1			
1011	14193	2			
1011	14472	1			
1012	14569	1			
1012	14644	1			
1012	14790			1 blue	Thumb edge
1012	14806		1		
1012	14882	1			
1012	15055		1		
1013	14194	2			
1024	15218	1			
1024	15275		1		
1024	15436	1			
1024	15483		1		
1024	15820	1			

1025	16644	1			
1025	16683	1			
1025	16749		1		
1025	16753	1			
1025	17095		1		
1100	16790	1			
1100	16801	1			
1100	16824	1			
1124	17555	1			
1124	17614	1			
1027	15713	1			
1027	15795	1			
1030	15908	1			
1030	15969	1			
1030	16370	1			
1037	15918	1			
1044	16075			1 Pale green	
1049	15572		1		
1049	16394		1		Thumb edge
1057	16155	1			
1057	16302	1			
1057	16402	1			
1058	18178	1			
1065	17216			1 blue	Thumb edge
1080	16562	1			
1081	16609	1			

The copper alloy – by David Dungworth

Catalogue of Copper-Alloy Artefacts

See Figures 53,54,55,56,57,58

1. Nauheim derivative brooch (fig.53:1)
small find number (sf) 17570; context 1098; bronze
A one-piece brooch with a four coil spring connected by an internal coil. The profile of the bow is a simple curve, the cross-section of the bow is round and the catch plate is not perforated. The type is also variously called a 'poor man's brooch' or a *Drahtfibel* (Hawkes & Hull 1947: type VIII). Flavian.

2. Nauheim derivative brooch (fig.53:2)
sf 15754; context 1030; leaded gunmetal
A one-piece brooch with the pin and most of the spring missing. The bow is nearly rectangular in section and tapers as the foot merges with the solid catch plate. An attempt may have been made to repair this brooch. One side of the single surviving spring coil and part of the bow bear signs of having been filed. Flavian.

3. MISS Colchester A ? brooch
sf 16133; context 1057; brass
A fragment of a one-piece brooch. The catch plate, foot, most of the bow, some of the spring and the pin are missing. Possibly originally a six-coil spring with an external cord secured by a forward-facing hook. The spring is obscured by two wings with oblique incised decoration (cf. Hawkes & Hull 1947: type III). The bow is almost square in section and turns through 90° approximately 5mm above the wings. Early to mid first century AD.

4. Rosette brooch (fig.53:4)
sf 14341; context 1011; leaded gunmetal
A near complete example of a rosette brooch (the pin is missing). The 10 (?) coil spring is held in a cylindrical spring cover. An applied domed rosette is fixed to the bow with a rivet. The rosette is decorated with radial grooves and a piece of red enamel in the centre (Hawkes & Hull 1947: type XI). Mid to late first century AD.

5. Rosette brooch (fig.53:5)
sf 16958; context 1030; leaded brass
A less complete example of a rosette brooch which lacks the pin, the domed rosette and part of the foot. The central field of red enamel decoration does survive. Mid to late first century AD.

6. Langton Down brooch (fig.53:6)
sf 17365; context 1082; brass (tinned)
A fairly large Langton Down brooch (Hawkes & Hull 1947: type XII). The catch-plate is damaged and the pin is missing. The front of the brooch has been tinned but this survives only within the base of some of the vertical grooves. Mid first century AD.

7. Langton Down brooch (fig.53:7)
sf 16278; context 1057; leaded brass
A smaller Langton Down brooch. The catch-plate is complete but has been crushed and the pin is missing. Mid first century AD.

8. Langton Down brooch (fig.53:8)
sf 14883; context 1010; brass (tinned)
A small Langton Down brooch with damaged foot; lacking most of the catch-plate and the pin. The front of the brooch has been tinned but this survives only within the base of some of the vertical grooves. Mid first century AD.

9. Hod Hill brooch (fig.53.9)
sf 14931; context 1010; brass (tinned)
A small Hod Hill brooch (Hawkes & Hull 1947: type XVIII) with two side knobs. The hinged pin is missing. Two separate sections of the foot are tinned. Mid first century AD.

10. Hod Hill brooch (fig.53:10)
sf 16327; context 1043; brass/copper (tinned)
A fairly large but incomplete (the foot, catch-plate and hinged pin are missing) and badly corroded Hod Hill brooch. There are still some traces of tinning on the front of the brooch. Mid first century AD.

11. Hod Hill brooch (fig.53:11)
sf 15417; context 1026; gunmetal (tinned)
A Hod Hill brooch with a narrow and plain bow (Hawkes & Hull 1947: type XVIIIC); the foot, catch-plate and most of the hinged pin are missing. Mid first century.

12. Colchester B brooch (fig.53:12)
sf 15476; context 1026; Leaded bronze
Complete, two-piece Colchester brooch (Hawkes & Hull 1947: type IV) with plain bow except for beaded decoration on the lug that holds the axial bar and chord in place. The eight-coil spring is broken at one end but the two circular plates at either end of the spring remain. Mid first to late century AD.

13. Colchester B brooch
sf 15351; context 1026; Leaded bronze
Two-piece Colchester brooch with three longitudinal grooves decorating the bow. The pin and half of the (eight-coil) spring are missing. Mid to late first century AD

14. Scabbard fitting (fig. 54:14)
sf 17603; context 1084
Large openwork scabbard fitting

15. Pendant (fig.54:15)
sf 14445; context 1002; leaded bronze
A broken cavalry pendant with suspension loop (cf. Oldenstein 1977: no. 200).

16. Belt slider (fig.54:16)

sf 14519; context 1007; leaded brass
Complete rectangular belt slider (31 x 14 x 8mm) decorated with radiating lines in a cross shape.

17. Cavalry harness fitting (fig.54:17)
sf 15339; context 1026; brass (possibly silvered)
Bent and worn strip (61 x 10mm) with a central hole, the remains of two rivets, one at either end, and a moulded outline. Well-preserved examples are decorated with fields of niello and silvered or tinned (cf. Jenkins 1985: fig 12; Webster 1971). Mid to late first century AD.

18. Belt/harness fitting/mount
sf 15210; context 1008; leaded brass
Strip (26 x 4mm) with central hole and two rivets, one at each end. The face is decorated with recessed lines running the length of the strip (cf. Frere 1984: cat 193).

19. Stud (fig.54:19)
sf 16681; context 1025; leaded gunmetal (silvered)
A stud (22mm long) with a square-sectioned tapering shaft and the head decorated with a human head in three dimensions. The back of the head is plain but the front shows the hair, eyes, nose, mouth and ears. The hair is rendered as radiating grooves and ridges representing the hair heavily scraped back in a style which has parallels with some 'Celtic' objects. Such 'ornaments in the form of human heads in late Celtic Britain. . . are, as we should expect, relatively rare (Toynbee 1964: 23). Examples are known from Welwyn, Hertfordshire (Fox 1958: plate 33b) but these have lentoid eyes and moustaches while the Fishbourne example has circular eyes and no moustache. Slightly closer parallels can be made with the statuettes of bound captives from Brougham, Cumbria and London (British Museum 1964: 54, plate 15).

20. Mount
sf 15490; context 1008; leaded gunmetal
Domed mount (8mm diameter) with two extensions which hold rivets. The surface of the dome is decorated with several parallel grooves.

21. Buckle (fig.54:21)
sf 14002; context 1002; leaded gunmetal
An incomplete D-shaped buckle (27 x 24mm), possibly medieval.

22. Buckle (fig.54:22)
sf 14036; context 1002; copper (tinned on one side)
A broken double D-shaped buckle (29 x 21mm), probably post-medieval.

23. Buckle fragment ?
sf 14996; context 1002; leaded gunmetal
Curved fragment of metal, possibly part of a large buckle.

24. Chain
sf 16234 & 16248; context 1030; bronze and brass

Numerous fragments of double-D chain (cross-section ~3mm). Brass and bronze wire alternate. Possibly used to connect two brooches or fittings (cf. Cunliffe 1971: Cat 99).

25. MISS Terminal
sf 16844; context 1094; leaded bronze
Baluster moulded cylindrical object. Two bands of rilled decoration run around the two balusters. One end shows the traces of iron corrosion products suggesting that it was originally attached to an iron rod, possibly a hair-pin (cf. Bishop & Dore 1988: cat 72; Frere 1984: cat 218).

26. Bracelet (fig.54:26)
sf 16998; context 1082; leaded bronze
Plain rectangular-sectioned bracelet.

27. Bracelet ?
sf 17432; context 1082; brass
Curved and tapering strip decorated with two longitudinal grooves. Possibly a bracelet.

28. Ear-ring ?
sf 16150; context 1029; brass
Fragment of a small ring (15mm external diameter) with tapering cross-section: square-sectioned at one end and circular-sectioned at the other (1mm). Possibly an ear-ring.

29. Nail cleaner ? (fig.55:29)
sf 15855; context 1027; bronze
Worn and incomplete nail cleaner (or possibly strap end, 25 x 7mm). Most of the suspension loop is missing. The junction between the suspension loop and the main body is decorated with a series of incised lines forming a chequer pattern. The main body tapers. (cf. Cunliffe 1968: cat 176; 1971: cat 67–71).

30. Tweezers (fig.55:30)
sf 14853; context 1010; leaded bronze
Complete pair of tweezers (49 x 16x 5mm) with incised decoration below suspension loop.

31. Spoon-probe (fig.55:31)
sf 14395 & 14412; context 1007; brass
Two fragments from a spoon-probe with decorative moulding below the spoon (which does not survive). (cf. Crummy 1983: cat 1929–1932).

32. Probe ?
sf 15340; context 1026; gunmetal
Tear-shaped fragment (27 x 6x 5mm), broken at thin end; possibly the probe end of a spoon probe.

33. Toilet implement ?
sf 17128; context 1040; leaded bronze (tinned)

Curved and tapering strip (55 x 5x 3mm) decorated with incised longitudinal lines. Broken at both ends, possibly a toilet implement.

34. Seal box lid (fig.55:34)
sf 14734; context 1012; leaded bronze
Round seal box lid with champlevé enamel decoration: an annular red field containing eight small circular fields of white, or possibly yellow, enamel, surrounds a central field of white or yellow enamel containing a single, central circular field of red enamel. (cf. Crummy 1983: cat 2521)

35. Seal box lid (fig.55:35)
sf 16021; context 1044; leaded gunmetal
Round seal box lid decorated with concentric grooves. The outermost band is decorated with dots (cf. Frere 1972: cat 66).

36. Box fitting or looped mount (fig.55:36)
sf 14176; context 1013; leaded bronze (possibly tinned)
Mount with loop on the back for suspension. The lower part of the front is decorated with incised lines (a leaf design ?). (cf. Cool & Philo 1998: cat 473; Crummy 1983: Cat 2223).

37. Key (fig.55:37)
sf 14413; context 1011; leaded gunmetal
A small (32 x 10x 7mm) tumbler lock slide key which has lost its teeth (cf. Cunliffe 1971: cat 140).

38. Lock-bolt (fig.55:38)
sf 15242; context 1024; leaded gunmetal
Small lock-bolt (52 x 11 x 3mm) with two holes for tumblers.

39. Openwork fitting
sf 17715; context 1081; leaded bronze
Small fragment (12 x 5 x 2mm) from an openwork fitting (possibly a belt-plate).

40. Fitting
sf 15424; context 1010; copper
Broken fitting consisting of a triangular sheet (23 x 15mm) with a curving extension projecting at right angles to the sheet at one apex. The reverse has a rivet for attachment. The function of this object is unclear and no parallels are known.

41. Fitting
sf 14367; context 1011; brass
An object made of sheet (18 x 10 x 6mm). It was formed from a circular sheet with a ‘tail’. Two halves of the circle have been bent along the axis of the ‘tail’ and almost meet. The function of this object is unclear and no parallels are known.

42. Fitting/mount
sf 14342; context 1007; brass

Fragment of sheet (20 x 13 x 1mm) for a rectangular fitting or mount. One end has a semi-circular shape cut out and two small rivet holes, one of which still has a small rivet (1mm diameter and 3mm long) in place.

43. Fitting/mount
sf 15801; context 1012; leaded gunmetal
Small fragment of sheet (23 x 12 x 1mm) for a rectangular fitting or mount. One corner has a rivet hole and rivet similar to sf 14342.

44. Ring
sf 15785; context 1027; leaded gunmetal
A ring (18mm diameter) with a spike (8mm long) projecting in the same plane. The function of this object is unclear and no parallels are known.

45. Weight ?
sf 14367; context 1011; leaded gunmetal
Plain cylinder (13mm diameter, 16 mm high). Possibly a weight (11.6g).

46. Weight ?
sf 14108; context 1001; leaded bronze
A heavy annular ring (21mm external diameter, 5mm internal diameter, 8mm thick) with a broken projection. Possibly a weight (20.8g)

47. Ring
sf 14993; context 1002; leaded gunmetal
Circular-sectioned ring (24mm diameter). The cross-section varies (2–4mm) and shows signs of wear. Probably not a finger-ring.

48. Ring
sf 14868; context 1002; leaded brass
Slightly distorted, D-sectioned ring (18mm diameter). Possibly a finger-ring.

49. annular ring
sf 15021; context 1010; leaded bronze
Penannular ring (24mm external diameter) with circular cross-section (3mm). The terminals are plane and this was probably not a penannular brooch.

50. Ring
sf 15540; context 1027; copper
Small ring (12mm external diameter) with circular cross-section (3mm).

51. Ring
sf 15047; context 1010; gunmetal
Fragment of a small ring (15mm external diameter) with diamond-shaped cross-section (3mm).

52. Pin
sf 16323; context 1050; leaded bronze
Curved and taping pin (38mm long) with circular cross-section (1mm). Possibly a brooch pin.

53. Pin
sf 17460; context 1144; leaded bronze
Pin (38mm long) with circular cross-section (2mm), pointed at one end.

54. Bead
sf 14995; context 1002; bronze
Small cylindrical bead (7mm diameter, 5mm long).

55. Rod
sf 16089; context 1027; leaded copper.
Rod (37mm long) tapering to a point at one end and flattened at the other. Possibly a stylus.

56. Rod
sf 17596; context 1124; bronze.
Curved rod (19mm long), tapering at one end. Possibly a tool.

57. Button
sf 14007; context 1002; leaded gunmetal
Hollow, domed button (22mm diameter), the suspension loop at the back is broken. Probably post-medieval.

58. Stud
sf 17368; context 1082; leaded bronze (silvered)
Domed stud (13mm diameter) with bent square-sectioned shank. Silvered on dome of stud.

59. Stud
sf 14997; context 1002; brass
Hollow, domed stud (10mm diameter). The square-sectioned shank is broken.

60. Stud
sf 15093; context 1010; leaded bronze
Slightly domed stud (10mm diameter) with short circular-sectioned shank.

61. Sheet
sf 16624; context 1025; bronze
Small fragment of sheet, curving in two planes. Possibly part of the head of a stud

62. Stud/button
sf 17130; context 1081; leaded bronze
Small oval-shaped stud (6 x 6mm). The surface is decorated with parallel ridges and grooves.

63. Stud
sf 14807; context 1010; brass
Flat-headed, circular stud (23mm diameter) with broken shank.

64. Stud

sf 17106; context 1080
Stud with damaged and corroded square or rectangular head (18 x 13mm) made of a tin-lead alloy with a copper alloy shank (5mm long).

65. Stud
sf 15746; context 1031; brass
Stud or nail with near spherical head (8mm diameter), and square-sectioned shank (2mm wide, 19mm long).

66. Stud
sf 18183; context 1098; leaded gunmetal
Stud or nail with cone-shaped head (5mm diameter), and gently tapering, circular-sectioned shank (23mm long).

67. Stud
sf 16584; context 1065; gunmetal
Stud or nail with spherical head (4mm diameter) and short, tapering, circular-sectioned shank.

68. Stud
sf 14747; context 1010; gunmetal
Stud or nail with spherical head (5mm diameter) and circular-sectioned shank (17mm long).

69. Stud
sf 15543; context 1027; copper
Small stud or rivet with slightly domed head (8mm diameter) and tapering shank (11mm long).

70. Stud
sf 15336; context 1012; brass
Small stud or rivet with spherical head (3mm diameter) and tapering shank (9mm long).

71. Stud
sf 17014; context 1002; copper
Rivet made from rolled sheet (28mm long).

72. Sheet
sf 14874; context 1002; leaded gunmetal
Circular fragment of sheet shaped into a cone (24mm diameter, 5mm high) with a hole at the apex (4mm diameter).

73. Washer
sf 15010; context 1010; copper
Small ring (7mm diameter) made from sheet. Possibly used as a ‘washer’ to secure a stud to leather or similar material (cf. Padley 1991: cat 99).

74. Weight ?
sf 14899; context 1002; leaded gunmetal

Triangular piece of thick sheet 5mm thick, 18mm long) possibly broken along one side. Possibly a weight (5.7g).

75. Bar
sf 18348; context 1007; bronze
Bar (38 x 5 x 4mm), bent in the middle.

76. Bar
sf 15835; context 1007; copper
Bar (18 x 6x 5mm).

77. Bar
sf 16166; context 1029; copper
Bar (24 x 3 x 3mm).

78. Bar
sf 16821; context 1100; leaded bronze
Bar (11 x 4 x 3mm).

79. Sheet
sf 14677; context 1010; leaded gunmetal (silvered)
Sheet fragment (25 x 20 x 0.8mm), silvered on one side,

80. Sheet
sf 14001; context 1002; copper
Fragment of sheet (14 x 12 x 1mm).

81. Sheet
sf 15121; context 1010; bronze
Fragment of sheet (15 x 15 x 0.3mm).

82. Sheet
sf 14994; context 1002; brass
Fragment of sheet (31 x 22 x 0.3mm)

83. Strip
sf 15093; context 1010; copper
Small strip (7 x 4 x 1mm) with two rivet holes.

84. Strip
sf 14620; context 1011; bronze
Fragment of strip (19 x 6 x 1mm).

85. Strip
sf 15173; context 1010; bronze
Fragment of strip (39 x 7 x 0.4mm).

86. Wire
sf 16477; context 1006; copper
Fragment of oval-sectioned (0.6 x 0.7mm) wire (14mm long).

87. Wire ?
sf 16443; context 1076; bronze
Rectangular-sectioned (2.8 x 2mm) slightly tapering wire (27mm long). Possibly a shank from a stud.

88. Lump
sf 14998; context 1002; copper
Amorphous lump (10 x 7 x 2mm).

89. Lump
sf 15304; context 1012; bronze
Amorphous lump (7 x 6 x 4mm).

90. Lump
sf 16802; context 1100; leaded bronze
Amorphous lump (6 x 2 x 2mm).

91. Lump
sf 15368; context 1012; leaded gunmetal
Amorphous lump (14 x 8 x 3mm).

92. Lump
sf 16695; context 1025; copper
Amorphous lump (6 x 4 x 3mm).

93. Lump
sf 16750; context 1025; leaded gunmetal
Amorphous lump (11 x 9 x 3mm).

94. Lump
sf 16908; context 1002; leaded bronze
Amorphous lump (14 x 11 x 3mm).

95. Lump
sf 14367; context 1011; bronze
Amorphous lump (14 x 12 x 5mm).

96. Lump
sf 14948; context 1011; leaded bronze
Amorphous lump (11 x 6 x 5mm).

97. Lump
sf 15458; context 1024; brass
Amorphous lump (3 x 2 x 1mm).

98. Lump
sf 16549; context 1027; leaded antimony bronze

Amorphous lump (21 x 10 x 10mm). The alloy is typical of that used in the manufacture of 11th to 18th century cooking vessels, such as cauldrons (cf. Dungworth 2004).

99. Lumps
sf 17327; context 1039
Several tiny fragments of copper alloy (<0.1g).

100. Two tiny fragments of copper alloy corrosion products; no metal present
sf 15544; context 1027
sf 17347; context 1039

The Iron – by Luke Barber

Catalogue of ironwork

Nails dominate both the post-Roman and Roman assemblages. A number of different nail types are present in the Roman assemblage but due to the lack of enough large tightly dated groups, and incomplete nature of the majority of the nails, no statistical analysis was undertaken on the different types. However, all complete nails were measured with the information being housed in the archive. In all, nine different types of nail were present, seven of which were noted in the earlier analysis (though Type 7 were not formally numbered at that time). To avoid repetition nail types previously described (Barber forthcoming) are only summarised here.

Type 1
General purpose nails equating to Manning's type 1b (Manning 1985). By far the most common type on any Roman site.

Type 2
Large heavy duty nails for structural work equating to Manning's type 1a (Manning 1985). These are far rarer due both to the lesser numbers of them used on a site combined with their size making them more likely to be recycled. Seventeen were recovered from Roman contexts during the current excavations.

Type 3
Steeply domed circular head with square sectioned stem. A similar type has been recovered from Gorhambury (Neal et. al. 1990, No. 734).

Type 4
Headless nails. These nails are notoriously difficult to isolate as they are virtually indistinguishable from Type 1 nails which have lost their heads.

Type 5
Studs and tacks with short square sectioned stems and large circular flat or low domed heads. They are distinguished from definite hobnails by the large head diameter and lack of a pronounced dome. Only six are present from Roman deposits at the current site, all from Phase CD or later deposits.

Type 6 (Hobnails)
Hobnails are relatively well represented at the site (see Table 4). Hobnails were found in numerous types of context (including post-Roman ones) of most Roman phases though no obvious concentrations were noted though most are from Phase CD contexts.

Type 7
These nails have rectangular or square heads when viewed end on, however, when viewed from the side the heads are raised, either with a squared or arced profile. This type is fairly typical of Farrier's nails of the medieval and post-medieval periods (Sparkes 1976, 7, Nos 1 and 2) and similar types have been noted in medieval deposits elsewhere (Neal et. al. 1990, No. 733). However, this is an ill-defined group

and the presence of some of these types in Roman contexts both elsewhere (Neal et. al. 1990, No. 731) and at the present site suggests some at least may be either of Roman date or intrusive.

Type 8
Small nails/tacks with circular heads and round sectioned shanks. No complete examples are present but lengths are in excess of 14mm with head diameters usually around 8mm. Of the six examples recovered only two are from Roman contexts and it is always possible these small nails could be intrusive from later periods.

Type 9
Nails with narrow, but tall triangular heads, usually hammered flat on top to create marked shoulders. Manning's Type 2 (Manning 1985). These nails, of which there is only one from a Roman context, have a narrow head to enable them to be hammered flush to the surface.

Strips, sheeting and unidentified

Sheeting and strip fragments were located in both sealed Roman (x12) and later (x13) contexts (Table 4). These items are all very fragmentary and few show any detail. As such, although it is possible to classify them by form, their function is not possible to ascertain. Most probably relate to bindings from buckets and doors but this cannot be proven.

The poor state of preservation of the iron from the site has meant that even the general shape/form of the original artefact is not apparent in many cases. This is often the case even after x-ray as most still do not show any form or internal structure. Some 23 such objects are present from secure Roman contexts. Most consist of small amorphous lumps, presumably fragments from larger objects, and none can be assigned to function.

Objects

Identifiable objects from secure Roman contexts are rare at the site: of the 23 items listed under 'objects' in Table 4, only 14 can probably be considered diagnostic of function. Structural fixtures and fittings are scarce and include two heavy door studs (Contexts 1082 and 1144 – both Phase CC1). These have short shanks but large 30-33mm diameter flat heads. In addition a U-shaped staple (Context 1100 – Phase CD), L-shaped bracket (Context 1081, Phase CD) and a split pin (Context 1030, Phase CD) were recovered.

One fragment of possible hinge pivot was located in Context 1083 (Phase CC1) and the fragmented remains of a small L-shaped lift key with only part of one tooth of the bit surviving were recovered from Context 1098.2 (Phase CD). (Fig. *, No. 4. SF 17190 – use x-ray and object for drawing) This piece can be exactly paralleled in the British Museum (Manning 1985, O31) and a similar example was found in the earlier excavations (Barber forthcoming, No. 7)

Other items include two badly fragmented knife/shear blade fragments (Contexts 1030 and 1081.2) though none are large enough to classify. The only other 'tool'

fragments present consist of two pieces of iron which appear to be from the socket of a hafted tool (Context 1021, Phase CG), though its function cannot be ascertained, and a possible small wedge (Context 1029, Phase CD). The remaining two pieces of interest appear to relate to equestrian activity. The first, recovered from Context 1098.5 (Phase CC1), is a square-framed 'harness-mount buckle' with extended frame to form a secondary loop for suspension. Although no exact parallel has been found the item closely resembles part of a cheek-piece from a curb-bit illustrated by Manning (1985, H18). (Fig. *, No. 5, SF 17571 – use x-ray and object for drawing). The second item is less diagnostic but appears to be a roughly 'fish-shaped' leather stud (though the item is admittedly heavily corroded). The x-ray suggest the surface may be decorated with four parallel lines of inlaid non-ferrous metal or alternatively have the remains of a non-ferrous plating. The fixing stud to the rear has all but broken off (Context 1081, Phase CD) (Fig. *, No. 6, SF 18077 – use x-ray and object for drawing).

Context type and distribution of Roman ironwork

Ironwork was present in most types of contexts at the site (figs. 59,60), from post-holes to demolition layers. It was also present in almost every period though there is a notable fluctuation in quantities. As such the assemblage is summarised by phase in an attempt to understand the different activities which may have been occurring at any one time. The small size of the excavation area does not allow a reliable detailed interpretation of the spatial distribution of items. However, a plot of all the nail finds indicates a significant concentration in the south-western corner of the site, no doubt related to the 'midden' deposits.

Phase CC1
This period sees the first objects appearing, including two door studs (Contexts 1082 and 1144) and the possible bridle fixing (Context 1098.5). In addition, there is a notable increase in the quantity of nails (Type 1, as well as a single Type 2 structural nail). The items, which come from the early gullies, post-holes and deposits above the early ditch, suggest by this time some repair works and/or alterations had probably taken place to nearby buildings allowing iron refuse to begin entering the archaeological record.

Phase CC2
The assemblage from this period, virtually all of which was from Contexts 1065, 1099, 1133 and 1134 (2nd phase gullies), constitutes a background spread similar to the previous period. Virtually all of the material consists of nails.

Phase CC3
As with the preceding period the ironwork assemblage consists of a general background scatter of Type 1 nails. No objects are present.

Phase CD
There is a dramatic increase in the amount of ironwork present during this phase: it accounts for the vast majority of ironwork from Roman contexts (1,303 pieces). These deposits produced very large amounts of nails, mainly of Type 1 but also including a good spread of Type 2 structural examples (Table 4). These high levels of ironwork,

particularly nails, correlate well with the Phase CD deposits dug in the 1999 excavations. For example, the single largest assemblage found during the 1999 excavations consisted of 198 nails from Context 905 in Trench B (equated now with Phase CD). In the current assemblage the bulk of the iron was recovered from the spreads above the timber buildings (Context 1011 had 83 Type 1 and 94 unidentified nails; 1030 had 172 Type 1 and 150 unidentified nails and 1081 had 54 Type 1 and 68 unidentified nails). The high density of nails suggests either the building/s were in use for a long period of time and saw repeated repair with nails being discarded on the ground surface and/or the building materials, for whatever reason, were not efficiently re-cycled.

Large quantities of nails were also recovered from the midden (Context 1098) suggesting its deposits may have been forming at the same time as, or after, the spreads above the building. Other deposits of this period, such as the stone spreads (Contexts 1125-1127) contain significantly less ironwork (accounting for only four nails between them).

The assemblage of objects from this phase mainly consist of waste pieces such as sheeting, strip and rod fragments though a few possible tools and household fixings are represented. These include knife blades (1030 and 1081), an L-shaped bracket (1091) and a U-shaped staple (1100). A possible leather decoration and key were also recovered (see above).

All in all Phase CD appears to have been quite an intense period of disposal/loss. This is likely to be the result, at least in part, of intense activity, perhaps including demolition of some existing structures.

Phase CE
The very small quantity of ironwork from this phase is dominated by nails and the majority is likely to have been derived from the earlier Phase CD deposits.

Phase CF
The small assemblage from this phase varies between contexts. Context 1032, has small quantities of nails either residual from Phase CD or associated with repairs to Building 4. A similarly thin scatter was located in a number of post-holes (ie 1018 and 1020). However, Context 1057 contained notably more nails: 83 Type 1, one Type 2 and 101 unidentifiable fragments. In addition this context also produced a hobnail though objects are limited to sheeting and strips fragments. It seems probable that the items in 1057 were derived from the use and repair of Building 4, though some could still be residual Phase CD material.

Phase CG
The final Roman phase appears to be associated with the robbing of Building 4. Surprisingly, and even considering the low numbers of contexts attributed to this phase, the ironwork assemblage is very small. Virtually all consists of nails though fragments of a socketed tool were found in Context 1021. Whatever the case, it seems quite probable that, unlike the earlier timber building/s, Building 4 was systematically dismantled and its materials re-used elsewhere.

The flintwork – by Chris Butler

Table 64: Fishbourne Flintwork

Type	***Number***
Hard hammer-struck flakes	45
Soft hammer-struck flakes	2
Hard hammer-struck blade	1
Soft hammer-struck blades	2
Soft hammer-struck bladelets	3
Fragments	18
Shattered pieces	6
Chunk	1
Single platform flake cores	2
Two platform flake core	1
Core fragment	1
End scraper	1
Hollow scraper	1
Piercer	1
Notched flake	1
Retouched thermal flake	1
Axe fragment	1
Arrowhead fragment	1
Hammerstone	1
Total	***90***
Fire fractured flints	4

The Flint Catalogue

Context	Small find no	CB Description	CB Comments	CB Date
1010	15157	arrowhead frag?	could be leaf-shaped or plano-convex knife frag?	
1001	14129	Chunk		
1012	14675	core fragment		
1010	14603	End scraper	On long flake	undiagnostic
1146	17499	FF	not worked	
1146	17515	FF	not worked	
1146	17545	FF	not worked	
1001	14080	Frag		
1001	14090	Frag		
1001	14133	Frag		
1005	14187	Frag	On database as context 1001	
1005	14179	Frag		
1005	14195	Frag	could be natural	
1005	14205	Frag		

1011	14438	Frag	
1011	15827	Frag	
1012	15049	Frag	
1023	14759	Frag	damage not retouch
1027	15648	Frag	
1057	16335	Frag	
1071	16342	Frag	
1080	16747	Frag	retouched - could be from scraper
1098	16846	Frag	
1121	17309	Frag	
1030	16174	frag – blade	semi-abrupt retouch on one edge
1012	14698	hh blade	
1001	14095	hh flake	
1001	14136	hh flake	
1001	14141	hh flake	
1001	14148	hh flake	
1005	14185	hh flake	
1007	14501	hh flake	
1008	15008	hh flake	
1010	14623	hh flake	could be wall knapped flint
1010	14624	hh flake	
1010	15027	hh flake	
1011	14211	hh flake	not necessarily humanly struck
1011	14249	hh flake	the other two are natural
1011	14297	hh flake	hinged
1011	14323	hh flake	hinged
1012	14633	hh flake	small
1012	14742	hh flake	
1013	14169	hh flake	some platform prep
1013	14259	hh flake	
1023	14760	hh flake	
1024	15190	hh flake	some retouch on one edge and shoulder
1026	15126	hh flake	abraded and retouched?
1026	16508	hh flake	
1028	16513	hh flake	
1029	16103	hh flake	some plat prep?
1029	16440	hh flake	could be wall knapped flint
1029	16444	hh flake	
1029	16492	hh flake	
1029	17111	hh flake	
1030	15726	hh flake	could be wall knapped flint
1030	15900	hh flake	retouch on shoulder
1030	16069	hh flake	
1030	16166	hh flake	
1031	17712	hh flake	
1032	18075	hh flake	
1057	16924	hh flake	
1061	16384	hh flake	
1081	16602	hh flake	
1081	18072	hh flake	
1082	17005	hh flake	

1084	17629	hh flake	
1121	17311	hh flake	
1122	17270	hh flake	hinged
1131	17306	hh flake	
1131	17442	hh flake	
1143	17676	hh flake	
1118	17062	hollow scraper	on large fragment
1134	17321	Piercer	retouched frag
1024	15294	retouched thermal flake	
1026	15364	sh blade	
1131	17516	sh blade	
1071	16917	sh bladelet	
1080	16684	sh bladelet	could be accidental
1083	17718	sh bladelet	
1011	14605	sh flake	Has platform prep
1023	14811	sh flake	could be axe thinning
1001	14094	Shatt	
1001	14099	Shatt	
1001	14110	Shatt	
1005	14274	Shatt	probalbly natural
1011	14416	Shatt	could be natural
1031	17729	Shatt	
1012	14665	axe fragment	bifacially worked end
1001	14114	single platform flake core	small rough pebble
1001	14116	single platform flake core	very rough small pebble
1011	14267	two platform flake core	no platform prep
1026	15481	Hammerstone	

Part 4 – biological and environmental analyses

The marine shell – by Liz Somerville and John Bonell

7 Tables (Tables 65-71) and 6 Figures (Figures 70-75) relevant to this report can be found in the spreadsheet entitled: FBE 02 shell.xls

Methods
Shell was initially identified to species (Fish & Fish, 1988), with effort concentrated on whole shell. Fragments smaller than approximately 0.5 cm2 were discarded. Once identified, shell was weighed. Gastropods were counted as being either complete, an apex or a fragment. Bivalves were counted as complete right/left valves, right/left and unsidable umbos or as fragments. These counts were used for the calculation of the minimum number of individuals (MNI) for each context, and for each phase of the site. For bivalves the greater of the two numbers for the sided valves plus umbos was taken, plus half (rounded down) of any unsided umbos. For gastropods, the MNI was the sum of whole shells plus apices. Where the species was only represented by fragments and/or a single unsided umbo, then an MNI of 1 was given.

The maximum length (from umbo to opposite margin) and width (orthogonal to length) were measured for bivalves, and the maximum height (from apex to the bottom of the last whorl or to the end of the siphon if present) and width (orthogonal to this) were measured for gastropods. Whole oyster valves were weighed individually.

Whole oyster shells were scored for a number of other characteristics including age and extent to which the surface bore the marks of infestation by the polychaete worms Polydora ciliata, P. hoplura and the burrowing sponge Cliona celata. In addition the presence on the shell surface of any other epifauna, any damage to the shell by predatory molluscs (drillholes), the presence of adhering shell or the reuse of the shell by people (nailholes - cf Holden 1963) were recorded. The presence/absence of these species and characteristics were also noted for the right and left umbos. The presence of any distortion of the shell profile was also scored for both right and left umbos and whole valves. The age at death of the shell was estimated by counting the growth lines at the umbo where these were clearly visible on both right and left umbos and whole valves. In addition, for the whole left valves from the midden contexts in phase CD, an adaptation of Kent's (1992) relative growth method for the American oyster (Crassotrea virginica) was used to investigate whether there was any evidence for a restricted period of harvesting. Briefly, a dissecting microscope was fitted with a graticule which was used to take a consistent, but non-calibrated, measure, along the junction of the anterior nympha and the chondrophore, of the last three major periods of growth, with the final period being the one during which the oyster was harvested. The amount of growth in this last period was then compared to the average growth for the two previous periods to give a relative measure of growth after the last major break in growth, presumed to be the previous winter.

Flotation samples.

The vase majority of shell from this site was hand collected from the trenches during excavation. However, in addition there were flotation samples, mainly but not exclusively from the midden contexts in Phase CD. These samples were processed in the same way as described above, i.e. the same cut off point for size was used in terms of counting fragments. Nonetheless, more fragments will have been retrieved by this route than would be the case for the hand collected shell. Flotation samples are therefore distinguished in the archive for the site and, where appropriate, are separated out in the results and discussion.

Oysters

a. Taphonomy
Results:
Oyster is well represented through all the phases and therefore it is possible to compare the extent of breakage of the shell. This is shown in Figure 70 below, as the percentage by weight of whole valves, umbos and fragments in the different phases. The values for phases which contained flotation samples (flot) are given both with and without this and the midden and non-midden groups of contexts within CD are also shown.

Figure 70
Breakage patterns in oyster shell by phase and for the two groups of contexts in phase CD

For the majority of phases, the umbos constitute about 70% of the weight of shell found, although the earlier contexts all have less than this, most markedly in the case of CC2 and CC1. The proportion by weight of whole shell also varies, and, within the deposits in CD is twice as high for the midden deposits than the non-midden deposits, although only half the value for CC1 and CC2.

Some measure of the comminution of the shell can be gained by looking at the average weight of the umbos and fragments in these same groupings. This is given in Table 66 below, together with the numbers of valves, umbos and fragments and the total MNI for the phase or context group. As for the graph above, data are presented both including and excluding the flotation samples. Over most of the site, the average weight of umbos is about 13 g, and it is interesting that within phase CD, the average for non-midden contexts is similar to this, whereas the midden contexts have a rather higher average, which is closer to the value for the earlier phases CC2 and CC1. The average size of fragments is again fairly consistent over most of the phases, being generally just over 1g. Deviations from this are seen in that the two smallest collections (CF and CC2) produce rather high values, whereas the midden contexts, and hence CD overall, as well as CA2 have notably lower values. In the case of the midden contexts, this low average is not affected by the inclusion of the flotation samples.

Table 66
Degree of comminution of oyster shell by phase and for the two groups of contexts in phase CD

A possible sign of differential deposition of table and kitchen waste may be seen in a bias towards the cupped left-hand shells for table waste and the reverse for kitchen waste. Over all phases 19 contexts had more than 10 whole shells plus umbos which could be securely sided. Amongst these only two had a bias towards one side which was equal to or greater than 70%, one of which (context 1021; robbing of building 4, phase CG) had a bias to the right and the other (1124; northern pits, phase CD) had a bias to the left. Two other contexts from the non-midden deposits in phase CD had biases towards the right of 69% (1011, general southern spreads) and 68% (1039, above timber building). Notably, the contexts in the oyster midden all had values of near 50:50 proportions of right and left shells.

Notches, presumably from opening, were found at the base of a small proportion of the whole valves in contexts CG (1/4); CE (1/16); CD non midden (1/40) while the midden deposits in CD produced more examples of this (24/250), but this is still a small proportion of the material.

Evidence for burning, where the shell turns blue-gray, was extremely rare, being confined to a few fragments of oyster shell from Phase CH and one fragment from the oyster midden contexts in CD.

Discussion
Differences in the total amounts of shell make comparisons across the phases of the site quite difficult.

Phase CC1 is distinctive in having proportionally fewer umbos and more whole shell and it may be significant that this material comes largely from pits and ditches, i.e. contexts where rapid burial after disposal may be expected. The other group of contexts which stand out as different are the midden deposits in CD. Here the proportion of umbos is about the same as for the site overall, but the proportion of fragments is markedly less. It is also noticeable that the average size of these fragments is small, which is somewhat puzzling in a context which otherwise appears to show less breakage. It is important to be sure that these differences are not simply the result of post-excavation sampling. Although the shell from the site was delivered to the specialist unwashed, it is possible that where the original context was more densely packed with shell, as in the midden, more smaller fragments may have been included in the matrix which was attached to the mass of shells as they were excavated and bagged. Thus, the more reliable indices for less breakage within the midden, possibly as a result of rapid deposition and subsequent burial are the larger size of the umbos and the higher proportion of whole shell.

There is no evidence for depositional bias in terms of left or right sides of the shell. This implies that either table and kitchen waste were disposed of together, or else that this distinction may be of little value. Certainly Apicius' recipes (Edwards, 1984) include both cooked oysters as ingredients in other dishes and sauces in which to cook or possibly simply serve oysters which had, presumably, been removed from the shell.

b. Size & shape of shells
Results:
The discrepancies in the numbers of whole shells from the different phases and from the two groups of contexts within phase CD preclude statistical analysis. The table

below gives basic metrical data for the whole shells found in the main phases, with the data for phase CD separated into the "midden" and "non-midden" groupings.

Table 67
Length of whole oyster valves.

This shows that the average size of shells varies little over time. The consistent difference between right and left valves is to be expected given their different morphologies. The better survival of the flatter and somewhat more robust right valve is consistent with the evidence from most archaeological sites which the author has examined. The graphical presentation of the data for the larger contexts, given below, shows the data from the better represented right valves as percentage distributions across the size range. The ranges for the different contexts clearly overlap completely, and, given the differences in the sizes of the samples, it is difficult to tell whether there is any difference in the distributions.

Figure 71
Distribution of length of right valves, shown as percentage.

For contexts CE, CD, both midden and non-midden contexts, and CC1, scatter plots of maximum length: maximum width of both right and left valves showed these values to be distributed about the 45 degree line of slope, i.e. these oysters were growing equally in length and width, and there was no indication of any sub-groupings of elongated forms. Five of the whole valves from the midden deposits showed an odd distortion where it appeared that the shell had grown in one direction when young and another when older.

As well as the size of the whole valves, data was gathered on the amount of distortion of both valves and umbos to try to deduce whether the shell came from a tended, possibly relayed oyster bed or from a natural bed. Given the differences between the two valves, the data is presented below for each side and for umbos and whole valves. Percentages are used for ease of comparison. Phases where fewer than 10 umbos or valves were collected are omitted.

Table 68
Shape of oyster shells showing the amount of distortion in both umbos and whole valves

The impression gained from the more numerous umbos is that there is a decline in the amount of distortion seen from the earlier to the later phases, with the notable exception of the material from phase CE. The information from whole valves is more limited, but there is possibly a similar pattern to be seen in the right valves. Whole left valves were only preserved in sufficient numbers in phase CD. These appear to show a difference between the non-midden and midden deposits, with the latter showing more distortion. However, the right-hand valves show the opposite trend, and there is no difference in the amount of distortion in the umbos from the two sets of contexts in phase CD.

Discussion:

The mean size of whole valves from these contexts are very similar, and they are also close to that found for the 1995-1999 excavations to the east of the palace (Somerville & Bonell in Manley & Rudkin 2005a). The values are slightly larger than the overall means for the Roman period of 7.15cm - right valves, and 8.04cm – left valves given by Winder (1992). Comparison with individual sites from Winder's data set shows that the oysters from Fishbourne are comparable in size to those from the Newport Roman Villa, Isle of Wight, which dates from the late 1st century onwards. Here the value given for the maximum dimension of the left valve is 8.56cm. In contrast, oysters from the Roman levels at Owlesbury have average lengths for the right valve of 6.9 to 7.2cm.

In terms of Sussex sites, the oysters from Chanctonbury (mid 1st to late 2nd century AD, with some use into 3rd & 4th centuries AD) are again of similar size with the three locations there yielding mean values for the right valves of 6.89cm-7.62cm and for the left valves of 7.29-8.29cm (Somerville, 2001). Further to the east, the excavations at Faversham, Kent, produced rather smaller oysters with a range of size for the right hand valves of 6.4 (1st century AD) to 6.9 cm (3rd – 5th centuries AD) (Somerville 1995).

Although a fair proportion of both umbos and valves were rated as distorted, this was due to a deviation of their profiles away from the expected shape, curved for the left valve and flat for the right valve. Thus irregularities which could have been the result of growth against an irregular surface will result in distortion, including, in the case of this site, some examples of left valves becoming somewhat flattened. The amount of distortion is somewhat higher than that seen in the much smaller sample of shell from the 1995-9 excavations at Fishbourne (Somerville & Bonell, forthcoming). The scatter plots of length:width dimensions showed a growth habit which would be consistent with the oysters coming from relatively uncrowded conditions.

c. Age of oysters
Results:
The information on aging was combined from umbos and whole shell. Table 69 below gives the overall numbers of shells which were inspected and the percentage which could be aged. The age categories were determined by consideration both of the need to compare the data with the modern strategy of harvesting oysters between 3 and 6 years (Walne, 1974) as well as the broader spread of ages which is typical of archaeological material. Beyond 10 years, the numbers were small, and so the older shells have been grouped.

Table 69
Percentage of shells (umbos and valves) in each age category.

The age range from all the phases overlaps, but there are some differences in the distributions, both in terms of the shape of the distribution and the modal age. There are no older shells represented here and only one, in CD (non-midden) older than 15 years. There appears to be some trend over time, in that the later phases have modal ages of 5 years or younger, although there is a strong secondary peak at 7 years in the data from CG. CC1 has a modal age of 6 years and the two sets of contexts from CD show some contrasts which are illustrated in Figure 72, below.

Figure 72
Age data from umbos and whole valves for the midden and non-midden deposits in phase CD shown as percentages.

This shows that the midden contexts have a generally normal distribution for age, with quite a wide plateau of the most common ages from 6-8 years. In contrast the modal age for the non-midden contexts is younger at 5 years and the distribution is somewhat skewed. This pattern is seen in both the umbos and the whole valves.

The large samples of whole shell from CD gave an opportunity to look at growth rates. These are plotted in Figure 5 below as the mean length of the shells of different ages. Data from right and left valves are shown separately. For the larger midden sample these two growth curves track each other as would be expected. There is some indication that growth rate is faster for younger shell, but the overall impression is not of the sigmoid shape which might be expected. The smaller sample from the non-midden contexts shows a more erratic form of growth, but the curves match each other quite well over the better represented ages.

Figure 73
Growth of oysters from phase CD in terms of the mean length of the shell at different ages.

Because the bone evidence from the midden contexts in CD indicated a restricted, winter, seasonality for the deposit (Sykes et al, forthcoming), an attempt was made to see if confirming evidence could be obtained from the oyster shell. To determine seasonality per se would require access to modern samples with all the complications of assumptions about comparability of growth patterns between archaeological material of unknown, and possibly mixed provenance and modern oysters growing under a potentially different climatic and environmental regime. However, the method of relative growth (Kent, 1992) offers the possibility of investigating whether the oysters in a context have all been harvested within a limited period. The proportion of last visible growth compared to the average of the previous two periods was calculated. Where this value came to more than 1, it was taken as 1. Although 99% of left valves could be aged, the relative growth could only be determined for 91% of the sample. The data is shown in Figure 74 below, and does not show any evidence of a restricted period of harvesting. The peak at 1 shows that there were a considerable number of shells which had either grown as much by harvesting as they had in the previous period or which, for some reason, were growing considerably more in this last period than previously.

Figure 74
Results from relative growth measurement and calculation for phase CD midden contexts.

Discussion:
For the site overall, the age data are consistent with a managed exploitation of oyster, with harvesting occurring sufficiently regularly to prevent the build up of older shells, possibly from less desirable slow-growing animals (cf Winder, 1992).

There are some differences in the patterning of the age distribution within CD in that the non-midden contexts have a generally lower age. However, the growth data show that this is not because of a consistently slower growth rate, and it is therefore also possible that either oysters of different sizes and therefore different ages were being exploited or that the harvesting of the oysters which were deposited in the midden simply gathered a broader range of sizes and therefore ages.

Within the midden contexts, there is no evidence of constrained harvesting, although it should be emphasised that the method used cannot be interpreted in terms of seasonality as no attempt was made to make a comparison with modern oysters of known season of harvest. The use of the left-hand valves only should not have biased this data as there is no difference in the distribution of age classes between umbos and valves generally, as can be seen from Figure 72. The shape of the umbo is more level in the left than in the right hand shells, making them more suitable for taking the measurements of the last three periods of growth at the same time, thereby minimising errors due to movement.

The age of the shells is similar to that found in the 1995-99 excavations, and the range of ages was also similar, with an absence of shell older than 15 years. The distribution of ages is more similar to the later periods at Faversham (Somerville, 1995) and contrasts with the exploitation of 3 and 4 year-old oysters in the 1st Century AD deposits at Faversham. Winder's data from Newport Roman Villa (Winder, 1992) also shows a modal age of 4 years and the Roman layers at Owlesbury have a majority of shells aged 4 to 5 years. The age ranges are from 1-11 years for Newport and 2 to 11 years for Owlesbury.

d. Infestation on oyster shell
Results:
Only the three common infesting species, Polydora ciliata, P. hoplura and Cliona celata were found. The amount of infestation, in terms of the extent to which the shell surface was affected, was scored for the whole valves and the data combined for right and left valves. Figure 75, below, shows the results for the phases where there were more than 10 whole valves.

Figure 75
Extent of infestation of whole valves

Overall, infestation was light, with the majority of infested shells showing only traces (category 1). However, for all of these contexts the majority of shells did show some infestation.

Table 70, below, shows the numbers of umbos and whole valves showing infestation by the different species. Here, right and left valves are reported separately, as there appears in some cases to be a difference in the pattern of infestation.

Table 70

Numbers of shells showing traces of infestation by polychaete worms (Polydora ciliata & P. hoplura) and the burrowing sponge (Cliona celata)

There appears to be no general trend in terms of the overall amount of infestation by the different species, although there are differences between the phases.

There were only two examples found of conjoined shells, one from phase CE and one from CD. Adhering oyster shell, possibly from spat settling, was found on 7 whole left valves from phase CD. Amongst the umbos, adhering shell was found on 8.1% of the left umbos from CE and on 4.3% of the left umbos from the midden contexts of CD. There were a further three examples of adhered shell which probably came from the substrate. In the CD midden contexts one left valve had a winkle columella attached at the umbo and a second left valve had a piece of oyster shell heavily infested with C. celata attached. A second example of this type of attachment came from phase CC1.

Discussion:
The pattern of infestation seen on the shells from the 2002 Fishbourne excavations is similar to the sample from the 1995-1999 excavations in that P. ciliata is the most common, and P. hoplura is the next most frequent, but the incidence of infestation is higher in the 2002 material. Table 71 shows a comparison between these two excavations, although the alignment of periods from 1995 to 1999 and phases from 2002 is not exact. Nonetheless, there is a match in terms of there being a higher incidence of infestation of P. ciliata in the earlier periods and phases. This pattern is broken by the late material from phase CH of the 2002 excavations. The opposite pattern appears to hold for C. celata, again not sustained into the period represented by phase CH. There is no obvious patterning through time for P. hoplura.

Table 71
Comparison of infestation rates for 1995-9 and 2002 excavations at Fishbourne.

Overall, the incidence of infestation with P. ciliata is somewhat lower than that found at Chanctonbury (Somerville, 2001), although the general pattern of the relative incidence of infestation by the three species is similar. The same pattern is also reported by Winder (1992) for Owlesbury Roman layers, but the pattern from Newport Roman villa is rather different as P. hoplura is the most common infesting species there.

The infesting species found are typical of the southern coast (Winder, 1992) and the higher proportion of the shallow water polychaete species P. ciliata is consistent with collection of the oysters from the creeks of Chichester harbour, local to Fishbourne itself. It is notable in this context that oyster beds survive there to the present e.g. at Bosham (D. Combes, pers. comm.). The differences in the infestation patterns seen in the different phases, and, in terms of the distribution of the infesting species between the right and left valves may represent natural variation, but may also indicate that the oysters are being obtained from different sources over time. Whether the smaller differences between the midden and non-midden contexts in CD also represent different sources is more open to question, especially because of the higher proportion of whole left valves from this set of contexts.

The animal bones – by Naomi Sykes, Claire Ingrem and Judith White

(for Tables 72-83, and Figures 76-88 (FBE 02 bone.xls), and the animal bone assessment report see 🕮 ■)

2. Methods
The assemblage was analysed at the Centre for Applied Archaeological Analyses (CAAA), University of Southampton. The mammal bones were recorded using Serjeantson's (1996) 'zones' system, with birds being zoned according to Cohen and Serjeantson (1996). The resulting data produced the basic NISP (Number of Identified Specimen) and MNE (Minimum Number of Elements) counts. The MNI (Minimum Number of Individuals) was calculated from the most common element according to the MNE, taking sides into consideration.

Where possible specimens were identified to species, with sheep (Ovis) and goat (Capra) being differentiated following Boessneck's (1969) and Payne's (1985) criteria. Wild and domestic cat bones were separated using Teichert (1978). Bird bones were identified using the comparative collections of LAZOR (Laboratory of Zooarchaeological Research) and the Natural History Museum, Tring. For the mammal remains, undiagnostic skull fragments, ribs and vertebra (except the atlas and axis) were placed in cat-size, sheep-size and cattle-size groups. Bones that showed signs of burning or gnawing were noted, and butchery marks on the mammalian remains were recorded in detail using Lauwerier's (1988) system.

Cattle and caprines were sexed on the morphology of their pelves (Grigson 1982) and pigs on the basis of their upper and lower canines (Schmidt, 1972).

Dental ageing was undertaken, using Grant's (1982) system, for mandibles (with two or more ageable teeth), single fourth premolars (both deciduous and permanent) and single third molars – Appendix I. The resulting data were placed into age groups following Legge (1992) for cattle, Payne (1973) for sheep/goat, and O'Connor (1984) for pigs. Bone fusion was also recorded and interpreted using Sisson and Grossman's (Getty, 1975) timings for epiphyseal closure.

Adult bones and mandibular teeth were measured following the methods of von den Driesch (1976), Payne and Bull (1988) and Davis (1992); the results are provided in Appendix II. Data accumulated by the Animal Bone Metrical Archive Project, Centre for Human Ecology and Environment (ads.ahds.ac.uk/catalogue/SpecColl/abmap) were used for comparison.

The fish bones were identified with the aid of the LAZOR comparative collection and using a low power (x10) binocular microscope. All fragments were recorded to species and anatomical element where possible (with the exception of ribs and fin spines) to produce a basic fragment count (NISP). Opercular bones, which allow speciation of members of the Clupeid family, were absent so, for the purposes of this report, all remains belonging to this taxon are assumed to belong to herring.

The completeness each fragment was recorded as < 25%, 25-50%, 50-75% and 75%. Where possible elements were sided. The state of preservation was recorded as good, medium or poor. Evidence of damage caused by burning and gnawing was noted and although it is not possible to determine the agent responsible for the latter, it is quite likely that the modifications results from human chewing.

Measurement were taken following the guidelines of Morales and Rosenlund (1979). In addition, size was visually categorised with the aid of modern reference specimens. In the interests of comparative studies the visual size categories follow those used by Cerón-Carrasco (1999): very small (<150mm), small (150-300mm), medium (300-600mm), large (600-1200mm) and very large (1200-c2000mm).

Taphonomy

Bone preservation at Fishbourne is notoriously bad but the material from the 2002 excavations was actually in quite good condition. This is reflected by the percentage of specimens that show evidence for butchery and gnawing (Table 72). Carnivore activity is indicated not only by the presence of gnaw marks but also by the fact that several specimens exhibit acid-etching consistent with having been digested. A fragment of a bone-rich dog scat was also recovered. This suggests that dogs had some access to, either through scavenging or being deliberately fed, the animal remains before they were discarded. The severe impact of carnivores on bone assemblages has been demonstrated on numerous occasions (for instance Brain 1967; Payne and Munson, 1985) and this should be taken into consideration when the body part data are examined. However, the overall percentage of gnawing is relatively low, suggesting that most material was buried quite quickly.

A more distinctive feature of the assemblage is the quantity of charred, burnt and calcined material it contains. The highest concentration came from the Phase CD deposits, in particular the oyster gully, in which 11% of the hand-collected material had been burnt to some degree. Animal bones may be burnt for many reasons: as part of the cooking process, for use as fuel or simply as a strategy for refuse disposal (Lyman 1996). There are, however, examples whereby bones were burnt deliberately for religious reasons (for instance Powell, 1995-6; Hamilakis and Konsolaki, 2004). Considering the unusual nature of the oyster gully deposit, it seems possible that similar ritual activities may account for the frequency of burning.

1. Ageing

Although, when subdivided by phase, sample sizes for epiphyseal fusion and dental ageing data are small, they do highlight some inter-period changes in herd and flock age structure. To gain an impression of how the site functioned – whether it was a consumer site, a producer site or self sufficient – it has, however, been necessary to combine the evidence from all phases of the site. The data are shown both by period and aggregated in Tables 73a-c and Figures 79 and 80.

Just three cattle mandibles were ageable: two came from animals approximately 6-8 years of age – Legge's (1992) Stage 8 – and the other from an individual killed

between 3 and 6 years (Stage 7). Epiphyseal fusion data also suggested that most individuals were raised to adulthood; overall just 10% appear to have been slaughtered before 13-18 months, with 60% being maintained beyond 4 years. No foetal or neonatal cattle remains were recovered from the site but two bones from juvenile individuals – an ulna from phase CD and a metatarsal from phase CH – were noted.

By contrast to cattle, neonatal caprines were present in all phases of occupation and Table 73b and Figure 79 suggest that most sheep/goats were culled before reaching old age. The epiphyseal fusion and dental ageing data correlate very well, both indicating that just 30% of the flock survived beyond three years. Sample sizes, particularly for epiphyseal fusion, are sufficient to perceive a slight temporal trend towards delayed slaughter: Table 73b suggests that, by comparison to phase CD, 18% more individuals from phase CH were maintained beyond 3 years.

As is usually the case, ageing data for pigs suggest that many individuals (29% according to dental ageing and 31% on the basis of epiphyseal fusion data) were slaughtered before reaching 12-14 months. The peak culling period appears to have been between approximately 1 and 3 years of age, with few animals surviving to old age: according to Table 73c just 3% of individuals lived beyond 3.5 years and no mandibles fell into the 'elderly' category.

7. Sexing

Few specimens providing sexing information were recovered. On the basis of pig canines, boars and sows appear to be represented in similar frequencies, males marginally more abundant (Table 74). Of the domestic fowl remains, two phase CD femora contained medullary bone, indicating that the specimens were from female birds, killed whilst in lay. Just one domestic fowl tarsometatarsi, which exhibited a spur, could be confidently identified as male.

8. Skeletal Representation

The anatomical representation data for cattle, caprines and pigs are presented, by phase, in Tables 75a-c. As no obvious inter-period variation is apparent, the overall totals for the three main domesticates are shown diagrammatically in Figures 81a-c. In each case it is clear that all parts of the skeleton are represented, although there is some variation in the abundance of the different anatomical elements: pig foot bones are scarce whereas cattle and caprine foot bones and the upper forelimbs of the pig carcass are well represented. Most of these patterns can be attributed to issues of survival and recovery rather than anthropogenic factors but human impact can be inferred from the dearth of cattle and caprine cranial elements, in particular the mandibles which are perhaps the most robust skeletal element. Their scarcity within the assemblage suggests either that cattle and caprine carcasses were brought to the site in a partially dressed state or, more probably, that their heads were discarded elsewhere, perhaps on the periphery of the settlement: such practices have been noted at other sites (see for instance Maltby 1985 and Wilson 1996).

Anthropogenic influence may also be responsible for anatomical patterning exhibited by the deer data (Table 76). Although red and roe deer are represented in roughly similar frequencies, they do not exhibit the same body part patterns. Whilst roe deer

are represented by most anatomical elements, indicating that their carcasses arrived on site complete, red deer show an over-representation of hindlimb bones compared to those of the forelimb. Natural factors are unlikely to have biased the record in such a way and it may be assumed that the venison from red deer was brought to the site as pre-butchered haunches.

Interesting anatomical patterns are also apparent for domestic fowl, particularly those from the CD contexts. Table 77 shows clearly that whilst all parts of the carcass are represented, most specimens are from meat-bearing parts of the carcass; the tarsometatarsus, carpometacarpus and phalanges being present only in low frequencies. The scarcity of these bones, all of which are from limb extremities, cannot be explained in terms of preservation or recovery since the tarsometatarsus and carpometacarpus are amongst the more resilient and regularly recovered elements of the body (Lyman 1996, 446-50).

The majority of the fish remains are vertebrae with all parts of the vertebral column represented: anterior abdominal, posterior abdominal and caudal, although the latter are easily the most numerous (Table 78). The predominance of vertebrae is unsurprising given the large number that comprise the vertebral column compared to other identifiable skeletal elements of which there are usually only one or two. Furthermore, vertebrae are both readily identifiable and robust whilst the majority of cranial and appendicular bones are fragile and less easily identifiable when fragmented. Eel is represented by a premaxilla, bass by a quadrate and a cleithrum, and flatfish by a hyomandibular - indicating that at least some fish arrived at the site whole.

9. Carcass Processing

Meat cleavers appear to have been the preferred butchery tool, with chop marks accounting for more than 86% of all butchery traces. As is usually the case, cattle carcasses were more heavily processed than those of the smaller domesticates: 18% of cattle bones demonstrated butchery marks compared to 9% of those belonging to pig and 5% of caprine.

No evidence for slaughter method was apparent and marks pertaining to carcass preparation (skinning and primary butchery) were also rare. More common were traces left during disarticulation and the reduction of joints into smaller portions. For example, several pelves and scapulae showed scars where the proximal femora and humeri had been detached, and most butchered long bones had been chopped through the middle of the shaft.

Cattle, caprine and pig specimens also exhibited marks from meat processing and consumption. A number of humeri, radii, femora and tibiae had cuts along their shaft; traces that Lauwerier (1988) has interpreted as evidence for filleting. Perhaps the most convincing evidence for meat processing was provided by the scapulae (cattle, caprine and pig) many of which showed series of cut or shaving marks on the medial surface of the blade. Such butchery patterns have been observed, particularly for cattle scapulae, on numerous Roman sites (Grant 1987) and are thought to have been

produced when meat, which had become firmly attached as a result of the curing process, was cut away from the bone (Lauwerier 1988,156).

Products other than meat, such as fat, grease and marrow, must also have been targeted during carcass processing, as is evidence by the number of bones, in particular metapodia, that had been split longitudinally.

No butchery marks were noted on the fish or bird bones.

10. Animal Size

Metrical data are insufficient to allow any detailed analysis of livestock size or conformation. Measurements from a small number of caprine tibiae (shown in Figure 82) do provide some indication of a temporal size increase similar to that noted at many other sites but, as the sample size here is small, this cannot be claimed with certainty. Perhaps the only statement that can be made with confidence is that the size of the Fishbourne domesticates was within the range of animals from contemporary sites in Britain.

For the fish bones it was only possible to obtain one measurement and this is unable to provide an estimate of the total length of the individual to which it belongs. However, fish size was estimated by comparison with reference specimens of known total length (Table 79). The majority of the bones belong to small (150-300mm) individuals although a few bones belonging to eel, whiting, bass and flatfish are comparable with medium size fish (300-600 mm). In contrast to the other taxa, most of the eel bones are comparable in size to large size reference specimens (600-1200mm).

The charred plant remains – by Ruth Pelling

For details of charred plant remains by individual sample and by phase see the spreadsheet entitled: FBE 02 seeds.xls

Results by phase:

Phase CF: 2nd half of the 2nd century AD
Flint post holes
Nine samples were taken from phase CF post hole fills. Charcoal was present in all samples, mostly of *Quercus* sp. Charred grain was present in five samples and included hulled *Hordeum vulgare* (barley) and *Triticum* sp. (wheat). A glume base of *Triticum spelta/dicoccum* suggests the *Triticum* to be a hulled variety. Nut shell fragments of *Corylus avellana* (hazel) were also noted in one sample (con text 1038).

Phase CE
Rubbish Pit
A single sample from the phase CE rubbish pit was examined. *Quercus* sp. charcoal was noted but no seeds or chaff.

Phase C: Late first/early second century
General southern spread
A single sample from the general southern spread produced *Quercus* sp. charcoal and an indeterminate cereal grain.

Midden: Oyster gully
Almost the entire contents of the oyster filled gully midden were floated, producing 19 samples. Small quantities of cereal grains were recovered from14 samples and included *Triticum spelta* (spelt wheat) and hulled *Hordeum vulgare* (barley). Weed seeds were recovered from nine samples and a glume base from one. In addition to the cereals and associated waste, occasional fragments of *Corylus avellana* nut shell, a possible *Lens culinaris* (lentil) and a *Vitis vinifera* seed were recovered. This *Vitis* seed was un-charred however, and given the general lack of waterlogged or mineralised remains in the deposit this raises the possibility that it results from more modern intrusive material. The samples were generally quite rich in charcoal which was dominated by *Quercus* but included other taxa.

Northern pits
Three samples were examined from a gully fill and two pits associated with the northern pits. Charred remains included grain of *Hordeum vulgare*, *Triticum spelta* glume bases, *Corylus avellana* nut shell and *Quercus* sp. charcoal.

Phase CC3
Third phase gullies
A single sample from the third phase gullies produced a *Triticum* sp. (wheat) grain and *Quercus* sp. charcoal.

Second Phase gullies

Three samples were examined from the second phase gullies. Charred plant remains, included an indeterminate grain, *Triticum spelta* (spelt wheat) glume base and *Quercus* sp. charcoal.

Timber Building
Two samples were examined from the timber building, one of which produced charred remains. Cereal grain of *Hordeum vulgare* and *Triticum* sp. were identified, along with a legume, *Vicia* cf. *faba* (Celtic bean), occasional weed seeds (*Vicia/Lathyrus* sp.) and a large quantity of *Quercus* sp. charcoal, perhaps derived from structural timbers.

Phase CC1: Immediately post AD 43
CC1 post-holes
Six samples from post holes dating to immediately post 43AD were examined, five of which produced charred seeds and chaff. Cereal grains included *Triticum* sp. (wheat) and *Hordeum vulgare* (barley). A single pulse was also identified as *Vicia/Pisum* sp. (bean/pea). Five of the samples produced small amounts of charcoal which included *Quercus* sp.

First Phase Gullies
Four samples from the first phase gullies produced no charred seeds or chaff. Two of the samples contained small quantities of *Quercus* sp. (oak) charcoal.

Phase CA1: BC10-AD30
Early Ditch silts
Samples from the late Iron Age ditch silts produced fairly frequent amounts of *Quercus* sp. charcoal. Cereal grain was identified from two samples, one of which produced *Hordeum vulgare* grain only and the other *Avena* sp. (oats) grain.

Midden Deposits: Unknown Phase
Four samples were taken from Midden deposits of unknown phase (contexts 1005, 1007, 1011, 1026). Each sample produced small quantities of charcoal. One indeterminate cereal grain was identified.

Pollen - by Rob Scaife

Pollen Method.
A total of 16 pollen samples were examined from contexts (1098), (1134), (1084), (1111) and (1132). Material for analysis was obtained in the field using monolith profiles taken directly from the excavated sections of the 2002 season and sub-sampled for pollen assessment. Standard techniques were used on samples of 5ml volume (Moore and Webb 1978; Moore *et al.* 1991). Absolute pollen frequencies were calculated using added exotics to known volumes of sample (Stockmarr 1971). Pollen was identified and counted using an Olympus biological research microscope fitted with Leitz optics. The pollen sum counted for each level was variable depending on the state of preservation and the absolute pollen frequencies present. A pollen sum of up to *c.* 200 grains per level was counted except where absolute pollen numbers were smaller and preservation poor. Percentages have not in this instance have not been calculated and the raw pollen count data is given in Table 86.

Taxonomy in general follows that of Moore and Webb (1978) modified according to Bennett *et al.* (1994) for pollen types and Stace (1992) for plant descriptions. These procedures were carried out in the Palaeoecology Laboratory of the Department of Geography, University of Southampton.

3.) The Pollen Data

Of the 16 samples analysed, 15 produced pollen and spores. In a number of samples there is clear evidence of differential pollen preservation with those taxa having more robust pollen walls being over-represented in the pollen spectra. This is especially the case with the Lactucoideae (dandelion types) and spores of *Pteridium aquilinum* (bracken) and are typical in marginal preserving conditions (Dimbleby 1988). This applies particularly to the basal sediments of midden context (1098), Gully context (1134) and the pit context (1111). Counterpart to this is the under-representation of thin walled pollen thus resulting in markedly skewed pollen data. In the case of ditch contexts (1084) and (1132) and upper levels of gully (1134), the higher values of Lactucoideae are also accompanied by more abundant Poaceae (grasses) and other herb taxa. This suggests that there may be residual older pollen remaining in these soils/sediment fills along with more or less contemporaneous material. This is extremely likely since by definition, the fills must be derived from earlier material (i.e. allochthonous). Poor pollen preserving conditions are also mirrored by the absolute pollen frequencies present, These are as low as 1250 grains/ml at the base of the midden (1094) to the relatively better preservation of the ditch context (1084) with up to 81,600 grains/ml. It is the ditch contexts (1084; 201) and 1132 (262) which provide the most reliable pollen assemblages from which inferences about past vegetation can be drawn. It should also be noted that the pollen has for many reasons, a complex taphonomy and generally only represents the on-site and very local vegetation. Here, without exception all samples have dominance of herbs and spores with only small numbers of trees and shrubs.

3.a.) Contexts (1084) and (1132) (Phase CA)
These contexts are the fills of ditches from the earliest phase (1st C). Pollen is relatively abundant (to *c.* 80,000 grains/ml) with good preservation of pollen contemporaneous with the basal grey sediments of the ditch. It has been noted (interim report 2002) that these features/contexts provide a key to a better understanding of the Fishbourne landscape prior to the main phase of (Flavian) villa construction.

Both contexts are dominated by Poaceae (grasses) with a range of other herbs which are strongly indicative of grassland, possibly pasture (e.g. *Plantago lanceolata*) and Asteraceae types (*Centaurea nigra* type and Lactucoideae). This dominance of grassland taxa contrasts with the paucity of cereal pollen recorded. The maximum number of grains come from the base of (1132) with 5 grains. Although this may imply cereal cultivation within the region, but not immediately adjacent, it is far more likely that this cereal pollen and associated segetals is of secondary origin. That is, coming from domestic debris including such possibilities as waste food, human and/or animal faeces or from crop processing activities. Threshing and winnowing of hulled grain will have liberated pollen trapped in the ears of the cereals (Robinson and Hubbard 1979).

Trees and shrubs, where they occur, are typical of the late Bronze Age, Iron Age and Romano-British periods in that they represent a regional background of oak (*Quercus*) and hazel (*Corylus avellana*) which remained after extensive late-prehistoric removal of lime (*Tilia cordata*) woodland. All taxa recorded (birch, pine, oak, alder and hazel) are wind pollinated and the small numbers here, in spite of the taphonomic factors associated with small depositional features, suggest that there was no woodland growing locally.

Small numbers of sedges (Cyperaceae) and possibly the sporadic occurrences of Royal Fern (*Osmunda regalis*; context 1132) possibly indicate that the ditch was wet although no indications of standing water were found. This also accords with the fine grey silts of the basal, primary context. Thus, whilst it was wet, this does not imply that the earlier suggestions of the ditch being a Roman water course are true and the interpretation as a defensive structure is just as likely since the clay sub-strate of the Reading beds would have created marshy conditions.

3.b.) The Gully (1134), Pit (1111) and Midden (1098) contexts.
All of these contexts are of later date and it was hoped that samples from these would contain pollen of foodstuffs and perhaps from garden and horticultural plants. This proved not to be the case in this study. Pollen was significantly sparser compared with the early ditch fills (3.a. above). Pollen counts were, however, made in an attempt to recover any such 'exotic' taxa which may have been present. These counts produced strong evidence of differential preservation with substantial numbers of Lactucoideae (dandelion types) but with a proportion of thinner walled grains in some samples.

Overall, the pollen assemblages from these features are similar to those described from the earliest ditch sediments. There are few trees and shrub pollen and dominance of herbs, especially grasses (Poaceae) and grassland plants. Lactucoideae

although over-represented as noted above are, however, also likely to have come from grassland/pasture. The absence of cereal pollen in any quantity is, perhaps surprising.

See other digital files for additional information:

- 2002 context phasing – table 85 (spreadsheet)
- 2002 animal bone assessment report (Word document)
- 2002 additional animal bone data; tables 72-83; figs 76-88 (spreadsheet)
- 2002 additional charred plant remains data by sample and context number – table 84 (spreadsheet)
- 2002 additional shell data; tables 65-71; figs 70-75 (spreadsheet)
- 2002 additional stone samples and stone small finds by phase; tables 51 and 52 (spreadsheet)
- 2002 Annex A – weight of brick and tile by context (Word document)
- 2002 pollen data – Table 86