EXCAVATIONS ON THE WHITE CLIFFS EXPERIENCE SITE, DOVER, 1988–91*

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GENERAL INTRODUCTION

This paper presents the results from a number of small excavations carried out by the Oxford Archaeological Unit on the site of the White Cliffs Experience, Dover. All excavation and post-excavation work was funded by Dover District Council.

During the 1970s and 80s a number of different developments were proposed for this archaeologically-important town centre site, prompting the rescue excavations discussed below, but it was not until 1988 that a project – the construction of the White Cliffs Experience[2] – was finally agreed. In September of that year the developers, Dover District Council, asked the Oxford Archaeological Unit (O.A.U.) to act as archaeologists to the scheme and set up the Dover Archaeological Advisory Board to monitor both this project and the general archaeological situation in the town.[3]

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[2] The White Cliffs Experience heritage centre, and the adjoining Dover Museum, were opened on 1st May, 1991.

[3] The Dover Archaeological Advisory Board consists of Professor B. Cunliffe (Chairman), Professor D. Harris, Professor P. Rahtz and Professor P. Salway. Acting on their advice, Dover District Council commissioned the O.A.U. to produce an archaeological implications survey of the town (Wilkinson, (1990)) to facilitate the integration of archaeology into the planning process.

A total of ten evaluation trenches were dug in November 1988 and February 1989 to assess the condition of the archaeology and to pinpoint the position of some structures. Normally, only backfill from previous excavations was removed but the results from Trench 1, where a small amount of stratification was investigated, are published here.[4] In particular, the information from the evaluation trenches allowed the supporting piles for the building to be positioned so as to minimise damage to the underlying archaeology.[5]

With the design of the building finalised, only a few small areas remained where damage to the archaeology could not reasonably be avoided and these were the subject of mitigation excavations carried out either before or during construction work. All of these areas, Trenches 11–14 (Fig. 2), are reported on here. Finally, the design of the heritage centre element of the scheme provided for three archaeological display areas which were cleared of backfill by the O.A.U. These were (see Fig. 2 for locations) the Time-and-Tide Theatre undercroft (*Classis Britannica* fort internal buildings, Code: DTT), the North Crescent (west end of St. Martin-le-Grand church) and the South Crescent (east gate of *Classis Britannia* fort, Saxon Shore fort bastion, Code DSC). Only in the latter case were any archaeological contexts removed, and these are reported on together with the adjoining Trench 14. The excavation archive, including all finds, will be deposited with Dover Museum.

THE SITE: TOPOGRAPHY AND GEOLOGY

The site, N.G.R. TR 31904137 (centred), lies in the town centre of Dover, to the south-west and west of Market Square (Fig. 1). It is bounded by Queen Street to the south, by York Street to the south-west and is crossed by the 10 m. contour. The steep slope of the Western Heights rises immediately west of the site to some 90 m. O.D., while to the east is the flat, built-up Town Centre which overlies the infilled estuary of the River Dour. A number of buildings have stood on the site in the recent past, including housing, a school and a warehouse but these were demolished in the 1970s. By 1988, much of the area was in use as a car park with only a few buildings left standing in the east and north of the site.

[4] The evaluation phase of the work, and also the excavation of Trench 11, was directed by Gill Hey of the O.A.U.

[5] The intention throughout the project was to leave the archaeology preserved *in situ* below the new building wherever possible. 167 piles, each 0.60 m. in diameter, were placed across the site in positions agreed by consultation between the engineers and the O.A.U. Damage to the archaeology from this process was kept well below 1 per cent.

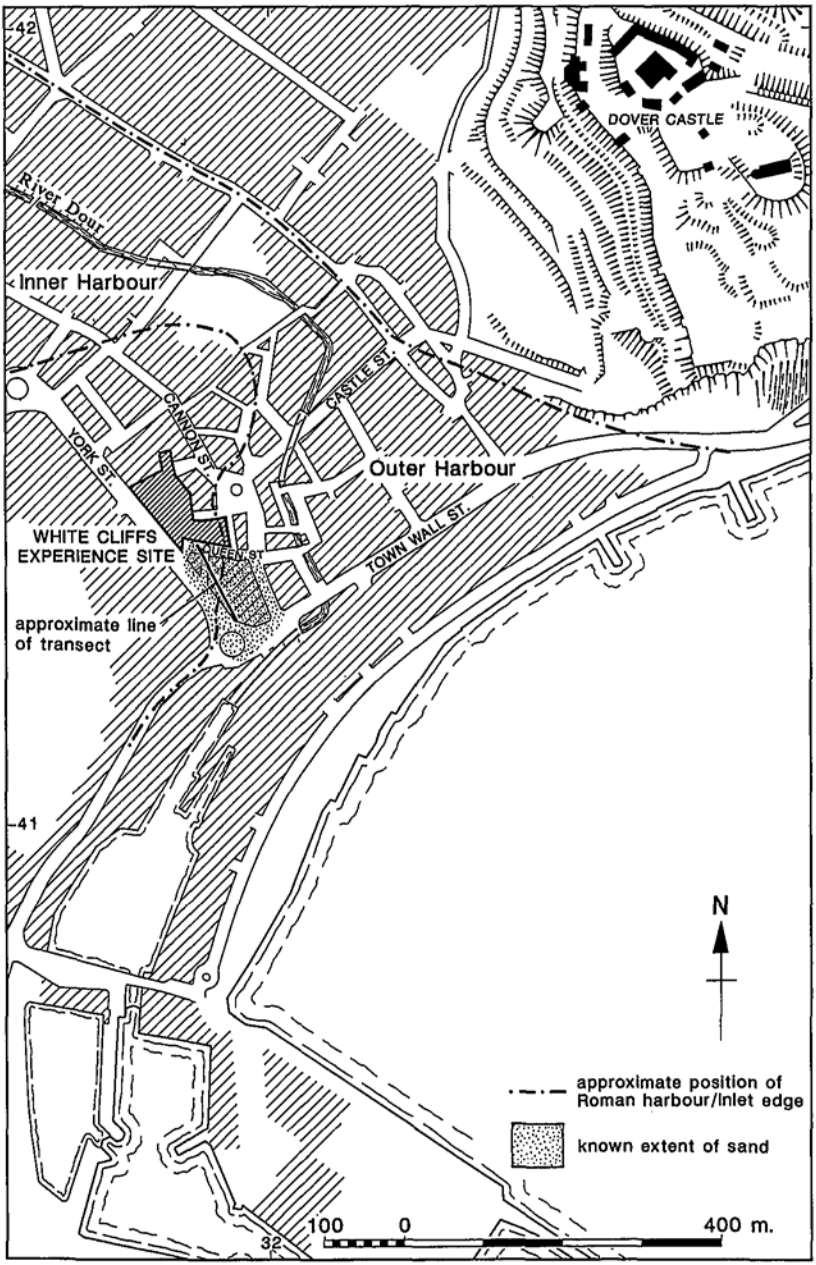

Fig. 1. The White Cliffs Experience site, Dover, location map, showing extent of the harbour/inlet in the Roman period.

Geologically, on the west side of the site, the chalk bedrock is overlaid by Coombe Rock which here takes the form of a buff, chalky clay with flints. On the east side of the site, being closer to the bottom of the river valley, the Coombe Rock lies below estuarine sands and gravels, themselves in turn overlain by alluvial silts.[6]

ARCHAEOLOGICAL BACKGROUND

The White Cliffs Experience site lies in an archaeological area which is unquestionably of international importance. The stratification in this part of Dover varies from four to over six metres in depth and all major periods from the Neolithic to the present day are represented. Two of the best-known elements of Dover's archaeology – the *Classis Britannica* (*Cl. Br.*) and Saxon Shore forts – lie superimposed on the site, which also encompasses a Roman military bath-house and the remains of the Norman church of St. Martin-le-Grand.

Observations during building work from the late nineteenth century onwards revealed the presence of substantial Roman remains on the site,[7] but the first specifically archaeological excavations, by the then newly-formed Dover Archaeological Committee, followed the large-scale damage inflicted on the town during the Second World War. One of the sites excavated during this campaign was at Fox's bakery, north of Queen Street (Fig. 1), and consisted of Roman walls below medieval deposits. The Roman walls have since been shown to be part of a building within the *Cl. Br.* fort. Between 1951 (when the Excavation Committee dug their last site) and 1970 very little archaeological work was carried out in Dover, and only one excavation lay close to the area relevant to this paper.[8]

[6] A.J. Barham and M.R. Bates, *The Holocene Prehistory and Palaeoenvironment of the Dour Valley Catchment: a Geoarchaeological Assessment Report for Dover District Council*, Geoarchaeological Service Facility Technical Report 90/04, (1990), 21–25, 55–68, see especially Fig. 13.

[7] A local man, Mr E.G.J. Amos, was a particularly keen observer. The evidence was summarised by himself and R.E. Mortimer Wheeler in 1929, when the presence of a Saxon Shore fort was correctly supposed: *Arch. Journ.*, lxxxvi (1929), 47–58. Their Site 6, *ibid.*, 49–50 was a piece of the Shore fort wall seen in 1915 and lay within the area discussed in this paper.

[8] *Arch. Cant.*, lxiv (1951), 133–4. For positions of these walls see Philp 1981: 9, 46, Fig. 16. For the work of the Dover Archaeological Committee, *op. cit.*, in note 4, 130–149 and *Arch. Cant.*, lxxi (1957), 14–37. For summaries of the work up to 1970, see *Arch. Journ.*, cxxvi (1969), 79–99 (S.E. Rigold's classic paper on the Roman harbour) and Philp, (1981), 7–12. In 1958, P.A. Rahtz observed part of St. Martin-le-Grand church, and underlying Roman structures, on a site between the Market Square and eastern boundary of the White Cliffs Experience, *Arch. Cant.*, lxxii (1958), 111–37.

From 1970 to 1988, the Kent Archaeological Rescue Unit (K.A.R.U.) executed a large programme of rescue excavations in central Dover, and much of our background knowledge of the White Cliffs Experience site is a direct result of their efforts; detailed information is currently available only for the earlier Roman (*Cl. Br.*) period, but an outline history for other periods can be pieced together.[9] The earliest known use of the area is represented by ditches, pits and flint scatters of the Neolithic period which were concentrated in the northern part of the site, forming part of what the excavator has described as 'an extensive farm'.[10] An apparent gap in occupation was then succeeded by an Iron Age settlement of *c.* 500 B.C. characterised by wooden huts and storage pits.[11]

In the Roman period, a fort was laid out *c.* A.D. 115–20 but was never completed; its north-east corner occupies the western half of the site. A second fort, built *c.* A.D. 130–140 on a similar alignment, was completed. It was occupied, though probably not continuously (see below), until the early third century. The large quantity of tiles stamped CLBR leave little room to doubt that this was a major base for the *Classis Britannica*, the Roman fleet in British waters.[12] North of the fort, and still within the area of the site, was a substantial military bath-house built *c.* A.D. 140–60.[13] The latter structure is immediately south of the Roman building known as the 'Painted House' which lies just outside the site boundary; this may have been part of a *mansio*.[14] To the south of the fort, and just east of the southern roundabout on York Street (Fig. 1), part of the wooden Roman waterfront was recently discovered.[15]

Following the abandonment of the *Cl. Br.* fort in the early third century, soil accumulated over the remains of the fort buildings until the construction of the Saxon Shore fort (A.D. 275 or later, see below). The Shore fort, trapezoidal in shape, is both offset from and considerably larger than its predecessor, enclosing an area of at least

[9] A summary and discussion of Dover's archaeology is contained in Wilkinson, (1990), 13–22.

[10] *Kent Arch. Rev.*, 28 (1972), 237; Wilkinson, (1990), 13.

[11] *Kent Arch. Rev., op. cit.* in note 8; Philp, (1981), 80. The recent discovery of a Bronze Age boat shows that in this period, too, the Dour estuary was of considerable importance: K. Parfitt 'The discovery of the Bronze Age boat', *Canterbury's Archaeology 1992–93*, Canterbury Archaeological Trust, 1993, 15–18.

[12] Philp (1981), is the definitive report on the *Classis Britannica* forts. Data on the fleet are well summarised by H. Cleere, 'The Classis Britannica', in Maxfield, (1989), 18–22.

[13] Philp, (1989), 275, Fig. 103.

[14] *Ibid.*, 281–2.

[15] K. Parfitt, 'The A20/Dover Sewers Project', *Canterbury's Archaeology 1992–3*, Canterbury Archaeological Trust, (Canterbury 1993), 15.

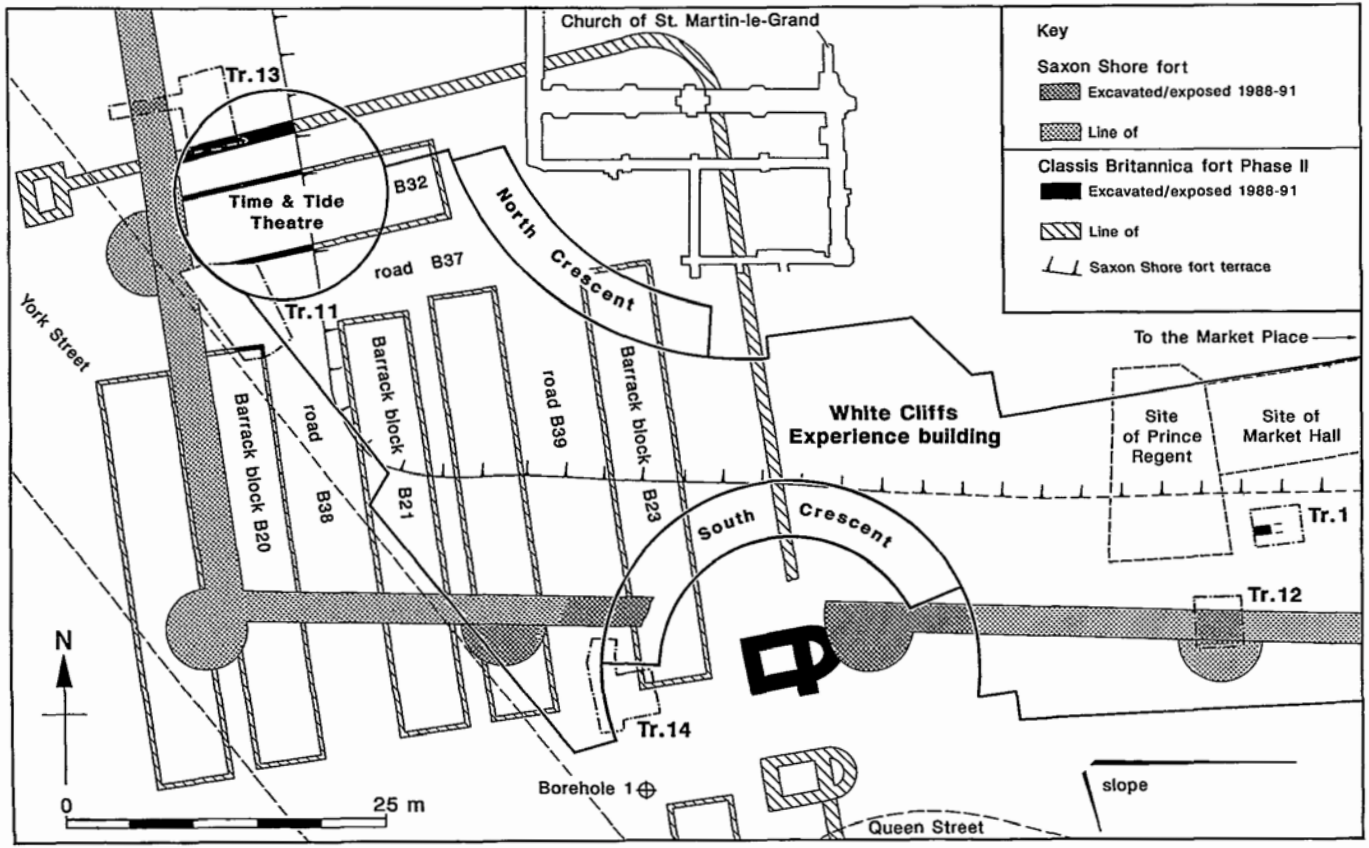

Fig. 2. Trench positions and major archaeological features; fort layouts after Philp (1981: Fig. 5).

1.5 ha. The south and west walls of the Shore fort cross the White Cliffs Experience site while the south-west corner lies just outside the site boundary, below modern York Street (Fig. 2).

With regard to the early medieval period, much evidence, as might be expected, has been recovered from inside the walls of the Shore fort, including sunken-featured buildings, a multi-phased timber hall and huts, and a multi-phase timber church with burials. There was evidently occupation from at least the seventh century onwards, possibly preceded by a break, and activity continued into the late Saxon and Saxo-Norman periods. The timber church and hall can perhaps be linked with the ancient Minster of St. Martin, founded in the seventh century.[16]

For the Saxo-Norman and later medieval periods the archaeology of the site is dominated by the remains of the stone church of St. Martin-le-Grand. Construction probably began in the late eleventh century and the church was originally intended as the centrepiece of St. Martin's Priory, but later became a parish church when a new priory was founded outside the town in 1130. The ruined west end of the structure was exposed in the 1970s by the Kent Archaeological Rescue Unit[17] and is now on display in the grounds of the White Cliffs Experience (Fig. 2).

DESCRIPTION AND DISCUSSION OF THE ARCHAEOLOGY

INTRODUCTION

The following section is not intended to be an exhaustive, context-by-context description of the archaeology. Instead, key contexts or groups of contexts are discussed under a number of thematic headings. Discussion of wider issues (e.g. the date of the Saxon Shore fort) is also contained within this section. Numbers given without any prefix refer to contexts while those prefixed by Number or No. refer to the finds catalogue which has a single unique sequence for all classes of material. Frequent reference is also made to building numbers (e.g. Building 2 or B2) and these are the numbers allocated to structures (including roads) by Philp in his publication of the *Classis Britannica*

[16] For a more detailed discussion of the archaeological evidence, and its relationship to the historic sources, see Wilkinson 1990: 17.

[17] *Kent Arch. Rev.*, 45 (1975), 119–20. In addition to the church, a lime kiln relating to its construction has also been excavated and a possible monastic masonry building (Wilkinson 1990: 22).

fort.[18] All references, unless otherwise stated, are to the completed and occupied *Cl. Br.* II fort rather than its unfinished predecessor.

INTERIOR OF THE *CL. BR.* FORT

Trenches 11 and 14 provided evidence from the fort interior. Trench 14 lay just inside the east gate of the fort, near the south-west corner of Building 23, a barrack block, and within the road B39 (Fig. 2). A thin, hard-packed layer of water-worn pebbles (917) on a base of chalk (918) was succeeded by 0.10 m. of clean silt (915) and then by a north–south drain built of chalk blocks (914). The drain was overlain by a second, metalled surface (913; Figs. 10, 11). The silt 915 contained the only dating evidence, a single sherd of samian (*c.* A.D. 150–200). On balance, the surface 913 probably belongs to Philp's Phase II of the *Cl. Br.* occupation (*c.* A.D. 190–200 until *c.* 210). The overlying stratification may have been truncated during the construction of the later Saxon Shore fort (see below). Both drains and surfaces of the types described above are typical of the open areas within the *Cl. Br.* fort – Philp identified a complex sequence of metalled surfaces and chalk-built drains running north–south along the same road, B38.[19]

Trench 11 was situated between the north end of the barrack block B20 and the south wall of Building 32. The earliest situation revealed by excavation is shown on Fig. 3: two short sections of rough, chalk-block wall (362) bonded with brown clay, clearly represent the east and north walls of B20, along with a clay surface (414) inside the building and a surface of water-worn pebbles (417, 402) outside. The latter was associated with two chalk-block gutters (421, 418) which both apparently emptied into a third drain (423) of which only the cut was seen. A patch of the metalled surface was repaired using chalk fragments (420). The next development of the area (Fig. 4) has the walls of Building 20 unchanged, more resurfacing (403) of the metalled area, and a new gutter (370), which ran under the corner of the building. The latter feature, perhaps intended to resolve drainage problems within the building, probably emptied into a new north–south drain (410), which itself joined a drain along the east–west road B37.

The pottery recovered gives a general date of mid second century or later for both of the phases described above; the size and nature of the assemblages do not allow any further refinement. Thus, these situations

[18] Philp (1981), Fig. 5.
[19] Philp (1981), 84–6, Fig. 16.

Fig. 3. Trench 11, earliest excavated phase.

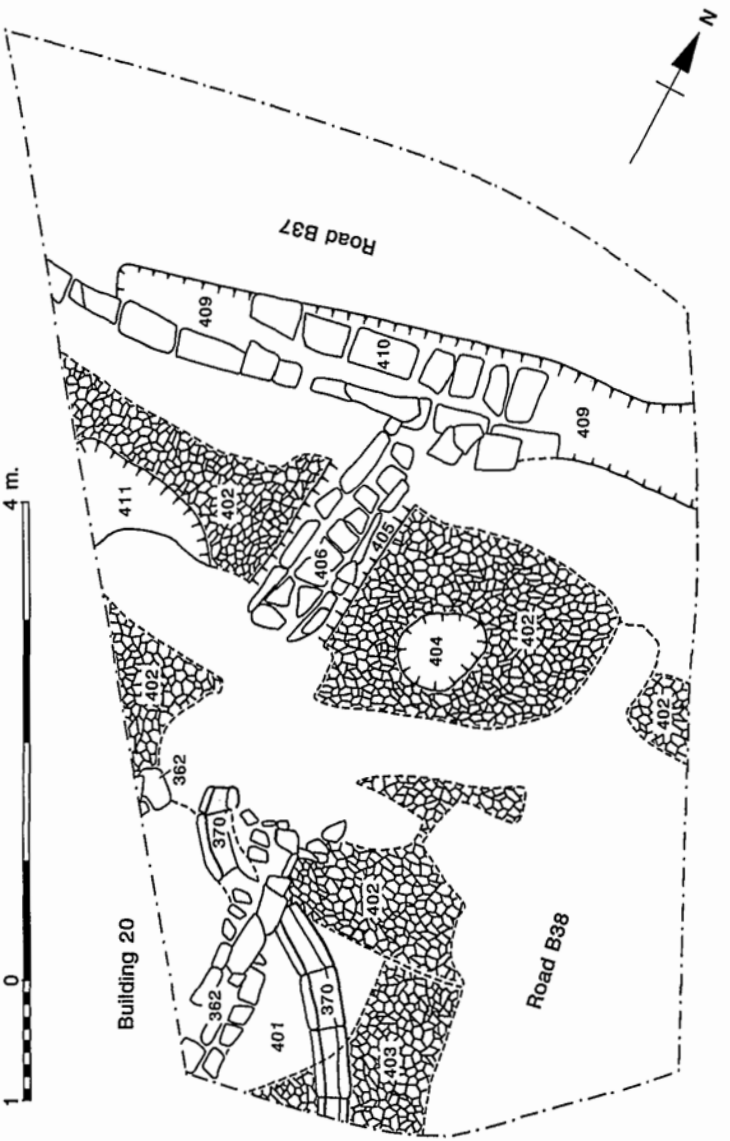

Fig. 4. Trench 11, second phase of metalled surfaces and chalk-block drains, with Building 20.

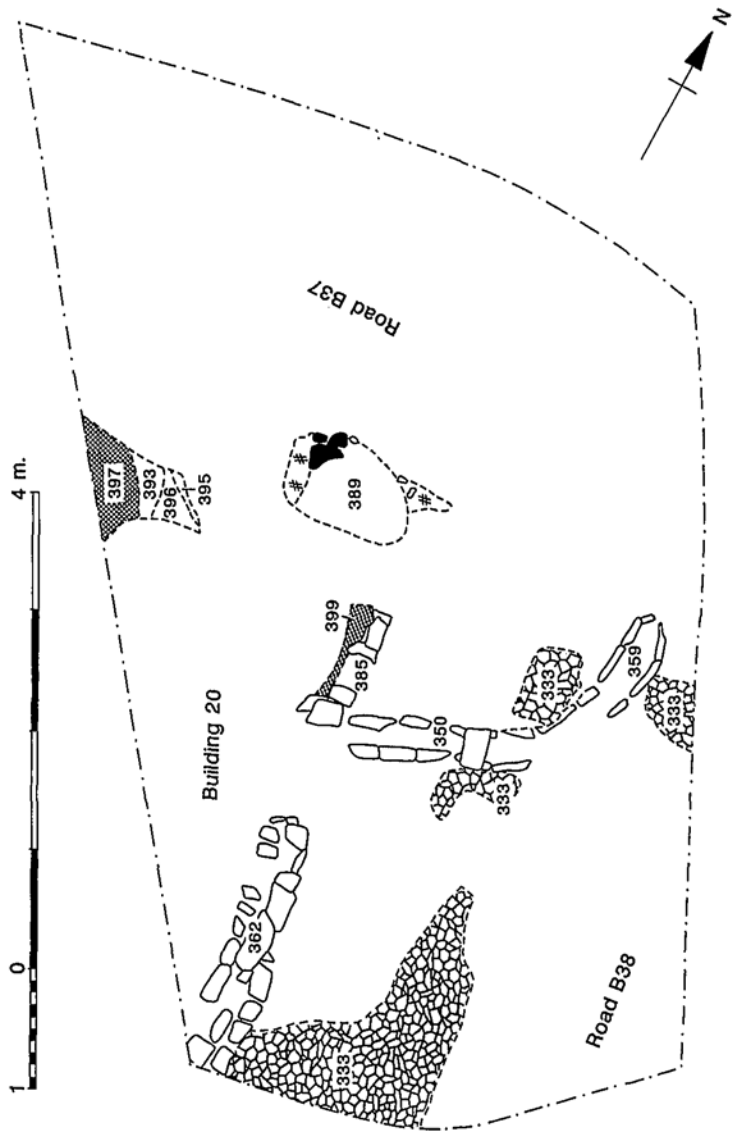

Fig. 5. Trench 11, third phase of metalled surfaces and chalk-block drains, with Building 20 extended to the north.

could relate to Philp's Period I (A.D. 130–40 until 154–55) or Period II (A.D. 163–65 until 180); this aspect is discussed further below.

Fairly deep layers of silt (401) and rubble (400) overlay the external and internal situations just described, and date to the second half of the second century or later. Following this Building 20 was extended northwards by the addition of wall 385 (Fig. 5). No return wall was found, so the length of the extension is unknown. A floor of *opus signinum* (397, 399) was laid inside the building, while externally, more metalling (333) was put down together with a chalk-block drain (350), which must have drained the newly-extended north end. The dating evidence for this phase is very sparse, and only a general date of mid to late second century or later can be assigned with confidence.

Finally, deep (up to 0.45 m.) rubble was dumped across the area, succeeded by a further phase of chalk-block drains and metalled surfaces in the area of Road B37. This latest phase (not illustrated) had been heavily cut about by later graves and only fragments remained. The fate of the building at this point is unclear – wall 385 did not survive although wall 362 may have done so. In terms of dating, four of the dump layers (334, 381, 389, 391) produced sherds of grog-tempered ware for which a late third-century date is normally suggested (see below, P. Booth, The Roman Pottery, Fabric R95, No. 23).

Relating this evidence from the interior of the *Cl. Br.* fort to the 1970s excavations is not without its problems. Four phases of development have been described above, compared with the three main phases proposed for the fort[20] by Philp, but this (even without the later pottery) would not be abnormal for an external area, and Philp notes five successive road surfaces just to the south, as well as a complex

[20] Philp sees the three phases as being periods of occupation, with abandonment in between. By postulating that the garrison supported campaigns in the north when not in Dover, he adds historical and archaeological evidence together to arrive at the phase dates of A.D. 130–40 until 154–55; A.D. 163–65 until 180; A.D. 190–200 until 208; Philp (1981), 97–99. In reviewing the excavation report, D.J. Breeze rightly points out that a *Cl. Br.* presence in the north is only proven in one case (Hadrian's Wall, A.D. 122–28), while other campaigns quoted are very poorly documented; on archaeological evidence alone, the dates of the three phases are A.D. 119 or later, A.D. 154 or later and A.D. 157 or later; *Britannia*, xiv (1983), 372–5. The rebuilding events seem too widespread to represent damage caused during occupation as Breeze *ibid.*, 373–4, suggests, so that there is still a reasonable argument for the garrison being absent and then returning. In this context, little has been made of the fact that the known rebuilding (except for one reconstructed gate-house) is limited to the barrack blocks, which are built in chalk blocks bonded with clay. Gate-houses, granaries and the fort wall are bonded in mortar, use more tufa and flint, and seem to survive the entire life-span of the fort. It is much easier to imagine either a care-and-maintenance staff coping with the latter structures, but not the flimsier barrack blocks, or even, that the chalk and clay wall stubs of the barrack blocks supported timber-framed walls, which were removed to be used elsewhere.

sequence of drains, all within the same B38 road as was investigated here.[21] The sheer quantity of drains and gutters, and their frequent re-ordering, is striking, and shows the difficulties caused by the fort's position at the bottom of the Western Heights slope. It is also the case that chalk blocks, a relatively rarely used building material in the Roman period,[22] were not a very suitable choice for drain-building, as the soluble chalk caused rapid silting. The main point of interest as regards dating is the presence of late third-century grog-tempered ware in contexts below the final phase of Road B37. The implications of this are discussed below (see The End of the *Cl. Br.* Fort). Extension of the building B20 was previously recorded during the 1970s excavations, as well as extensions (always towards the fort wall end of the building) to two other structures, all in Philp's Phase III. One of these latter, like B20, was given an *opus signinum* floor. The extensions of these barrack blocks can be interpreted either as being for officers previously quartered elsewhere, or as an improvement of officers' quarters which had formerly (and unusually) been of the same size and shape as the men's accommodation.[23]

THE DITCH AND EXTRA-MURAL AREA OF THE FORT

Trench 13, which was situated immediately outside the north wall of the *Cl. Br.* fort (Fig. 2), provided a small amount of information on the extra-mural arrangements. A limited area of stratification at the northern edge of the trench (Fig. 6) consisted of a loam layer (861) covered successively by rammed chalk (860) with a surface of water-worn pebbles (857); a silt layer (858) had formed over this surface. Layer 861, at the bottom of the sequence, can be dated to the mid second century or later, while 858, at the top, contained Antonine samian. All of these deposits were cut by 863 (Figs. 6, 7) which ran parallel to, and 4 m. north of, the *Cl. Br.* wall. The cut, which sloped away southwards at *c.* 45°, should be the north edge of the recut *Cl. Br.* fort ditch. This recut, which from the 1970s excavation could only be shown to be post *c.* A.D. 70–100,[24] can now be seen as post *c.* A.D. 140–150.

[21] Philp (1981), 71.

[22] *Britannia*, ii (1971), 166–95.

[23] Philp (1981), 110, prefers the first interpretation, with the officers quartered in separate buildings along the *Via Principalis*. For a detailed argument of the second interpretation, and its ramifications for the size of the garrison, see D.J. Breeze's review of the excavation report, *Britannia*, xiv (1983), 372–5.

[24] Philp (1981), 24–5; the evidence comes from just north of the work reported on here, and is therefore likely to be the same recut.

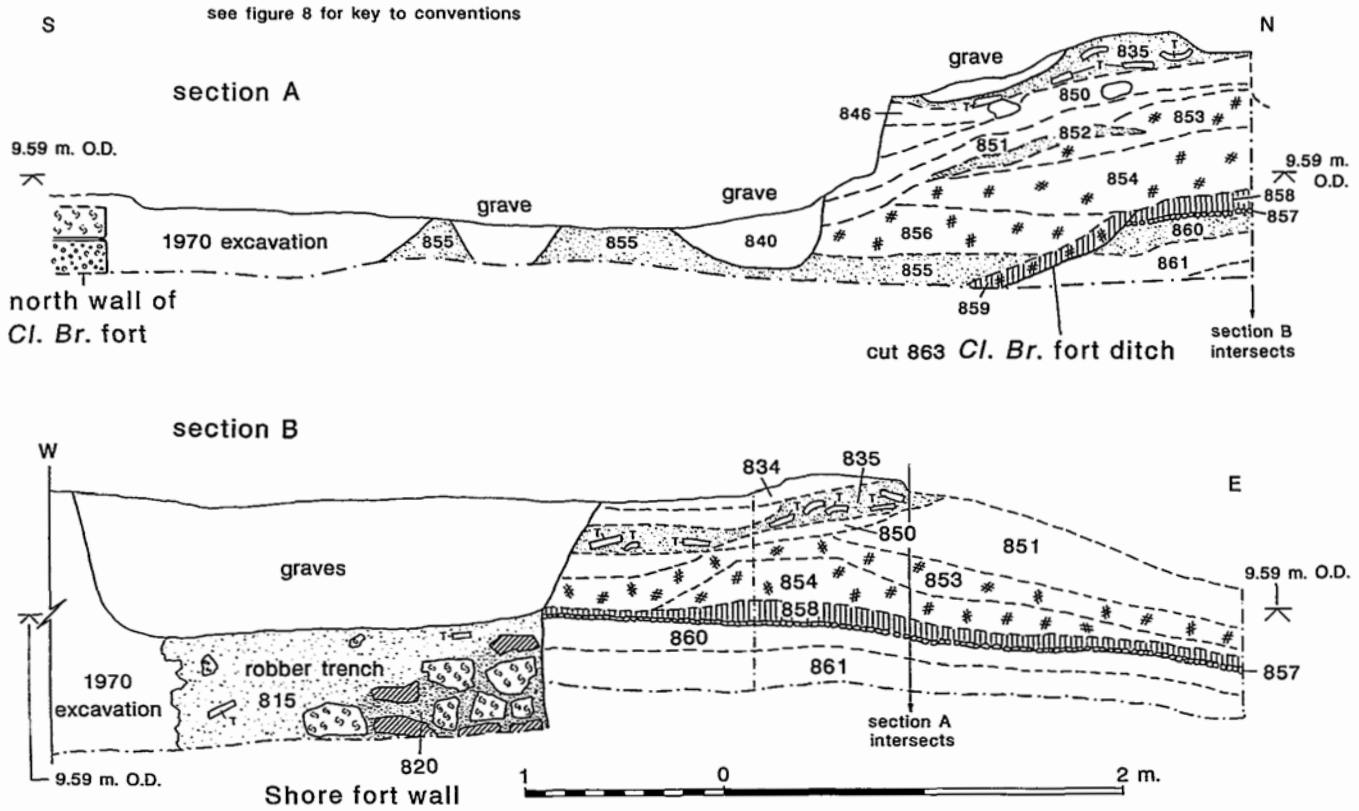

Fig. 6. Trench 13. Sections through rampart tips of the Saxon Shore fort rampart (for position of sections see Fig. 7).

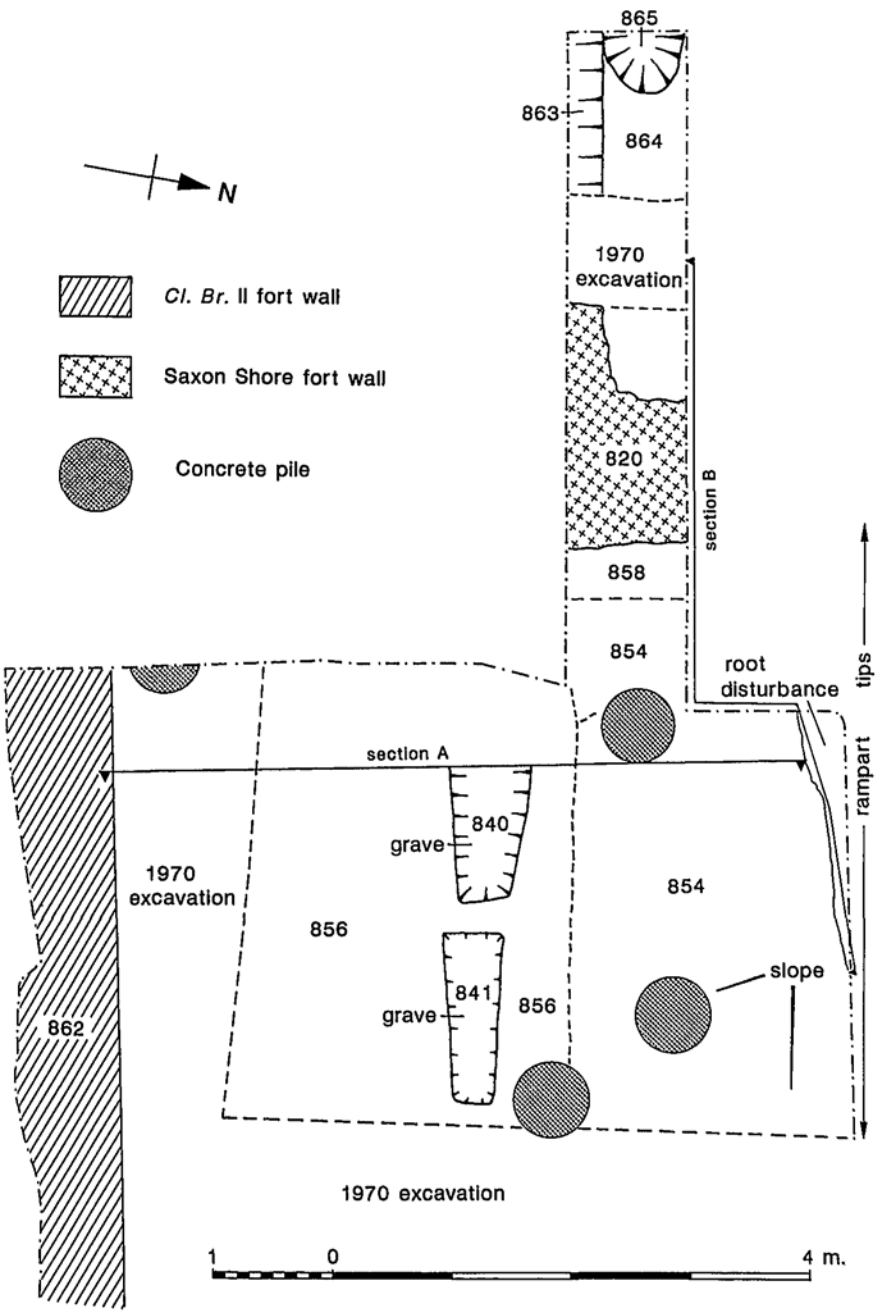

Fig. 7. Trench 13, plan, showing rampart tips against Saxon Shore fort wall.

AN EXTRA-MURAL STRUCTURE NORTH OF THE *CL. BR.* FORT

This structure was identified in Trench 1, situated 35 m. east of the fort's east gate (Fig. 2). A short (1.20 m.), north–south length of chalk-block wall set in mortar was revealed (36). The footing of the wall was off-set to the south by 0.20 m., giving a total width of at least 0.58 m.; two courses of walling survived (Figs. 8, 9). The footing was covered by a metalled surface formed of small water-worn pebbles, in turn covered by a layer of silt (37) which had formed against the south side of the wall, and a layer of rubble (38), probably wall-collapse. Both of the latter two deposits contained many small fragments (total = 110) of painted plaster. The few larger fragments preserved (i.e. *c.* 0.05 x 0.05 m.) showed a background of reddish-pink onto which was imposed some small areas of dark reddish-black and some of dark red (not illustrated). This pattern suggests that at least some of the plaster was painted as imitation marble, a technique used commonly for both the dado and middle zone of Roman painted walls.[25] Munsell numbers for the colours are as follows: 2.5YR 6/6 (reddish-pink), 10R 2.5/1 (dark reddish-black), 10R 3/6 (dark red).

The structure described above cannot be independently dated, but the use of chalk-block construction recalls structures within the *Cl. Br.* fort, and the metalled surface is identical to that used for roads and other external areas within the fort (see above: The Interior of the *Cl. Br.* fort). More compellingly, the building almost certainly precedes the construction of the Saxon Shore fort (*c.* A.D. 275 to early years of fourth century, see below) and the accumulating silts (37, 35) with fragments of plaster suggest at least considerable dilapidation, if not abandonment, well before this date. On balance, then, while no construction date can be established, the building should have been in use during the final phase of the *Cl. Br.* fort and for at least part of the intervening period, prior to the construction of the Shore fort.

The context in which the plaster fragments were found, in a silt layer accumulated overlying a metalled surface, strongly suggests that they had fallen from the external face of the wall, as metalled surfaces of this type seem, at least on the evidence of the *Cl. Br.* fort, to be used for outside spaces. It is, of course, possible that the wall was fronted by a portico which protected it from weathering to some extent, as has been proposed for a painted courtyard wall from Verulamium.[26] The building discussed here may be the same as that found in 1982 by the Kent

[25] N. Davey and R. Ling, *Wall-Painting in Roman Britain*, Britannia Monograph Series, 3, (London, 1982), 31–2.

[26] *Ibid.*, 66.

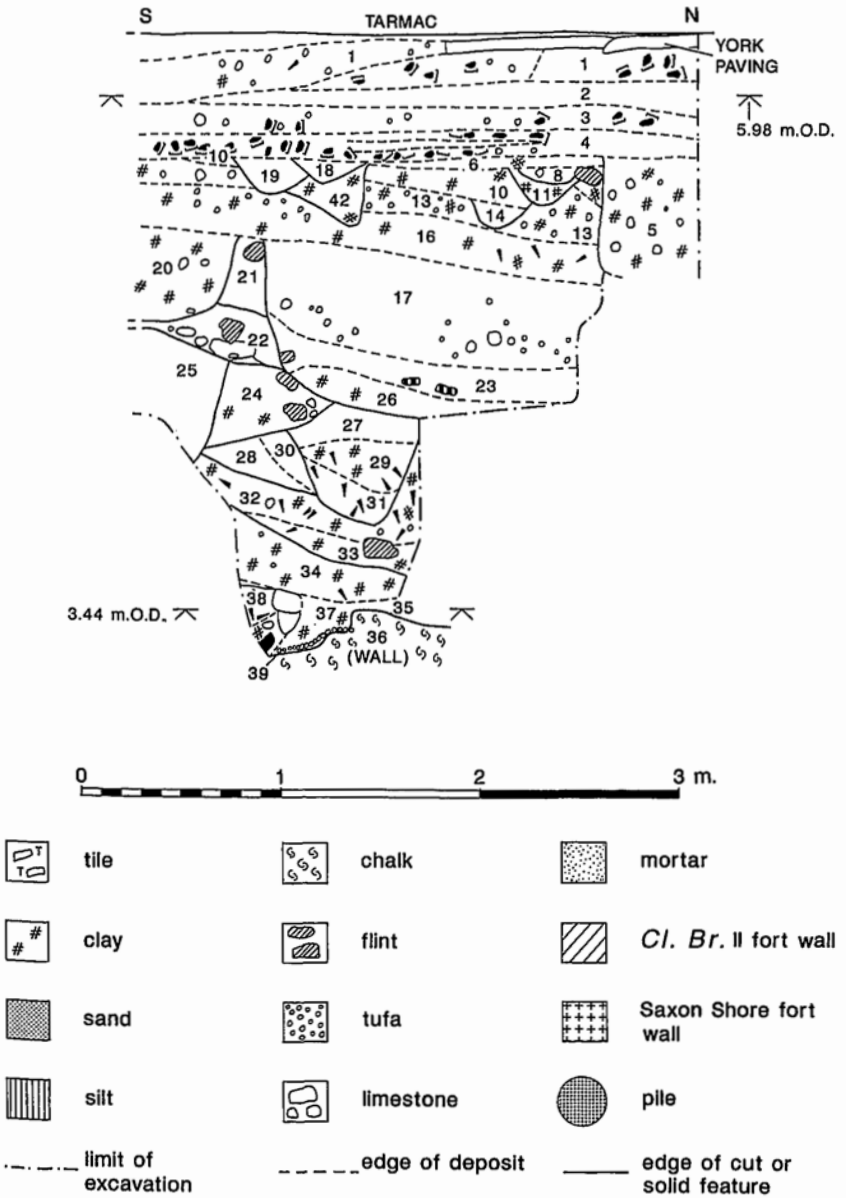

Fig. 8. Trench 1, west section (see Fig. 9 for position).

Archaeological Rescue Unit,[27] and the painted wall could have faced out onto the main approach road to the east gate of the fort.

THE END OF THE *CL. BR.* FORT – ABANDONMENT AND CONTINUITY

Coin and pottery evidence from the 1970s excavations indicate that the *Cl. Br.* fort was abandoned in the early third century.[28] The rubble from the buildings appears to occur directly over occupation in some buildings, so that there may have been deliberate destruction of the walls.[29] A fine soil then accumulated over the rubble, and preceded the construction of the Shore fort, so that there was clearly a substantial time gap between the two events.[30] Thus far, the story seems clear, but in the area of Trench 11 just inside the west wall of the fort (Fig. 2) no trace of an abandonment loam was found. It has also already been noted that the road B37 was resurfaced, and a new chalk drain built, in the late third century or later. This latter operation probably relates to the Shore fort (see below) but it increases the plausibility that earlier road surfaces continued in use following the abandonment of the *Cl. Br.* fort, particularly if the road provided a useful thoroughfare. In this case, the road may have led westwards to the north gate of the abandoned fort, thus giving access northwards to the area of the 'Painted House'. To the east, the road could either have followed round the east wall of the fort, or gone through a break in the fort wall. This evidence, along with possible continued use of an extra-mural building east of the fort (see above) and the 'Painted House' itself are all reminders of the continuity of life in the *vicus* following the abandonment of the fort. The possibility that part of the road continued to be used during the life of the Saxon Shore fort is discussed below (see The Shore Fort Walls. . .).

CONSTRUCTION OF THE SAXON SHORE FORT

Evidence relating directly to the Shore fort construction period was recovered from Trenches 1 and 13. Trench 1 (Figs. 8, 9), from which some of the deposits have already been described above, would have

[27] *Kent Arch. Rev.*, 71 (1983), 10–11. The structure is described as 'a substantial Roman building, with plastered walls painted in many colours'.

[28] A general early third-century date is preferred here to the precise A.D. 208 which Philp gives, as the latter date supposes that the fleet had left Dover to support campaigns by Septimius Severus in the north, and this is not proven; Philp (1981), 99; *Britannia*, xiv, (1983), 373–4.

[29] Philp (1981), 43, Fig. 25, S13.

[30] Philp (1981), 94–6.

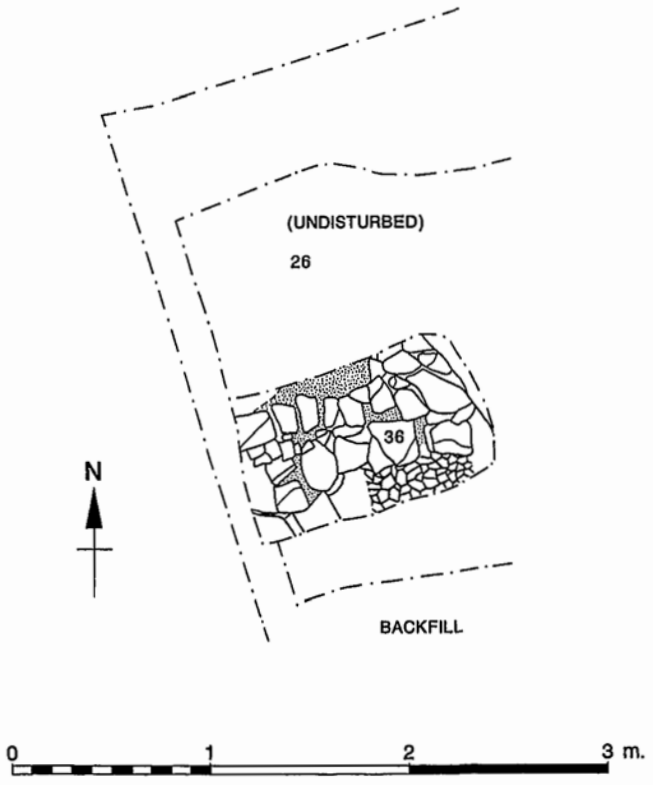

Fig. 9. Trench 1, plan, showing wall (36) of Roman building with painted wall-plaster.

been 7 m. inside the east wall of the Saxon Shore fort, and close to the projected line of the Shore fort terrace.

The destruction rubble (38) from wall 36 (see above) was covered by a deep (up to 0.40 m.) layer of clay (34), with very few inclusions, and sloping downwards from south to north (Fig. 8). Layer 34 contained four coins, Nos. 11, 12, 14, 15, all dated to *c.* A.D. 260–280 and 27 sherds of pottery (e.g. No. 34) which indicate a date from the late third century onwards. Some caution must be exercised here, given the very small area of excavation, but it seems likely that layer 34 represents the tail of the Saxon Shore fort rampart – a feature which is known to have existed and which in other areas of the fort extended at least 7 m. back from the fort wall.[31] The clay which constitutes layer 34 could easily

[31] See e.g. Philp (1989), Fig. 22, Section E.

have been derived from excavation of the Shore fort terrace into the natural clay with flints.

Further evidence of the rampart was found in Trench 13 (Figs. 6, 7), just inside the western wall of the Shore fort. As discussed above (see The ditch and Extra-mural Area of the Fort), the cut for the *Cl. Br.* fort ditch was identified in this area, but only its uppermost fills were seen. The 1970s excavations showed, however, that the ditch was being used for the dumping of domestic rubbish in the second half of the second century, and did not serve its original function in the final phases of the fort's life.[32] In Trench 13, two layers of loam, 856 in the top of the ditch, and 854, which covered 856 and spread northwards, can both be dated from their pottery as mid to late third century or later. The relationship of 856 to the Shore fort wall is unknown, so that it would be unwise to rely on this layer for dating purposes. In the case of 854, however, more careful consideration of its origin is required, and the shape of the deposit in section (Fig. 6, Section B) would be consistent with it being derived from excavation of the foundation trench for the Shore fort wall (820). At the same time, 854 spreads some distance (at least 4.60 m.) back from the wall, and therefore might also include material being dumped from elsewhere. Altogether, layer 854 is of considerable interest for dating purposes, as a primary rampart tip, and this is discussed below in more detail.

Above 854 were two sequences of tip layers, many of which appear on Fig. 6, and the majority of which also contained significant quantities of pottery. The sequences, which were recorded separately, are: Sequence A (in order of deposition) 822, 821, 819, 818, 812, 811, 805; these deposits varied from fine rubble (including tufa, chalk, tile and shell) to silty loam. Sequence B, also in order of deposition, comprised 835, 852, 851, 850, 849, 848, 847, 846, and (probably) 834; these deposits were mainly silty or clay loams, with some sand or mortar lenses. Layer 835 contained a large quantity of broken roof tiles (see below, L. Turner, The Roman Tile). The character of these rampart tips seems consistent with that found elsewhere although clearly there is a change where substantial buildings were demolished prior to the Shore fort construction.[33]

THE DATE OF THE SAXON SHORE FORT

Although the stratification relating to the Shore fort from previous (1970s and 80s) excavations is not fully published, some discussion of

[32] Philp (1981), 23–5.

[33] For similar deposits, see Philp (1981), Fig. 23, Section 11 – layers above 73; for the rampart constructed from demolition rubble, see Philp (1989), Fig. 22, Section E – Layers 54, 64.

the evidence is still possible. Deposits published with the *Cl. Br.* fort include the soil which had formed over the rubble of the fort following its abandonment (perhaps about A.D. 210). These layers contained a number of coins of which the latest to definitely precede the Shore fort (the coin of Allectus is from well outside the fort) is a coin of Salonina (A.D. 253–59). Furthermore, the context containing this coin can be matched by level and description with a context cut by the Shore fort wall foundation trench, giving a *terminus post quem* of A.D. 253 for this part of the wall at least, which lies about 20 m. south of the rampart section excavated by the O.A.U., and described above.[34] For the length of rampart built over the demolished 'Painted House' and other structures, 50 m. north of the O.A.U. excavations, a date of A.D. 250–270 is suggested. As the provenance of four crucial coins is not entirely secure (the latest of these is A.D. 238–44) the *terminus post quem* is best regarded as A.D. 222–35, from a coin of Julia Mammaea in a demolition layer.[35] Pottery from the demolition layers includes groups comparable with those from the Trench 13 rampart tip layers (see below).

To the above we can now add the new evidence, namely, the four coins all dating *c.* A.D. 260–280 from the clay layer (34) which was probably the tail of the rampart on the south side of the fort. We also have the rampart tip layers (822 etc., 835 etc.) from the centre and front (i.e. just behind the fort wall) of the west rampart (see above, Figs. 6, 7), for which a date of at least *c.* A.D. 275, but possibly as late as the early fourth century is proposed, based on the large and coherent pottery group which was recovered (see below, P. Booth, The Roman Pottery, Nos. 67–87). The overall result of this review of the evidence is to push the construction date for the Saxon Shore fort at Dover slightly later than had previously been considered. The original proposed date of A.D. 250–70 now looks untenable unless parts of the fort (such as the west rampart investigated in Trench 13) were completed considerably later than others. Such an explanation cannot be written off completely, but would probably have to involve a break of some years in construction activity; as such it verges on special pleading and in any case can only be explored further when the rest of the evidence from the site has been published.

A date of *c.* A.D. 275+ is, of course, perfectly reasonable, and would fit Dover in to the second phase of Shore fort building – Stephen Johnson suggests these sites (Burgh Castle, Bradwell, Walton Castle,

[34] For the coin see Philp (1981), 122, No. 83, and pp. 94–6 for a discussion of soil over the demolished buildings. For the contexts compare *ibid.*, Fig. 25, Section 13 – Layer 3 (west end of section) with Fig. 25, Section 15 – Layer 33 (east end of section).

[35] Philp (1989), 50–1.

Richborough, Dover, Lympne) should fall within the decade A.D. 275–85. A slightly later date for Dover would place the fort with those at Portchester and even Pevensey.[36] With regard to the problems of dating the Shore forts, Johnson has also examined the typological development of their defensive architecture. Within this scheme he points out that Dover, having at least one 'early' feature, i.e. an internal rampart, and some 'later' features, i.e. non-rectangular plan, sharp corners and projecting towers (some integral, some added), could be seen as transitional.[37] This is not the place to explore this intriguing idea in detail, but the date proposed above does not fit particularly well – on current knowledge (and many of the forts are poorly dated at best) a date of A.D. 250–60 might better suit a transitional structure. The decision to construct the 'early' feature at Dover, the internal rampart, could also have been influenced by other factors, such as the desire to protect the vulnerable inner chalk face of the wall from weathering (see also below – The Shore Fort Wall and External Towers). The rampart also provided a dump for the rubble from demolished buildings, excavation of a very large levelling terrace within the fort and (possibly, depending on the construction sequence) the excavation of the massive external ditches (Fig. 2), so that it did not have to be transported off site.

THE SHORE FORT WALLS, EXTERNAL TOWERS AND A POSSIBLE POSTERN GATE

The Shore fort wall was constructed on a trench-built foundation which was *c.* 0.25 m. wider than the wall on each side, and contained four or five courses of large chalk blocks (up to 0.30 x 0.30 m.) with some flint. Only one narrow and heavily-robbed section of foundation (820) was investigated in 1989 (Fig. 6, Section B), but previously-published sections clearly show the construction detail.[38] The wall itself (504) was examined in Trench 12 (Fig. 12) where six courses were seen – the foundation level was not reached here. The wall is 2.50 m. wide and uses well-faced tufa blocks averaging 0.10–0.12 m. high x 0.18–0.30 m. long for the exterior (southern) face, large unshaped chalk blocks, flint nodules and very sparse small tufa fragments for the core, and

[36] Johnson (1989, 39–44) points out that the dating for Portchester (after A.D. 286–7) is more secure than that for Pevensey where the date of A.D. 330 or later rests on a single coin from a beam hole in one of the towers.

[37] Johnson (1989), 39–44.

[38] Philp (1981), Fig. 24, Section 11, Fig. 25, Section 15; Philp (1989), Fig. 22, Sections E, H.

shaped chalk blocks for the interior face. The coursing is continuous throughout the whole wall, and courses were made up to an average height of 0.14 m. by a layer of mortar – this was coarse, cream-coloured and contained frequent large inclusions, including flint fragments and water-rounded pebbles up to 0.02 m. in diameter.

Previous excavations in this area by the Kent Archaeological Rescue Unit have shown that the wall still stands to a height of 4.50 m. in places, with no change in the upper part from the use of chalk for the inner face and tufa for the outer face.[39] This aspect of the wall construction merits some further discussion, for it is clear that the use of chalk on the inner face only means that this material, which is highly susceptible to weathering (particularly frost), could be covered and protected by the rampart behind the wall. It may seem that it would have been easier to simply use tufa for both faces, but tufa of suitable quality for building was probably a relatively rare commodity. It is noticeable that in the wall core it occurs rarely compared with flint and chalk, and the available geological data also suggest a comparatively rare resource.[40] The necessity of exposing a minimum amount of chalk to the elements must have been a continual concern for the builders at Dover, and the use of an internal rampart may have originated with the earlier *Cl. Br.* fort.[41] The *Cl. Br.* fort also used some tufa in the external face of the fort wall, often alternating with chalk blocks.[42] Finally, we should not ignore the possibility that the external wall faces of either or both of the forts could have been covered by a protective layer of either whitewash or mortar at some point in their lives,[43] although no evidence for this was found at Dover, and the piece of wall described above, sealed behind an external tower (see below) was apparently not covered.

[39] A large (*c.* 9 m. long) fallen section of the wall was also found, and it is suggested that its collapse was caused by an earthquake, *Kent Arch. Rev.*, 78 (1984), 187–90. It seems at least equally possible that it was caused by the unusual combination at Dover of a relatively narrow wall backed, and therefore under pressure from, the massive rampart, particularly considering the extra material, in the form of dumped rubbish, which was later added to the rampart (see this article, The Occupation of the Shore Fort).

[40] Tufa occurs only under quite specific conditions (precipitation of calcium carbonate near spring lines) and the early to middle Holocene marine transgression (stabilising near modern sea level about 6000 years B.P.) eroded existing tufa deposits and buried others below marine/estuarine deposits; see Barham and Bates (1990), 26, 101–7.

[41] The implications of a rampart, however small, within the *Cl. Br.* fort are not discussed by its excavator, but such a feature clearly existed: Philp (1981), 72–3, Fig. 24, Section 9 (Road B40); *ibid.*, 20 (Structure B2); *ibid.*, Fig. 23, Section 7 (Structure B4, Layer 55).

[42] Philp (1981), 23.

[43] *Current Archaeology*, 109 (1990), 119; *ibid.*, 122 (1990), 94.

The rear of one of the external towers was also found within Trench 12 (Fig. 12, 505), constructed almost flush to the outer face of the fort wall, with the narrow intervening space being filled with mortar. The mortar within this space, and in the fabric of the tower, was visually identical to that used in the wall, but a very faint line (visible only in section) down the line of the wall face indicated that it was built before the tower. In terms of construction detail, the face of the tower was not seen, but the core was broadly similar to that of the wall. It differed in that the coursing seemed less regular, and a clear band was formed by three successive courses of flint. The tower investigated here is probably the same as that revealed by excavations in 1984, in which case it stands over 4 m. high, and the facing includes tile string-courses.[44]

Of the known towers from the Dover Shore fort some are of integral construction with the wall, while others, like that described above, are built flush. Most of the known towers appear on Fig. 2, where on the south wall they alternate between flush and integral. On the west wall, working northwards from the integral corner tower, the next tower (shown on Fig. 2) is flush, and the next two (not illustrated) are uncertain, and then flush.[45] The pattern may thus be the same as on the south wall. No date for the addition of the extra towers has yet been published, but two published sections both suggest the intervening period between the construction of the wall and the additional towers was short. In one case, the substantial wall stubs of an earlier structure in front of the Shore fort wall are used as foundations for the tower – had the wall existed for some time without a tower it would be reasonable to expect the wall stubs to have been cleared away. Also, in neither case has any intervening stratification formed between the construction of the two elements although this could, of course, be accounted for by truncation prior to building the towers.[46] On present evidence, then, the decision to add extra towers could actually have been taken during the construction period.

Evidence has been discussed above for the use of the road B37, within the *Cl. Br.* fort (Fig. 2), after the fort had been abandoned (see The End of the *Cl. Br.* Fort. . .). It is also possible that this road, or at

[44] *Kent Arch. Rev.*, 78 (1984), 190.

[45] For the tower just north of the *Cl. Br.* fort the wall/tower interface was concealed below the wall of the former joinery works in this area. Following demolition of the joinery works superstructure, the archaeology in this area was reburied under O.A.U. supervision, and is now within the grounds of the White Cliffs Experience. The next (built flush) tower to the north overlay the 'Painted House', see Philp (1989), Fig. 21, Fig. 22, Section E.

[46] Philp (1981), Fig. 23, Section 6; Philp (1989), Fig. 22, Section E.

least part of it, served some purpose within the Saxon Shore fort. Firstly, dump layers below the latest phase of metalling in the road contained late Roman grog-tempered ware which is thought not to have reached Kent before the late third century (see P. Booth, The Roman Pottery, Fabric R95). Secondly, although the stratification was much disturbed by later graves and robber trenches, no rampart tips were identified in this area (Trench 11), nor does the 1970s excavation plan show that the Shore fort wall was found here, although the fort ditch apparently continued.[47] It seems, then, that while the southern part of the road B37 would have been cut away by the Shore fort terrace, a short northern length could have survived, and may have led to a postern gate in the fort wall. A gate in this position would have given access to the berm, or, if a wooden bridge existed, to the area beyond the ditch. A postern gate was found during excavations in the early 1970s but its position is currently unclear.[48]

OCCUPATION OF THE SHORE FORT

The only evidence for activity within the Shore fort came from deposits in Trench 1, above the rampart tail, 34 (see above, Abandonment of the *Cl. Br.* Fort. . .). A 1.50 m.-deep sequence of silts and clay-loams was recorded in section (Fig. 8, Contexts 16–17, 21–32). Lenses of darker silt and charcoal occurred frequently, as did shell fragments, and even from the limited area of investigation, it is clear that a large number of these deposits were pit fills (see Fig. 8). Section cleaning produced a high concentration of coins, 17 in all; these are listed in Table 1.

In general, these deposits would seem to have been formed by the dumping of rubbish, and by the excavation of pits for further rubbish; this is confirmed by the quantity of pottery recovered – 48 sherds from section cleaning alone. The depth of deposit accumulating over the rampart is of interest, particularly as the coin evidence suggests this did not begin, at least in this part of the fort, until the late fourth century. Unfortunately, it is difficult to define how long this process continued, as none of the coins or pot-sherds is definitely later than A.D. 402, and there is a high degree of residuality as might be expected when rubbish deposits are being frequently dug over and redeposited. To add to the difficulty, no finds were recovered from contexts above layer 16 (Fig. 8) and we can therefore only say with confidence, allowing time for the coins to circulate, that deposition continued at least into the first

[47] Philp (1981), Figs. 5 and 15 (area of drains B56, 58, 59).
[48] *Current Archaeology*, 38 (1973), 88.

TABLE 1

Context (latest at top)	Date of coin(s) (A.D.)	Catalogue No.
17	*c.* 330–368	No. 28
23	*c.* 330–368	No. 25
26	*c.* 250–368	No. 5
	c. 250–368	No. 6
25	*c.* 348–360	No. 31
24	260–268	No. 8
27	260–268	No. 7
	330–348	No. 24
28	*c.* 330–368	No. 27
32	260–285	No. 10
	c. 260–285	No. 16
	c. 260–285	No. 17
	268–274	No. 20
	c. 330–368	No. 26
	348–360	No. 29
	348–360	No. 30
	388–402	No. 32

Table 1. Coins from the Saxon Shore fort occupation deposits (Trench 1).

quarter of the fifth century. Elsewhere in the fort, from the evidence of material dumped in the fort ditch, Philp has suggested occupation into the sixth century at least.[49] In general, the dumping of rubbish over the rampart from the late fourth century onwards would fit with a model of an initially well-organised life within the fort, surely military or under military influence, followed later by a more rough-and-ready occupation. This may well be pushing the small amount of evidence too hard, but it is nevertheless interesting that a similar model has been proposed for the Shore fort at Reculver, although here the whole process is some 50 years earlier at least.[50] The detail on the interior arrangements of the Dover Shore fort has yet to be fully published, but a circular wattle and daub hut was found in the south-west corner. Other elements known to have been found are: at least eleven timber-

[49] *Op. cit.* in note 34.

[50] *Op. cit.*, 87; for the dating of the foundation of Reculver to A.D. 200–225, see Philp (1981), 18.

built structures (circular, square, oval and sub-rectangular), metalled internal roads, a postern gate with footbridge, ovens, pits and stake-hole complexes. The military bath-house, built in the second century outside the *Cl. Br.* fort, was apparently re-used within the Shore fort.[51]

THE EARLY MEDIEVAL EVIDENCE; AN EXTENSIVE SAND DEPOSIT SOUTH OF THE SHORE FORT

Within Trench 14, just outside the south wall of the Shore fort, a metalled surface (913) has already been discussed as part of the *Cl. Br.* phase (Fig. 10). It was overlain by a silty loam (912) which could not be dated. However, as the next layer in the sequence (911) was clearly a partial collapse of the Shore fort wall, it is difficult to interpret the silt layer confidently; perhaps, the most likely scenario is that the metalled surface was in use during the life-time of the Shore fort, forming part of the berm, and that the silt formed when it fell out of use. A metalled surface which has been assigned to the late Roman period was found at the Zion Chapel site, *c.* 40 m. to the south (Fig. 22).[52] The layer of Shore fort collapse was succeeded by a silty loam (910) with relatively few inclusions, the accumulation of which suggests a period of little activity, and followed by a sand layer (919), a second rubble (902) derived from the Shore fort wall, and then a much deeper (at least 0.80 m.) sand layer (903; Fig. 10). Rubble 902, apart from some residual second-century Roman sherds, also contained a single sixth/seventh-century sherd (see The Medieval Pottery, Fabric 13, No. 95).

The sand layer 903, which can thus be dated as sixth/seventh-century or later, has been identified across a wide area of the town south of Shore fort (Fig. 1) and is over 3.50 m. deep in places. Observations in a trench dug in York Street[53] during roadworks show that in this area (just south of the White Cliffs Experience site) there was no occupation on the sand until at least the later eleventh century. Deposits below the sand in Borehole 1, just south of Trench 14 (Figs. 11, 21, 22) were rich in 'anthropogenic clastic material' (see below, Barham and Bates, The Sedimentology) and are probably rubbish deposits within the Saxon Shore fort ditch. A section running 140 m. southwards from close to Trench 14 (Figs 1, 21) shows how the depth of the sand deposit

[51] *Current Archaeology*, 38 (1973), 87; Wilkinson (1990), 17.

[52] For an interim report on the Zion Chapel site, see Mynott (1981).

[53] O.A.U. Watching Brief, 20/2/91; report lodged with the Kent Sites and Monuments Record.

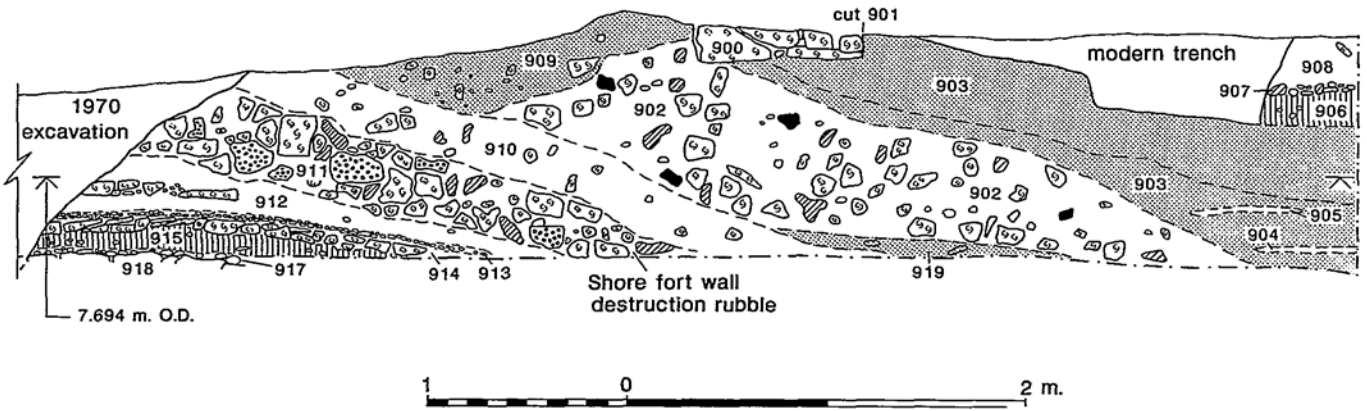

Fig. 10. Trench 14, east section; extensive sand deposits (919, 903) and rubble layers (902, 911) from the Saxon Shore fort wall (for position of section see Fig. 11).

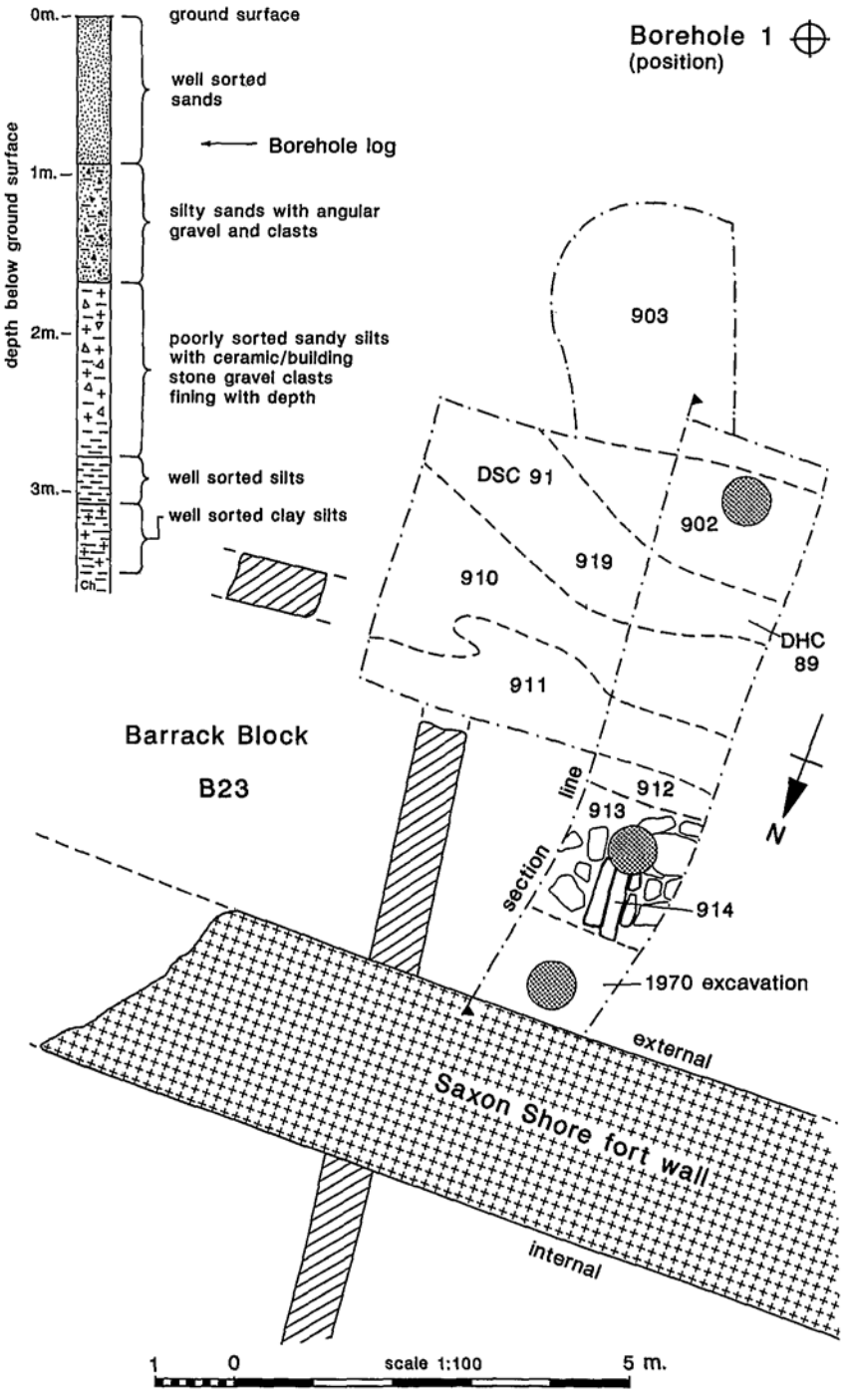

Fig. 11. Trench 14, plan. Position and log of Borehole 1.

increases towards the sea-front, and also how at the Zion Chapel site it overlay the late Roman surface (see above). This sand deposit is discussed below in detail by Barham and Bates (see The Sedimentology, and Appendix 1), who conclude that the onset of sand deposition was rapid, quickly sealing deposits, and that fast deposition occurred thereafter. The deposit, of which a significant proportion was wind-blown, was derived from a beach or back-beach environment which lay south of the York Street roundabout area, i.e. close to the confluence of the River Dour with the outer estuary.

The extensive sand deposit has implications for both the interior and exterior of the Shore fort, which was by now clearly in a state of some disrepair, its ditch infilled, but with much of the wall still likely to have been standing to a considerable height. Taking the exterior area south of the fort first, the presence of a beach, and of the sand layer itself, should imply that the Roman water-front, part of which was recently found just east of the York Street roundabout, was now disused and buried.[54] This has some bearing on Biddle's suggestion that Dover, where the place name 'Wyke' is known to have been used for the later water-front, could have been the site of a middle Saxon trading settlement like those known at Norwich, Ipswich and Sandwich.[55] I previously suggested that such a settlement might reasonably be expected to lie on the water-front close to the Shore fort, but extensive work by the Canterbury Archaeological Trust has now shown this to be unlikely, at least for the southern area.[56] Other possible locations are within the Shore fort itself, with boats being brought up on the beach, or in the area of the 'Inner Harbour' north of the promontory on which the fort is built (Fig. 1). Neither of these possibilities can as yet be explored much further, as the Shore fort evidence is not yet published, and the 'Inner Harbour' is insufficiently explored. However, we do know that a river rather than a sea harbour existed at Dover in 1066, perhaps making the second possibility more likely.[57]

In the interior of the Shore fort, we have already noted occupation into at least the sixth century[58] and extensive later remains have also

[54] Barham and Bates, 'The Sedimentology', (below); K. Parfitt, 'The A20/Dover Sewers Project', *Canterbury's Archaeology 1992–3*, Canterbury Archaeological Trust, (Canterbury 1993), 15; M.R. Bates, 'Recent Work by the Geoarchaeological Service Facility (UCL) in Dover, with Particular Reference to the Discovery of the Bronze Age Boat', *ibid.*, Fig. 13.

[55] For discussion, see Wilkinson (1990), 18.

[56] K. Parfitt, 'A20 Dover Sewers Project', in *Canterbury's Archaeology, 1991–92*, Canterbury Archaeological Trust, 1992, 11–16; and K. Parfitt, *pers. comm.*

[57] Wilkinson, (1990), 18.

[58] *Current Archaeology*, 38 (1973), 88.

been found, including a timber church and burials, other timber structures, sunken-featured buildings, hearths, pits etc. Detailed dating for these remains is not available, although some of the occupation is certainly seventh- to ninth-century. We thus cannot yet establish whether there were any breaks in occupation, or what the situation was within the fort during the period when the sand deposits were forming against its south wall.[59]

Other evidence of early medieval (i.e. pre-eleventh century) activity is limited to residual pottery. No. 95, from the sand layer, was the only probable non-residual sherd. Otherwise less than a dozen sherds were recovered, mostly eighth- to ninth-century; only three sherds of North French Black ware were definitely imports, but little can be read into the results from such a small collection (see C. Underwood-Keevill, The Anglo-Saxon, medieval and post-medieval Pottery, e.g. No. 94).

THE MEDIEVAL PERIOD (ELEVENTH TO FIFTEENTH CENTURIES)

With the exception of a single context (363) in Trench 11 (which contained twelfth-century pottery), and some residual sherds in later contexts, all of the medieval evidence came from Trench 12, situated on the south wall of the Saxon Shore fort (Fig. 2). The level to which this trench was excavated is shown in Fig. 12, which makes it clear that a dense complex of pits had been cut into the Shore fort wall and bastion. Disturbed backfill over this area indicated that some truncation of later deposits had taken place, and there may also have been some excavation here during the 1980s.[60]

The earliest excavated pit (556; Fig. 12) was cut right into the core of the Shore fort wall. The labour required would have been considerable, as the mortar in the wall remains sound to this day, and the decision to go on digging the pit after the wall was encountered could indicate that space for rubbish disposal was limited. It is, however, difficult to imagine that the pit would have been dug if the wall was visible at the time, and later operations (e.g. stone settings 510, 528, see below) may therefore have involved some clearance and truncation. The eleven excavated fills of the pit consisted of mainly silt-loams and thin lenses of sand, suggesting intermittent filling. No great quantity of domestic rubbish was recovered from any of these, and much of the fill may have been cut away by later pits. Three of the fills contained small quantities of eleventh- to twelfth-century pottery.

[59] *Op. cit.*, 17–19.
[60] *Kent Arch. Rev.*, 71 (1983), 10–11.

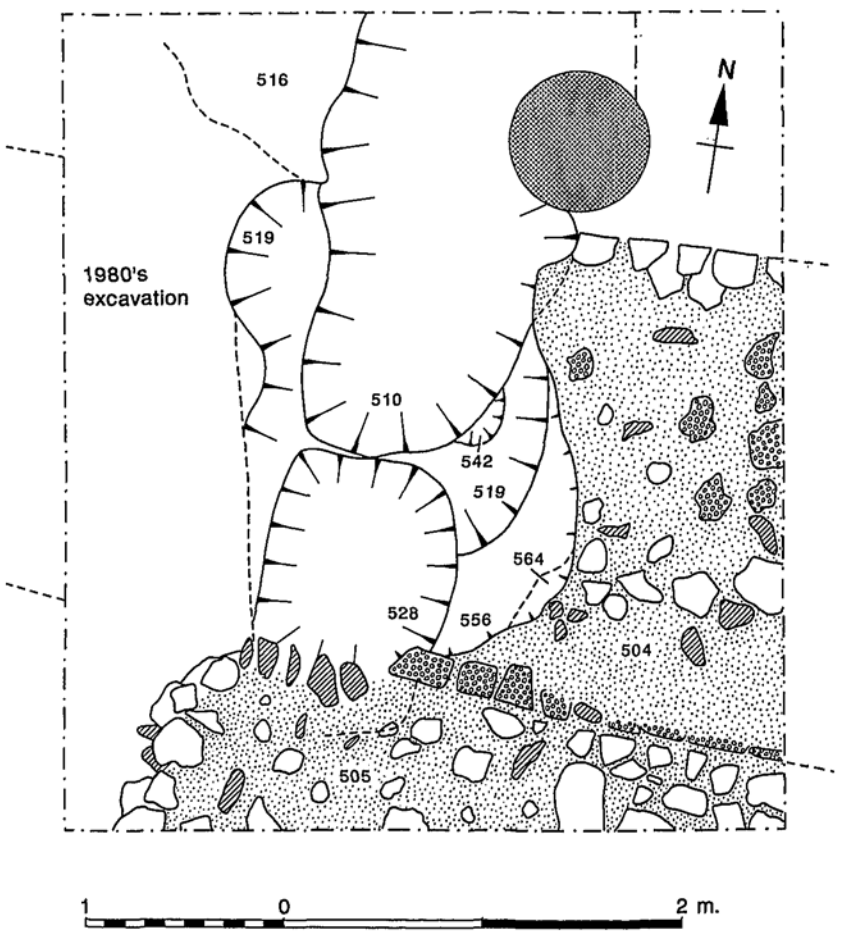

Fig. 12. Trench 12, plan of intercutting medieval pits dug into Saxon Shore fort wall (504) and back of added tower (505).

The uppermost excavated fill (507) of pit 556 was cut by another pit of irregular shape, 519 (Fig. 12), which retained some traces of a burnt wooden lining. The lower fills were similar in character to those described above, but some, such as 522 and 533, contained considerable quantities of shell, fish bone and animal bone, and clearly represent domestic rubbish. Pottery recovered from the pit included a residual sherd of Ipswich Ware (No. 94) from Context 546, but was otherwise mainly late eleventh- to twelfth-century. The best representations of pottery of that date were in Contexts 520, 544 and 549 which contained 24, 16 and 15 sherds respectively, including

imports from northern France. A single Flemish import, a fragment of Aardenburg-type ware, is also the only thirteenth-century sherd and came from near the top of the pit (Context 536). For further detail on the pottery, see below, C. Underwood-Keevill, The Anglo-Saxon, medieval and post-medieval Pottery.

The fills of pit 519 were cut by a sub-rectangular pit (528) and a shallow post-hole (542). The post-hole was at least 0.35 m. in diameter, and filled with sandy silt — no finds were recovered. Post-hole 542 was then cut away by another large, irregular pit (510) which extended beyond the northern edge of the trench; this situation is illustrated in Fig. 13. It was immediately apparent that neither of the cut features 528, 510, was used for rubbish disposal. Six large water-worn limestone pebbles were placed in the bottom of feature 528, with some burnt and unburnt flint (530) placed around them (Fig. 13, Phase I). Gaps between the stone and flint were filled with clean yellow sand (531). Over this stone setting was a layer of crushed chalk (529) followed by a second similar setting (526) topped with crushed chalk (525; Fig. 13, Phase II).

Feature 510 contained a spread of small, shaped chalk blocks and unshaped chalk fragments up to 0.30 x 0.50 m., covered by a layer of silty loam and chalk (517). There then followed two successive layers of roughly-shaped chalk blocks up to 0.30 x 0.40 m., 511 and 509 (Fig. 13) overlain by crushed chalk rubble (502) and then silty loam 503. The latter context contained a pottery handle, possibly from north-west France (No. 107) while 509 and 511 contained residual eleventh- and twelfth-century material.

Both of the 'stone-packed' features described above must be thirteenth-century or later, but neither can be dated more closely. Beyond noting that an area previously used for rubbish disposal was now surely the site of a structure of some kind, it is not easy to interpret these features within such a small area of excavation. One possibility is that 528 represents the foundation, or post-pad for a gate or large door-post, while 510 is the (separately excavated) foundation for an associated wall. The careful laying of these foundations, as well as the possible replacement of the packing in 510 (if this does genuinely represent two phases) could both be explained by the loose fills of rubbish pits beneath, which would have been liable to subsidence. Any further interpretation must await the publication of other excavations in this area.

THE POST-MEDIEVAL PERIOD AND LATER

For the most part, evidence of these later periods was represented by pottery from grave fills and other disturbed contexts in Trenches 11 and 13. The majority of the pottery was seventeenth- to eighteenth-century

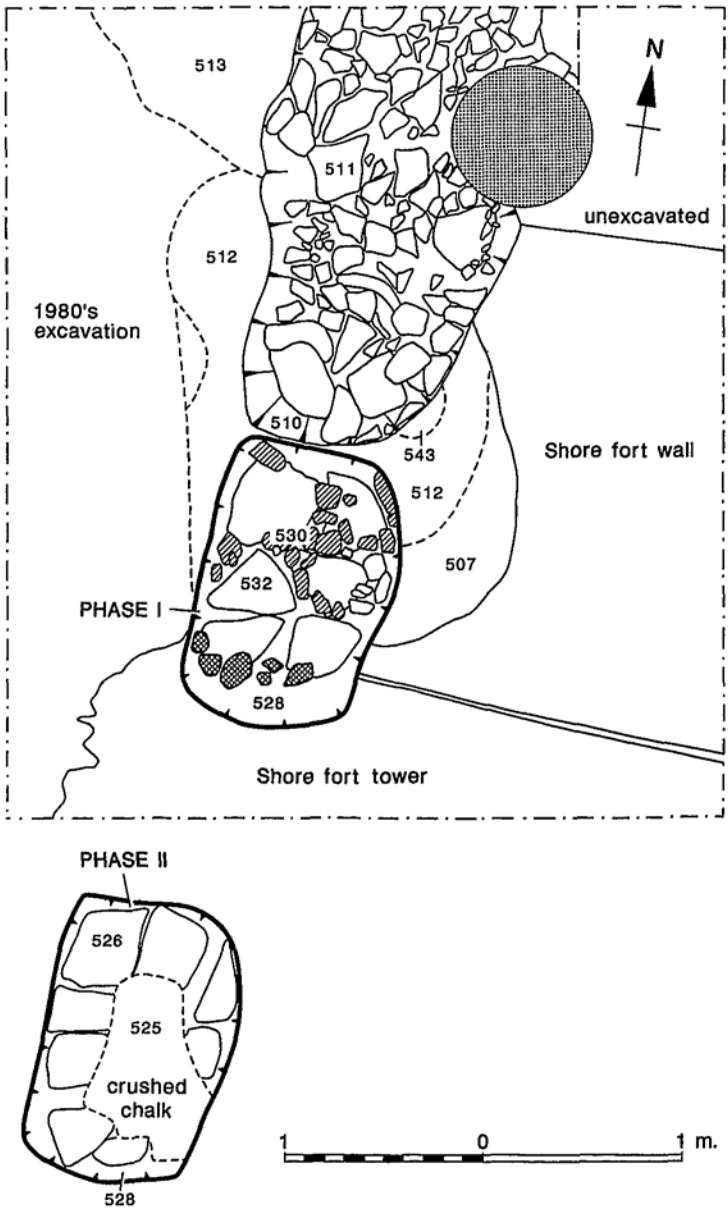

Fig. 13. Trench 12, medieval stone settings 528 (two phases) and 510.

(see Fabrics 4, 5, 40–1, Group 6, 100–1; Nos. 108, 109). Human bone from the cemetery, which was still in use in the mid nineteenth century, was bagged and reburied in the local Charlton cemetery, where a short service was held. Aside from pottery, the only find of note from the cemetery was a diamond-shaped copper alloy coffin plate, measuring 0.33 m. x 0.33 m. and bearing the following inscription, picked-out in punched holes:

ARABELLA WYATT

WIDOW OF CAPTAIN

FRANCES WYATT DYED

THE 17TH OF MARCH

1789 AGED 75

CONCLUSION

The work at the White Cliffs Experience site has shown that small-scale excavations of this kind, within a general programme of preservation *in situ*, can contribute valuable evidence. In the case of this particular site, the presence of a body of published evidence for parts of the site (albeit incomplete) has considerably aided interpretation.

The new detail obtained on the interior arrangements of the *Cl. Br.* fort is valuable, but the most interesting information from the pre-Shore fort period concerns an extra-mural building with a painted wall, possibly external, facing the approach to the *Cl. Br.* fort's main east gate. This building went out of use when the Shore fort was built, if not before, but a road alignment within the abandoned *Cl. Br.* fort apparently continued in use, possibly leading to a postern gate in the west wall of the Shore fort. New evidence for the Shore fort's construction suggests a date no earlier than A.D. 275, and possibly as late as the early years of the fourth century. The presence at Dover of an 'early' feature, the internal rampart, may be a local response to difficulties in obtaining sufficient quantities of good building stone. Finally, the most important evidence from the early medieval and medieval periods concerns the extensive deposits of sand which formed south of the Shore fort after the sixth to seventh century. The true significance of this apparent abandonment of a large water-front area of the settlement will only become apparent when more evidence is available for the nature of early medieval settlement in other parts of the town.

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THE COINS

Cathy E. King

Thirty-four coins were recovered from this site of which 32 were Roman (see Table 2). Three were imperial bronzes, the first an illegible *as* or *dupondius* of the first or second century A.D. (No. 1), the second a bronze of Antoninus Pius (No. 2) and the third a *sestertius* of Postumus (No. 9) which will be discussed more fully below. The remainder of the pieces consist of debased silver and copper issues of the third or fourth century. The largest concentration of coins (15) were minted in the years between A.D. 260 and 280. While the majority of British sites have significant numbers of coins minted between these years the White Cliffs Experience site is unusual in having so few coins

datable to the fourth century, particularly from A.D. 330–48 and A.D. 364–78. These periods are normally well-represented on sites in Britain and northern Gaul. In part the small number of fourth-century pieces is due to the low total number of coins recovered during the excavations and in part it results from the relatively high proportion of coins (5) which are not sufficiently legible to be assigned to a specific period within the fourth century.

The number of ancient imitations from the site is also small; there are two third-century *antoniniani* copying pieces minted between *c.* A.D. 260 and 285 (Nos. 15, 17) and a fourth-century FEL TEMP REPARATIO falling horseman type (No. 31) whose prototype was minted between A.D. 353 and 360.

The non-Roman coins consist of a silver penny of Edward I, II or III from the Canterbury mint produced between 1300 and 1400 (No. 33), a Queen Victoria halfpenny and an unidentifiable coin or token minted between *c.* 1700 and 1900 (the latter two are not catalogued here).

The most interesting coin recovered was a *sestertius* of Postumus (No. 9) with the obverse legend IMP C POSTVMVS [P F AVG] and a left-facing bust with the emperor raising his right hand and the reverse VIRTVS AVG S C. The piece is rare owing to the special bust type, and Bastien cited only one very worn specimen in the Bibliothèque Nationale in Paris (Bastien 1967, No. 123). It belongs to a group of coins which share this special obverse and which, according to Bastien, were minted in A.D. 261. At some time after the coin was minted, an attempt was made to turn it into a double *sestertius* (a denomination minted by Postumus) by scratching lines across the hair to simulate a radiate crown (see Plate I). Other examples of this practice are known (Gricourt 1990, Pl. X, No. 4, Pl. XII, No. 8, Pl. XIII, No. 14).

PLATE I

Bronze coin (*sestertius*) of Postumus, from the White Cliffs Experience site, Dover (No. 9, A.D. 260–68).

TABLE 2

Cat. No.	Obverse	Emperor	Reverse	Mint	Date	Denom.	Mat.	Comments	Object No.	Context
1	ILLEG.		ILLEG.	Rome	44–193c.	As/Dp	AE		16	1
2	ILLEG.	A. Pius	ILLEG. Stg. female figure	Rome	138–161	As/Dp	AE		181	U/5
3	M IVL PHILIPPVS CAES	Philip II	PRINCIPI IVVENT	Rome	244–246	Ant.	AR	RIC 216c	44	335
4	ILLEG.		ILLEG.		250–285c	Ant.	AE	Empress	20	33
5	ILLEG.		ILLEG.		260–368c		AE		8	26
6	ILLEG.		ILLEG.		260–368c		AE	In fragments	5	26
7	ILLEG.	Gallienus	[]CONS []animal	Rome	260–268	Ant.	AE		186	27
8	ILLEG.	Gallienus	ILLEG.	Rome	260–268	Ant.	AE		4	24
9	IMP C POSTVMVS[ ]	Postumus	VIRTVS AVG SC	Gaul	260–268	Sest.	AE	Bast 123	97 (same dies?)	U/5
10	ILLEG.		ILLEG.		260–285	Ant.	AE		188	32
11	ILLEG.		ILLEG. Stg. figure		260–285c	Ant.	AE		30	34
12	ILLEG.		ILLEG.		260–285c	Ant.	AE	Broken	28	34
13			ILLEG. Stg. female figure		260–285c	Ant.	AE		34	154
14	ILLEG.		ILLEG. Stg. female figure		260–285c	Ant.	AE		36	34
15	ILLEG.		ILLEG. Stg. female figure		260–285c	Ant.	AE	14 mm	37	34

16	ILLEG.		ILLEG.		260–285c	Ant.	AE		189	32
17	[DIVO CLAVDIO]	Claudius II	[CONSECRATIO] altar		260–285c	Ant.	AE	12 mm	190	32
18	ILLEG.		ILLEG.		260–368c		AE		192	261
19	[ ]PF AVG		Stg. female figure	Gaul	268–274	Ant.	AE		33	U/5
20	ILLEG.		ILLEG. Salus?	Gaul	268–274	Ant.	AE		187	32
21	[ ]V TETRICVS CAES	Tetricus II	SPES AVGG	Gaul	270–274	Ant.	AE	Cun 2647	16	103
22	ILLEG.		ILLEG.		310–313c	Fol.	AE		153	827/2
23	ILLEG.		ILLEG.		320–368c	Fol.	AE		15	101
24	ILLEG.		ILLEG.		330–348	Fol.	AE		12	27
25	ILLEG.		ILLEG.		330–368c	Fol.	AE	Chipped	9	23
26	ILLEG.		ILLEG.		330–368c	Fol.	AE		184	32
27	ILLEG.		ILLEG.		330–368c	Fol.	AE		11	28
28	ILLEG.		ILLEG.		330–368c	Fol.	AE		10	17
29	ILLEG.		ILLEG.		348–360	Fol.	AE		25	32
30	ILLEG.		ILLEG.		348–360	Fol.	AE		191	32
31	ILLEG.		[FEL TEMP REPARATIO] Falling horseman		348–360c	Fol.	AE	12 mm	24	25
32	ILLEG.		ILLEG. Victory		388–402	Fol.	AE		185	32
33		Edward I, II or III		Canter-bury	1300–1400c	Penny	AR		40	315

Table 2 Coins from excavations at the White Cliffs Experience site.

Bronze coins of Postumus are not common on British sites although they have been recovered in modest numbers at Bath (4), Colchester (4), Richborough (7), Verulamium (2), Harlow (1) and Leicester (2).[61] They also occur in a few British hoards, again in small numbers, and can be found in mixed hoards of silver and bronze coins or finds of bronze coins only (See Table 3).

TABLE 3

HOARD[62]	*AE*	*AR*	TOTAL	POSTUMUS
Bourne End (Herts.)	35	5	40	1
Leysdown (Kent)	504		504	2
Ramsgate (Kent)	27		27	1
Combe Hill (E. Sussex)	4	140	144	1
Gare (Cornwall)	1037	47	1084	4
Alchester (Warwickshire)	51	95	146	2
Ham Hill (Somerset)	1066		1066	2

Table 3 British coin hoards containing bronze coins of Postumus.

The geographical distribution of Postumus bronzes both in hoards and on sites suggests that they are more likely to be recovered in

[61] D.R. Walker, 'Roman Coins from the Sacred Spring at Bath', in (Ed.) B. Cunliffe, *The Temple of Sulis Minerva at Bath, II: Finds from the Sacred Spring*, (Oxford, 1988), 281–358; (Ed.) N. Crummy, *Colchester Archaeological Report 4: the Coins from Excavations in Colchester, 1971–9*, (Colchester, 1987), 84–92; R. Reece, 'The Roman Coins from Richborough – a Summary', *Bull. of the Inst. of Arch. of the Univ. of London*, xviii (1981), 49–71; R. Reece, 'The Coins', in S.S. Frere, *Verulamium Excavations, III*, (Oxford, 1984), 3–17; N.E. France and B.M. Gobel, *The Romano-British Temple at Harlow, Essex*, (Gloucester, 1985), 67–70; K. Kenyon, *Excavations at the Jewry Wall Site, Leicester*, (London, 1948), 279–82.

[62] A. Burnett, 'Bourne End Find (1976)' *Coin Hoards III*, (1977), 77–8, No. 174; R.A.G. Carson, 'Leysdown (Kent) Hoard of Early Roman Imperial Bronzes', *Numismatic Chronicle*, xi.7 (1971), 189–197; R. Merrifield, 'A Roman Coin-hoard from Ramsgate, 1969', *Numismatic Chronicle*, xi.7 (1978), 199–201; D.R. Rudling, 'A Hoard of Roman Coins from Combe Hill, East Sussex', *Coin Hoards from Roman Britain, VI*, Brit. Mus. Occ. Pap. No. 58, (1986), 147–55; R.A.G. Carson, 'Gare (Cornwall) Find of Roman Silver and Bronze Coins', *Numismatic Chronicle*, xi.7 (1971), 181–8; R.A.G. Carson, 'Alchester (Warwickshire) Find of Roman *Antoniniani* and *Sestertii*', *Numismatic Chronicle*, ix.7 (1969), 23–128; W.A. Seaby, 'Coinage from Ham Hill in Taunton Museum', *Numismatic Chronicle*, ix.6 (1949), 166–79.

southern Britain and they do not seem to be restricted to a narrow geographical area. However, it would not be surprising if they proved ultimately to be more dominant in the south-east.

Comparison of the pattern of coin loss from the White Cliff Experience site with that from the *Cl. Br.* and the 'Painted House' excavations shows distinct chronological differences between them. While the majority of the White Cliffs site coins is concentrated in the period between *c.* A.D. 260 and 296, coins from the second century, and bronzes in particular, are dominant in the published lists from *Cl. Br.* and 'Painted House' sites and they show virtually no coins after A.D. 260 (Philp 1981, 119–20; 1989, 56–7). This is at variance with the normal British pattern where late third- and fourth-century coins are recovered in large numbers, but it should be noted that 'hundreds of late-Roman coins' (Philp 1989, 283) are still to be published from within the Shore fort, so that the true pattern may not yet be apparent. The low representation of second-century coins at the White Cliffs site can probably be explained by the very limited number of contexts excavated from the *Cl. Br.* fort. The *Cl. Br.* and 'Painted House' sites are also unusual in yielding a relatively high proportion of silver coins produced in the period between A.D. 193 and 260. Viewed in the context of the total numbers of coins recovered from the various Dover excavations, the late third-century concentration of coins from the White Cliffs site is less anomalous than it first appears.

THE ROMAN POTTERY

Paul Booth

INTRODUCTION

The various excavations produced in total 2040 sherds (*c.* 31.5 kg., 39.05 EVEs) of Roman pottery, which was examined at varying levels of detail. The majority of this was from the various DHC trenches. The total includes pottery from the small-scale clearance operations DTT and DSC, which produced 25 and 12 Roman sherds, respectively, and are not commented on further (i.e. the discussions of fabrics and vessel types below exclude these figures). It does not include a further 3.5 kg. of pottery discarded by the Kent Archaeological Rescue Unit (marked with various DV context numbers) which was recovered from the backfill of some of their trenches. This material is not considered here. The pottery spans the period from the early second century to some time in the fourth, with a very small number of earlier sherds, presumably residual in the contexts in which they occurred. A wide

range of sources of supply is indicated for the *Classis Britannica* fort, but the assemblage is most important in providing a good group of material from the rampart of the Saxon Shore fort.

The pottery was recorded using the system currently employed by the O.A.U. on sites within the Oxford region and elsewhere. The pottery was divided into a series of fabric and ware groups (see below) and quantified by sherd count, weight and EVEs (Estimated Vessel Equivalents, based on rim percentages – more strictly rim-equivalents, see e.g. Pollard 1990, 76). Most of the discussion of variations in fabric proportions is based on the sherd count figures. Discussion of the vessel types represented is based on the figures for EVEs.

FABRICS

Fabrics were assigned to one of a number of 'ware groups' (e.g. F=Fine Wares, O=Oxidised Coarse Wares, etc.). The system is organised hierarchically so that sherds can be recorded at one of several interrelated levels of detail. The primary level is that of the ware group itself (e.g. F, O, R=Reduced Coarse Ware, etc.), the secondary level is that of the major subdivisions of the ware group (e.g. R80=grey wares in which sand is the principal tempering agent, B10=all BB1 fabrics, B20=all BB2 fabrics) and a third level can be used to identify a specific fabric or ware source (e.g. F51=Oxfordshire colour-coated ware). The fabric/ware codes used here represent an extension of the system as employed in Oxfordshire. Direct overlap with the Oxfordshire codes was avoided where it was not appropriate; many of the latter were clearly not applicable to Kent. Many of the codes for fine wares, amphorae, mortaria, black-burnished wares, etc., are, however, universally applicable.

Limitations of time meant that it was not possible to identify every sherd down to the level of individual fabric/ware. For many of the reduced coarse wares, for example, attribution was at the intermediate level of precision. As far as possible, however, fine wares, amphora and mortarium sherds were assigned to specific fabrics. Definition of two important groups of coarse wares (here fabrics R95 and R98) follows the usage of Pollard (1988, 126, 129; see below).

FABRIC DESCRIPTIONS

Only brief descriptions are given here, and widely-known fabrics are referred to by their common names. Full descriptions, where appropriate, are contained in the excavation archive. The total number of sherds in each fabric is also given here and tabulated below (Table 4).

S. Samian ware.
This has not been examined in detail. The overall designation S was used for all fabrics regardless of source. 344 sherds.
S45. Argonne ware (tentative identification). 2 sherds.

F. Fine wares (i.e. colour-coated, lead glazed, mica dusted, etc., but not fine oxidised and reduced wares in the sense used by Pollard (e.g. 1988, 59–60).
F35. Fine sandy oxidised, mica-dusted. 9 sherds.
F36. Sandy oxidised, mica-dusted, probably Canterbury? 1 sherd.
F40. Fine buff/white fabric, red-brown colour-coat, ?Continental. 2 sherds.
F43. Central Gaulish 'Rhenish' ware. 1 sherd.
F44. Trier (?) 'Rhenish' ware. 4 sherds.
F46. Fine, white fabric, colour-coated, 'Lower Rhine fabric 1' (Anderson 1980, 14). 23 sherds.
F49. '*Céramique à l'éponge*' (Fulford 1977, 45–46). 2 sherds.
F50. Fine oxidised, red-brown colour-coat, source uncertain, probably British. 1 sherd.
F51. Oxfordshire colour-coated ware. 8 sherds.
F52. Lower Nene Valley colour-coated ware. 38 sherds.
F54. New Forest reduced 'stone ware' colour-coated ware. 1 sherd.
F55. ?Colchester colour-coated ware. 9 sherds.
F56. ?Much Hadham colour-coated ware. 2 sherds.
F60. Oxidised, red-brown colour-coat, source uncertain/?various, probably British. 3 sherds.
F66. Fine sandy oxidised, red colour-coat, cf. F35, ?local. 3 sherds.
F67. Coarse sandy oxidised, red colour-coat, ?Pompeian red ware. Source uncertain. 4 sherds.

A. Amphora fabrics.
A10. Buff-brown ?South Spanish Dressel 20. 1 sherd.
A11. Buff-brown South Spanish Dressel 20. 12 sherds.
A13. Fine-buff ?South Gaulish (e.g. Pélichet 47 (Peacock and Williams 1986, class 27) etc.). 25 sherds.
A20. Fine oxidised, source uncertain. 4 sherds.
A22. Fairly fine sandy, oxidised, probably South Gaulish as A13. 2 sherds.
A25. Sandy oxidised, carrot amphora (exact type uncertain). 1 sherd.

M. Mortarium fabrics.
M10. Buff, coarse sandy, probably Rhineland. 1 sherd.
M11. Fine buff, Hartley (1977) group 1? North Gaul/South-east England. 2 sherds.

M12. Fine buff, Hartley (1977) group 2? North Gaul/South-east England. 3 sherds.
M22. Oxfordshire white ware. 1 sherd.
M23. Mancetter-Hartshill white ware. 1 sherd.
M29. Buff, fine, Kent/south Essex/Colchester group (Pollard 1988, 213, cf. Hartley 1982, 151, fabric 1B). 11 sherds.
M35. Fine oxidised, white calcareous inclusions, white slip, source unknown. 1 sherd.
M36. Sandy oxidised, white slip, ?east Kent. 1 sherd.
M41. Oxfordshire oxidised, white slipped fabric, Young (1977) fabric WC. 1 sherd.
M55. Buff sandy fabric, Canterbury. 7 sherds.
M56. Fine sandy similar to M56, ?Canterbury but possibly imported. 5 sherds.

W. White wares.
W. General category, undifferentiated. 1 sherd.
W10. Fine white ware, uncertain source. 1 sherd.
W20. Sandy white wares, ?various (uncertain) sources. 5 sherds.
W21. Sandy buff/white ware, Verulamium region. 1 sherd.
W40. Fine 'pink-buff' wares, probably local. 16 sherds.

Q. White-slipped fabrics, except mortaria. Mainly oxidised 'flagon' fabrics.
Q40. Fairly fine oxidised, cream or white slip, ?various sources. 4 sherds.
Q41. Sandy oxidised with white slip, probably Canterbury. 16 sherds.
Q42. Fine sandy oxidised with white slip, cf. F35. 5 sherds.
Q43. Fine oxidised, micaceous, with clay pellets, white slip, probably local. 4 sherds.
Q44. Fine, hard oxidised with white calcareous inclusions, buff-white slip. Source uncertain. 28 sherds.

O. Oxidised coarse wares.
O. General category, undifferentiated. 4 sherds.
O10. Fine oxidised wares, ?various sources. 7 sherds.
O19. Fine red-brown, very micaceous fabric. ?source. 1 sherd.
O50. Sandy oxidised wares, ?various sources, most probably ?local. 23 sherds.
O51. Canterbury sandy oxidised ware. 84 sherds.
O53. Slightly sandy oxidised, micaceous, with clay pellets, probably local, cf. Q43. 8 sherds.
O55. Slightly sandy oxidised, white calcareous inclusions. Similar to O53 but less micaceous. ?Local. 2 sherds.

O57. Fine sandy oxidised. Perhaps from Much Hadham (Herts.). 4 sherds.
O61. Fine buff-orange, source unknown. 1 sherd.
O80. Coarse (usually ?grog-tempered) oxidised fabrics. 1 sherd.
O85. Coarse oxidised, grog inclusions. 2 sherds.

R. Reduced coarse wares.
R. General category, undifferentiated. 7 sherds.
R30. Fine reduced wares, ?various sources. 44 sherds.
R35. 'Upchurch type' fine grey ware. Most, if not all, from north Kent. 130 sherds.
R80. Sandy reduced wares, ?various sources. 401 sherds.
R81. Canterbury sandy reduced ware. 49 sherds.
R82. Similar to R81, but less uniformly sandy. 63 sherds.
R83. Buff-grey, fine sand inclusions, ?North Gaul. 2 sherds.
R85. Highgate Wood sandy reduced ware (Brown and Sheldon 1974, 224). 3 sherds.
R89. North-east Gaulish sandy reduced ware. 11 sherds.
R90. Coarse (mainly grog?) tempered reduced wares, various sources. 19 sherds.
R95. 'Late-Roman' grog tempered ware (Pollard 1988, 129). 67 sherds.
R96. Brownish-grey with common flint inclusions. Possibly prehistoric? 1 sherd.
R97. Hard, dark grey, cf. R98, but with moderate flint inclusions. 3 sherds.
R98. Hard, dark grey fabric with coarse grog and quartz inclusions, 'Native Coarse Ware' (Pollard 1988, 126). 9 sherds.

B. Black-burnished wares.
B11. Black-burnished ware category 1 (BB1). Dorset. 107 sherds.
B15. Black-burnished ware category 1, non-Dorset source. 5 sherds.
B20. Black-burnished ware category 2, various sources. 330 sherds.
B22. Black-burnished ware category 2, possibly Colchester? 19 sherds.

C. Calcareous tempered fabrics/wares.
C10. Shell tempered fabrics, various sources? 5 sherds.
C11. Midlands late Roman shell tempered ware. 2 sherds.

P. ?Prehistoric fabrics.
P. General category, black, with flint and sand inclusions, hand-made. 2 sherds.

Z. ?Anglo-Saxon fabrics.
Z. General category, black, sand tempered, hand-made. 2 sherds.

TABLE 4

FABRIC AND NUMBER OF SHERDS																TOTAL SHERDS	per. cent.
S 331	S45 2															333	16.6
F35 9	F36 1	F40 2	F43 1	F44 4	F46 23	F49 2	F50 1	F51 8	F52 37	F54 1	F55 9	F56 2	F60 3	F66 3	F67 4	110	5.4
A10 1	A11 12	A13 25	A20 4	A22 2	A25 1											45	2.2
M10 1	M11 1	M12 3	M22 1	M23 1	M29 11	M35 1	M36 1	M41 1	M55 7	M56 5						33	1.6
W 1	W10 1	W20 5	W21 1	W40 16												24	1.2
Q40 4	Q41 16	Q42 5	Q43 4	Q44 28												57	2.8
O 4	O10 7	O19 1	O50 23	O51 84	O53 8	O55 2	O57 4	O61 1	O80 1	O85 2						137	6.8
R 7	R30 42	R35 127	R80 401	R81 49	R82 62	R83 2	R85 3	R89 11	R90 19	R95 66	R96 1	R97 3	R98 9			802	40.1
B11 107	B15 4	B20 321	B22 19													451	22.5
C10 5	C11 2															7	0.3
P 2																2	0.1
Z 2																2	0.1

Table 4 Roman pottery: total sherds in each fabric type.

The assemblage was dominated by reduced coarse wares and black-burnished wares, with samian ware also forming a substantial component. The major ware group proportions expressed in terms of EVEs gave quite closely comparable figures, with black-burnished ware slightly better represented (24.5 per cent), and reduced coarse wares and samian slightly less common (respectively 37.3 per cent and 14.0 per cent). The total of so-called 'fine and specialist' wares (e.g. Booth 1991, 5), i.e. samian, other fine wares, amphora, mortarium, white and white-slipped fabrics, is 29.8 per cent (32.1 per cent EVEs). Such a relatively high representation of these wares is what would be expected on what is essentially a high status site.

The samian is drawn from all sources, but South Gaulish material is very rare, which is consistent with the generally accepted early second-century foundation date for the *Classis Britannica* fort. East Gaulish material seems relatively well-represented, and two sherds of Argonne ware were tentatively identified. There was a wide range of fine ware fabrics, including mica-dusted wares as well as colour coated fabrics. Of the latter the 'lower Rhine' fabric F46 was most common in the earlier phases (though several significant occurrences of this fabric were residual in later contexts). Of the principal Romano-British colour coated ware sources, the Nene Valley was the best represented, constituting exactly one-third of all the fine ware sherds. Oxfordshire and probable Colchester and Much Hadham products were all less common. There were four sherds which were perhaps of Pompeian Red ware (which has been noted at Dover (Pollard 1988, 82)), and two of '*céramique à l'éponge*, never particularly common in Kent but also already identified at Dover (*ibid.*, 142 and 216).

Amphorae were relatively scarce, only one rim being represented (No. 33 below). The most common fabric was A13, attributed to Southern Gaul and used principally for types such as the wine amphora Pélichet 47 (Peacock and Williams 1986, 142–3, class 27). Fabric A22 (see No. 66) may have originated in the same area. The ubiquitous south Spanish olive oil amphora, Dressel 20, was rather less common, but sherds in fabrics A10, A11 and A20 were probably all of this type.

Of the wide range of mortarium fabrics the most important were relatively local products; M29, which may represent several sources in Kent and Essex, including Colchester (No. 50, below, has a typical Colchester herringbone stamp), and the probable Canterbury fabrics M55 and M56. Sherds of imported vessels (fabrics M10–M12) formed only a small proportion of this group. There were single sherds of Mancetter-Hartshill and two Oxfordshire fabrics, all of which occurred in late-Roman contexts. Most of the fabrics of the white and white-slipped ware groups are much less easily sourced, though the only

likely non-local example was a single sherd of fabric W21, a Verulamium region product.

Oxidised wares formed only a relatively small part of the assemblage (6.8 per cent). Most of these were sand-tempered, the exceptions being a few fine fabrics (O10, O19 and O61) and the grog-tempered O80 group. O51, much the most important oxidised fabric, is a Canterbury product, and a fairly local origin is likely for most of the other fabrics in this group. O57, of which four sherds were identified, can, however, be attributed to Much Hadham (Herts.) (along with the colour-coated fabric F56). While these sherds are unlikely to have arrived in Dover before the late third century (Pollard 1988, 119), the bulk of the oxidised wares will have been of second-century date since the Canterbury industry is thought to have been in decline by the later second century (*ibid.*, 178–9).

Reduced wares, the dominant ware group, were also drawn largely from Kentish sources, though the importance of Canterbury is less clear. Sherds attributed to Canterbury with some confidence only amounted to 6 per cent of all the reduced wares, and although the general sandy reduced ware group (R80, which comprised half of all the reduced ware sherds) may have contained many more examples, Canterbury products were a much smaller component of the reduced than of the oxidised wares (see also discussion of vessel types below). Sand-tempered fabrics amounted to two-thirds of all the reduced wares, but the number of possible sources is unknown. Three sherds (fabric R85) were identified as coming from the kilns at Highgate Wood (R. Pollard, *pers. comm.*). A further 11 (Fabric R89) and possibly two in Fabric R83, are likely imports from northern France, where several different sources produced vessels in a common tradition (Richardson and Tyers 1984, see also Richardson 1986, 106–9). Some of these sherds have characteristic horizontal burnished line decoration ('*bandes lustrées*', cf. *ibid.*, 134) and the fabrics are sufficiently distinctive to allow confident identification. Rims of several vessels occurred, including a possible jar, a beaker ('*vase tronconique*' – Tuffreau-Libre 1980, 96–9), bowl and ?dish types, but all were fragmentary.

The other principal categories of reduced wares were fine and grog-tempered fabrics. The former, Fabrics R30 and R35, amounted to 21 per cent of all reduced sherds. A north Kent source is likely for these fabrics, and indeed some of the R80 sherds may also have originated here. R35 was very fine, often with a characteristic sandwich, and is consistent with Monaghan's fabric N2/1b (Monaghan 1987, 252), which may reasonably be regarded as genuine 'Upchurch Ware' (*ibid.*, 173). Sherds of R30 were generally similar, but usually not quite as fine; they cannot be regarded as certain Upchurch products.

R90 fabrics, all grog-tempered, included a small quantity of 'Native Coarse Ware' (Fabric R98; Pollard 1988, 126) and a higher proportion of late Roman grog-tempered ware (R95, which comprised 3.3 per cent of the total assemblage; Pollard 1988, 129).

Black-burnished wares formed the only remaining ware group of significance. The majority of this group was composed of BB2 fabrics (B20 and B22). Sherds of B22, with very high quality burnishing, were separated because it was felt that they might represent a distinct production site (e.g. Colchester, as suggested by Williams (1977, 208)), but this remains uncertain. No other attempt was made to subdivide B20, which must include vessels from a number of sources, probably chiefly the Upchurch and Thameside kilns. Both of these centres were of little significance after *c.* A.D. 250, however (Monaghan 1987, 221 and 225). B11, which totalled a little less than a quarter of all black-burnished ware, shows a complementary pattern in that it was most important in the late third and ?early fourth centuries. The majority of recognisable BB1 vessel types can be assigned to this period. While BB1 probably occurred at Dover in small quantities from the foundation of the *Classis Britannica* fort onwards, in this assemblage, at least, it can be seen as succeeding BB2 in widespread use. The majority of the BB1 seems to have been the standard Dorset product, but there were five sherds of a distinct fabric (B15) with fine white inclusions which were presumably from another source.

VESSEL TYPES

Vessel types were recorded in a manner similar to the fabrics, i.e. major vessel classes (flagons, beakers, jars, etc.) were defined and then subdivided hierarchically. Detailed recording of rim profiles potentially allowed extensive subdivision of the major classes, but this was not done for the Dover assemblage except in a few cases. Most vessels were therefore recorded at the level of the principal subdivisions of the major vessel classes, though some rims (particularly jars) were not defined more precisely than at the level of the major class. Table 5 shows the breakdown of fabric and type at this level of detail. A more detailed breakdown using the subdivisions of the major vessel classes was not particularly informative and is retained in archive. Some of the information derived from that data is, however, discussed below.

The vessel type codes used for the major classes and found in Table 5 were as follows:

A, Amphora; B, Flagon; C, Jar; D, Jar/beaker (not used); E, Beaker; F, Cup; G, Tankard (not used); H, Bowl; I, Bowl/dish; J, Dish; K, Mortarium; L, Lid; M, Miscellaneous (not used); Z, Uncertain.

TABLE 5

TYPE WARE	A	B	C	E	F	H	I	J	K	L	Z	TOTAL	per cent
S					1.18	3.69		0.13	0.28		0.08	5.36	14.0
F35						0.23	0.12					0.35	0.9
F36						0.04						0.04	0.1
F40				0.05								0.05	0.1
F46				0.37								0.37	1.0
F51						0.09						0.09	0.2
F52				0.91								0.91	2.4
F55				0.75								0.75	2.0
SubF				2.08		0.36	0.12					2.56	6.7
A22	0.25											0.25	0.7
M10									0.12			0.12	0.3
M11									0.04			0.04	0.1
M12									0.13			0.13	0.3
M23									0.14			0.14	0.3
M29									0.36			0.36	0.9
M35									0.17			0.17	0.4
M41									0.02			0.02	0.1
M55									0.18			0.18	0.5
M56									0.08			0.08	0.2
SubM									1.24			1.24	3.2
W40		0.88										0.88	2.3
Q41		0.64										0.64	1.7
Q43		0.33										0.33	0.9
Q44		1.00										1.00	2.6
SubQ		1.97										1.97	5.2

TYPE WARE	A	B	C	E	F	H	I	J	K	L	Z	TOTAL	per cent
O50			0.35			0.02						0.37	1.0
O51		1.02	0.31			0.03				0.10		1.46	3.8
O61											0.22	0.22	0.6
SubO		1.02	0.66			0.05				0.10	0.22	2.05	5.4
R30			0.26	0.54							0.08	0.88	2.3
R35			1.38	0.59		0.54	0.05	0.06				2.62	6.8
R80			4.77	0.06		0.65	0.06	0.05		0.05		5.64	14.7
R81			2.04			0.09					0.05	2.18	5.7
R82			0.62	0.55		0.08	0.04				0.02	1.31	3.4
R83			0.06									0.06	0.2
R85						0.10						0.10	0.3
R89				0.30		0.10	0.04					0.44	1.2
R90			0.18				0.12					0.30	0.8
R95			0.42			0.17	0.08					0.67	1.8
R98			0.03			0.05						0.08	0.2
SubR			9.76	2.04		1.78	0.39	0.11		0.05	0.15	14.28	37.4
B11			0.50			0.60	0.04	0.65				1.79	4.7
B15			0.03					0.03				0.06	0.2
B20			1.42	0.07		0.73	3.14	1.30				6.66	17.4
B22			0.25			0.16	0.32	0.14				0.87	2.3
SubB			2.20	0.07		1.49	3.50	2.12				9.38	24.5
C10			0.25									0.25	0.7
TOTAL	0.25	3.87	12.87	4.19	1.18	7.37	4.01	2.36	1.52	0.15	0.45	38.22	
per cent	0.7	10.1	33.6	11.0	3.1	19.3	10.5	6.2	4.0	0.4	1.2		

Table 5 Roman pottery: ware types represented in each fabric.

The vessel assemblage from the various DHC trenches totalled 38.22 EVEs (sites DSC and DTT excluded). Jars were, as usual, the principal vessel class, but they only amounted to one-third of the vessels. Bowls, dishes and uncertain intermediate bowl-dish types were respectively 19.3 per cent, 6.2 per cent and 10.5 per cent. Almost half the bowls were in samian and fineware fabrics, emphasising the importance of these fabrics in the assemblage. The relatively high representation of flagons and beakers (10 per cent and 11 per cent) also underlines the importance of the fine and specialist wares in the assemblage, since these types occurred principally in such fabrics. Cups (3.5 per cent) were entirely in samian ware (forms 27 and 33) and mortaria (4.0 per cent) also included a small samian ware component. The low representation of amphorae and, in particular, the almost total absence of lids (despite the fact that they were relatively common products of the Canterbury kilns (Jenkins 1960, 160) is striking. Unidentified types only amounted to 1.2 per cent.

Jars occurred principally in reduced and black-burnished fabrics, with small quantities in O51 (Canterbury oxidised) and C10 (shell-tempered) fabrics. The sandy reduced fabrics (R80, etc.) were the most important here, but probable jar types, including the only narrow-mouthed jar in the assemblage, were found in the fine 'Upchurch' fabric R35. Jars were apparently also important in the grog-tempered fabric R95, but there were insufficient vessels to allow firm conclusions to be drawn here. Detailed recording of particular jar types was not possible, but most jars probably fell into a general medium-mouthed category. Specific types noted included 'cooking-pot type' vessels (particularly important in black-burnished ware) and those with lid-seated rims. The latter amounted to one-third (expressed as EVEs) of the rims identified as Canterbury sandy fabric R81 (almost all of which were jars). In contrast to this less than 7 per cent of the jars recorded in fabric R80 were of lid-seated type. This distinctly different pattern probably supports the conclusion (above) that R80 represents products from a variety of sources and contains only a relatively small amount of Canterbury material. (Reduced ware lid-seated jars were not, of course, exclusively produced at Canterbury, they occur, e.g., in the Thameside industry (Monaghan 1987, 108–11), but the characteristic form at Dover (cf. e.g. Macpherson-Grant 1982, 136, No. 257) is typical of Canterbury types).

Jars comprised respectively 28 per cent and 22 per cent of BB1 and BB2 vessels, together amounting to just under 20 per cent of the total of jars from the site. It is unclear if these slight differences were significant.

Bowls, dishes and the intermediate bowl-dish types can be discussed together. A small number of carinated 'bowls' occurred in reduced

fabrics, the best example (No. 55 below), in fabric R35, presumably a north Kent product, is not paralleled in Monaghan's corpus but is broadly of his Class 4H (Monaghan 1987, 129). The great majority of all bowl, dish and intermediate vessels were straight-sided; curving sided vessels in these groups were rare, except for samian ware types (particularly Drag. 37 and 38). Fine ware occurrences of bowl-dish types were limited, with three examples (one of uncertain type) in the mica-dusted fabrics F35 and F36 (see Nos. 45, 49 below) and a single example probably of type C51 (Young 1977, 160–61) in Oxfordshire colour coated ware (F51).

The bowl-dish continuum comprised 18 per cent of reduced ware vessels, most of which were bowls. Confidently identified dishes were only 0.9 per cent of all reduced wares. The figures for BB1 and BB2, however, show contrasting patterns. In BB1 the representation of bowls and dishes was closely comparable, each amounting to a third of all vessels, and the intermediate category was only 2.2 per cent. In BB2, bowls constituted *c.* 12 per cent of the vessels, dishes 21 per cent, and the indeterminate group amounted to 44.5 per cent (the remaining vessels being jars). These differences can be explained in part in terms of chronology and rim typology. The majority of the BB1 in this assemblage is of late date (mainly late third-century, see above), by which time the typological distinction between bowls and dishes is clear, even when the surviving sherds are small. In BB2, conversely, there is no such clear-cut distinction between the rims of bowls and dishes (a problem which would also have applied to BB1 had its second-century forms occurred widely). It is impossible therefore to determine what breakdown of BB2 bowls and dishes was represented by the numerous indeterminate group. Since the overall representation of bowl-dish types in BB1 and BB2 is fairly closely comparable (respectively 72 per cent and 78 per cent), it may be tentatively suggested that the ratio of bowls:dishes was also broadly similar, and that the approximately 1:1 relationship observed for BB1 also applied to BB2. In any case, with the exception of three examples (one samian, two reduced wares) all the dishes in the assemblage were in black-burnished ware.

The remaining important vessel classes require little comment. Flagons occurred chiefly in white slipped fabrics (50.9 per cent), the buff-white fabric W40 (22.7 per cent) and the Canterbury oxidised sandy fabric O51 (26.4 per cent) accounting for the rest. Beakers (represented by rims) occurred in fabrics F40, F46, F52 and F55, of which F52 (Nene Valley ware) was most important, and there was a single example in B20. They were also important in reduced fabrics; the possible and probable Upchurch products (R30 and R35), the fine sandy R82 and the north Gaulish sandy ware R89, which together amounted to 48.7 per cent of all beakers in the assemblage.

CATALOGUE AND STRATIGRAPHIC DISCUSSION (Figs. 14–18)

The illustrated vessels (Figs. 14–18) are presented in stratified sequence within the individual trenches of the excavation. No attempt has been made to correlate deposits in one trench with those in another for the purpose of identifying precise ceramic phases.

In all entries the fabric code is followed by that for the vessel type with the context number last.

Trench 1

34. Fabric F52, type ED. Context 34.
35. Fabric R80, type HB. Context 32.

These vessels occurred in contexts dated by coin evidence to the late third century (Context 34) and later (Context 32) and are consistent with this date. No. 35 is in a sandy fabric rather than the grog-tempered or black-burnished wares which provided most examples of the form at this date.

Trench 11

36. Fabric B20, type JA. Context 416.
37. Fabric B20, type CH. Context 402.
38. Fabric B20, type CM. Context 402.
39. Fabric B20, type CK. Context 406/2.
40. Fabric B20, type HB. Context 406/2.
41. Fabric B20, type IA. Context 406/2.
42. Fabric R35, type EH. Context 401.
43. Fabric M56, type K. Context 409.
44. Fabric R81, type CK. Context 409.
45. Fabric F35, type HC. Context 360.
46. Fabric Q44, type BB. Contexts 350/2, 315 and 334.
47. Fabric M35, type KA. Context 333.
48. Fabric B20, type JA. Context 333.
49. Fabric F35, type IB. Context 364.
50. Fabric M29, type KA. Context 387.
51. Fabric M55, type KA. Context 372.
52. Fabric B20, type IA. Context 372.
53. Fabric O51, type C. Context 357/3.
54. Fabric R80, type JA. Context 355.
55. Fabric R35, type HA. Context 342/1.
56. Fabric R95, type IA. Context 337.

Nos. 36–56, arranged in stratigraphical order, are from a sequence which, although not completely excavated, spans most of the main periods of occupation of the *Classis Britannica* fort.

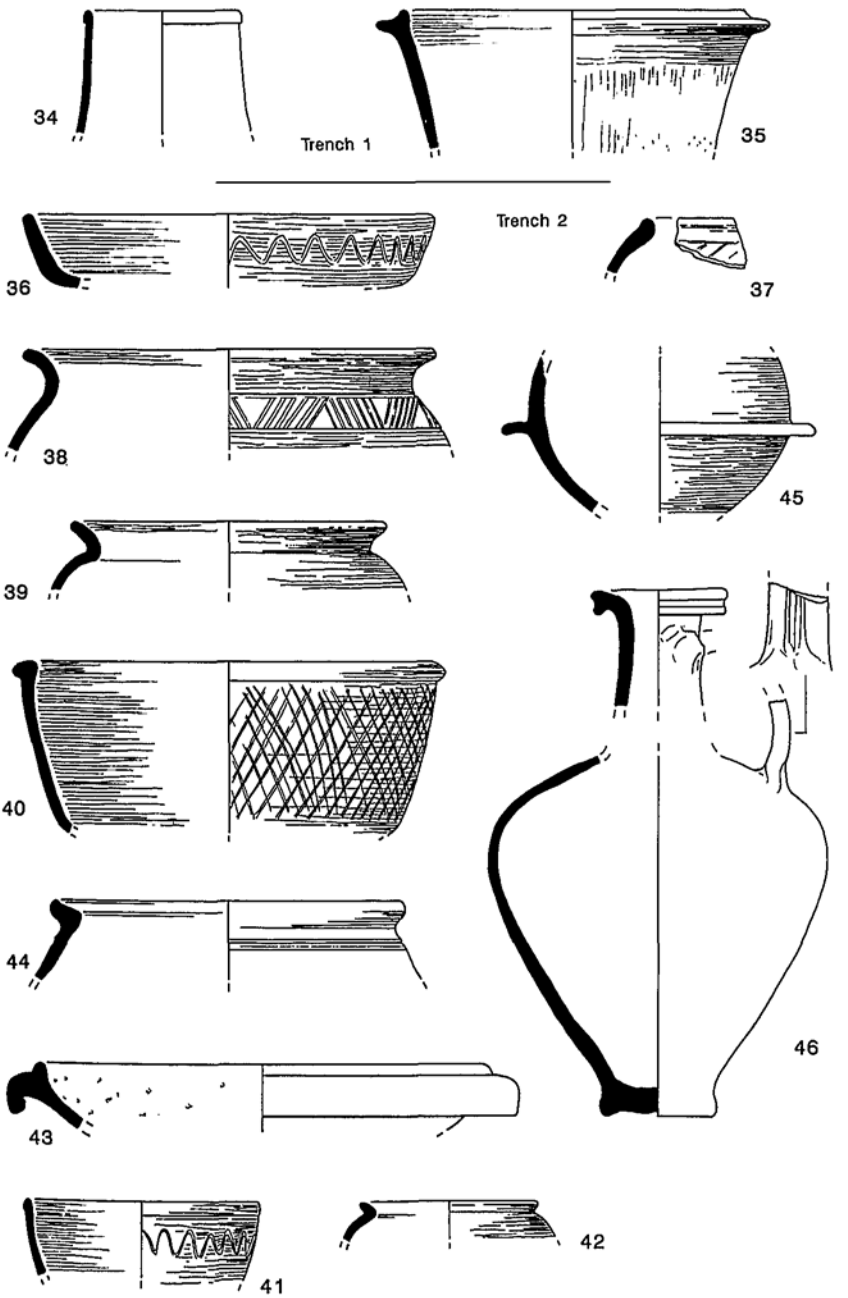


Fig. 14. Roman pottery from Trench 1 (Nos. 34–5) and Trench 11 (Nos. 36–46).

The source of the mica-dusted vessels Nos. 45 and 49, apparently not Canterbury, is uncertain. No. 45 is reminiscent of the London fineware type 14 (Marsh 1978, 148–50) but No. 49 is not closely paralleled there. The mortaria are in a variety of fabrics, mainly from local sources (including Canterbury). No. 50, a Colchester product, can be dated *c.* A.D. 130–170 on the basis of the stamp (cf. Hartley 1987, 100). The source of the flagon No. 46 may also have been relatively local. The pulley-wheel rim form is found at Canterbury Castle (Macpherson-Grant 1982, 148–149, No. 413) in a 'colour-coated' pink buff sandy ware, and amongst the material from the Whitehall Road kilns where, however, the parallels are not particularly precise (Jenkins 1960, 157–9, nos. 4 and 5). A very close parallel at Chelmsford is in an 'unspecified buff ware' (Going 1986, 32 and 52, class J2 2.1), but the type is rare. The remaining coarse wares are mainly Canterbury products and BB2 of second-century date. No. 56, from the top of the stratigraphic sequence, seems to be in late Roman grog-tempered ware and as such was perhaps intrusive, but M. Lyne (*pers. comm.*) suggests that this is an East Sussex form for which an early third-century date would be acceptable. No. 54 may be from the same source and of similar date. A single small sherd of New Forest purple colour-coated ware in a fairly coarse, sandy fabric may likewise have been an early third-century piece, though the rubble deposit (363) from which it derived is dated to the medieval period.

Trench 11

57. Fabric M12, type KD. Context 324.
58. Fabric M12, type KD. Context 324.
59. Fabric M10, type KD. Context 312.
60. Fabric O61, type Z. Context 312.

These vessels occurred in the fills of Victorian graves which cut the Roman deposits. They supplement the range of vessels from stratified contexts. No. 58 is similar to Hartley (1981) No. 383, but No. 57 is not precisely paralleled among the published Dover material, although its affinities with No. 58, both in fabric and form, are clear. No. 59, from the Rhineland, is paralleled, e.g., by Gose (1950) No. 453. All these vessels belong to the later second to early third century and may be presumed to have derived from the latest phase of the *Classis Britannica* fort. No. 60 is unique in fabric and form and is possibly not of Roman date.

Trench 13

61. Fabric R80, type HA. Context 861.
62. Fabric F46, type EC. Context 829.
63. Fabric F55, type EC. Context 827.

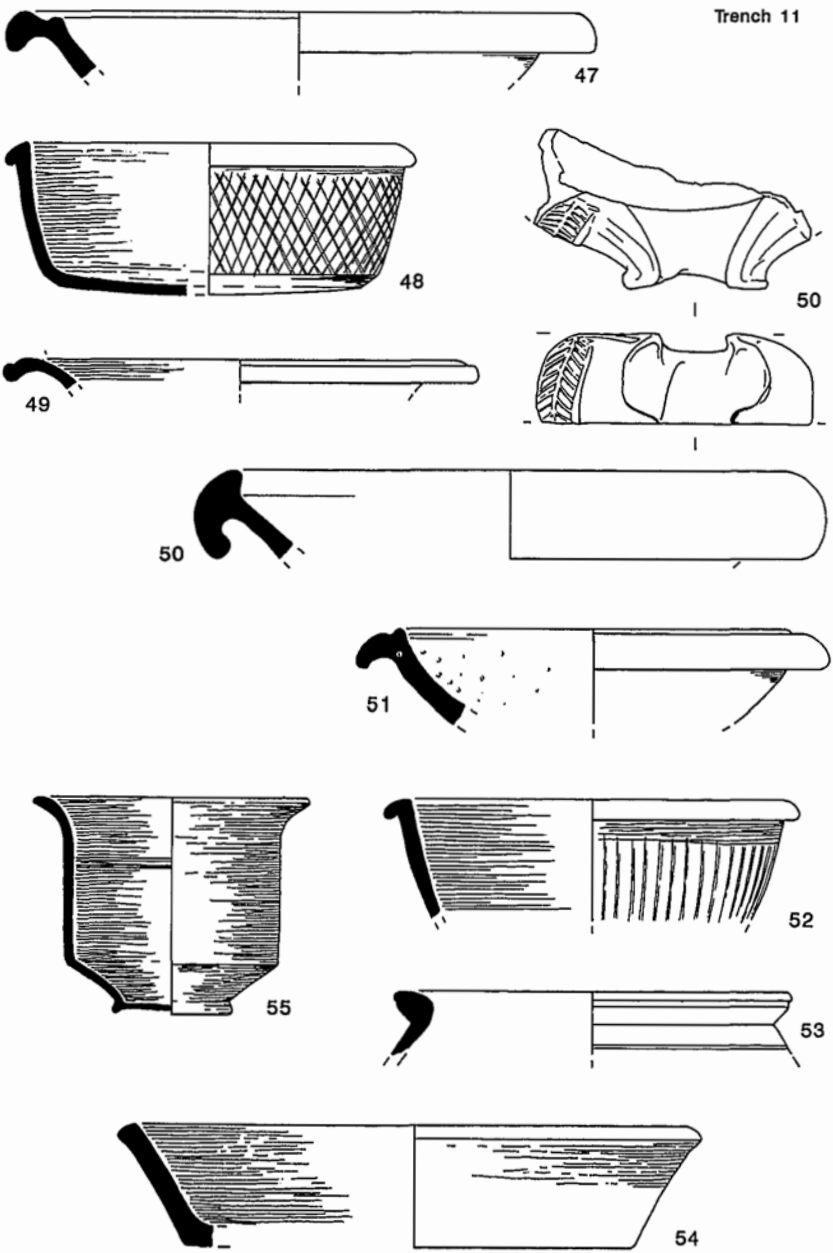


Fig. 15. Roman pottery from Trench 11 (Nos. 47–55).

64. Fabric R81, type CK. Context 827.
65. Fabric R35, type JB. Context 827.
66. Fabric A22, type A. Context 859.

Nos. 61–5 are from *Classis Britannica* fort contexts, Nos. 63–5 being from a salvage-recorded drain and No. 62 from a layer beneath it. No. 66 is from a fill in the top of the fort ditch, which could have been deposited some time after its disuse.

67. Fabric F52, type E. Context 822.
68. Fabric F52, type E. Context 819.
69. Fabric F52, type ED. Context 850.
70. Fabric M29, type KA. Context 847.
71. Fabric M56, type KA. Context 854.
72. Fabric O51, type BA. Context 821.
73. Fabric R95, type IA. Context 854.
74. Fabric B11, type CK. Context 849.
75. Fabric B11, type CK. Context 850.
76. Fabric B11, type HB. Context 818.
77. Fabric B11, type HB. Context 848.
78. Fabric B11, type HB. Context 849.
79. Fabric B11, type HB. Context 849.
80. Fabric B11, type JA. Context 848.
81. Fabric B11, type JA. Context 849.
82. Fabric B11, type JA. Context 849.
83. Fabric B11, type JA. Context 849.
84. Fabric B11, type JA. Context 850.
85. Fabric B20, type HB. Context 848.
86. Fabric B22, type HB. Context 850.
87. Fabric B22, type JA. Context 819.

This group is from component layers of the Saxon Shore fort rampart and is dated to the last quarter of the third century or slightly later. The homogeneity of the material and the occurrence of sherds, particularly of BB1, probably from the same vessels in more than one contexts (albeit non-joining) justifies its treatment as a single whole. The rampart contexts together produced 245 sherds (4.10 EVEs). The principal characteristics of the group were high representations of fine wares and black-burnished ware in comparison to the overall assemblage. Samian and oxidised coarse wares were of reduced importance, both obvious trends in view of the date of this group. The representation of reduced coarse wares was much the same as the site average (as a percentage of sherds; it was much lower when expressed in terms of EVEs).

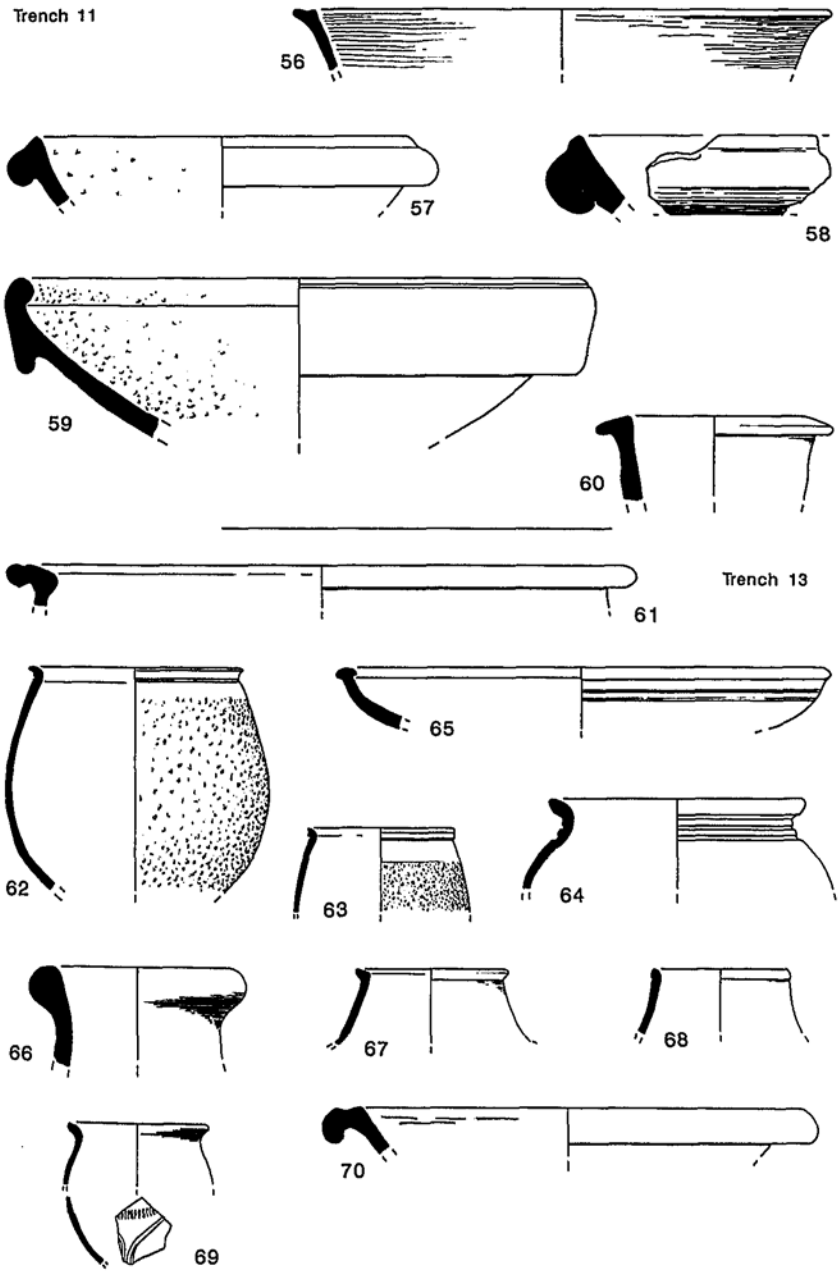


Fig. 16. Roman pottery from Trench 11 (Nos. 56–60) and Trench 13 (Nos. 61–70).

The fine wares consisted almost exclusively of Nene Valley colour-coated ware (F52) which totalled 8.6 per cent of the sherds. Samian ware was now 7.3 per cent. The main reduced ware was still R80. R81 (Canterbury sandy fabric) did not appear at all, but R35 was only slightly less common than in the overall assemblage, though it is likely to have been out of production by this time (see above). R95, late Roman grog-tempered ware, was now a significant component (7.8 per cent) of the group. BB1 comprised a quarter of the assemblage, and was now more than twice as common as BB2. A high proportion of the BB2 sherds was in the fine fabric B22, but it is uncertain if this is significant.

The date of the group rests primarily on the Nene Valley ware and BB1. The mortaria and flagon (Nos. 70–72) are likely to have been residual in this group. This was probably also the case with the BB2, particularly Nos. 85–6, which are considered to be 'primarily a second century form' by Monaghan (1987, 144, his type 5D). This conclusion may be supported by their almost total absence from New Fresh Wharf, London (Richardson 1986, 127, with discussion of fabrics), but the comparable type IV.H.4 at Southwark, with a date range of A.D. 140+, is considered 'probably commoner after 170' (Hammerson 1988, 208). In any case, Nos. 85–6 are likely to have been residual in later third-century deposits.

There were four Nene Valley beaker rims, and body sherds from further vessels including at least four indented examples, three with large indentations (cf. Howe *et al.* 1980, 21, Nos. 51 and 52, fourth-century) and one with narrow indentations (*ibid.*, No. 53, also fourth-century). The character of the barbotine decoration of No. 69 suggests a third-century date (cf. *ibid.*, Nos. 48–50), but the indented sherds and all the rim forms seem later. For example the closest parallels for the rim form of No. 67 (Howe *et al.* 1980, 21, Nos. 54, 56) are dated to the fourth century), though a late third-century date may be acceptable for this vessel.

The BB1 constitutes a tight, internally consistent group within this assemblage, of which the most important component is the flanged bowls (Nos. 76–9), and includes several almost identical examples of the same types (e.g. Nos. 74–5). The absence from this group of BB1 bowls with 'incipient flanges' is noteworthy. There are some similarities between this group and that from New Fresh Wharf, London (Richardson 1986, 124–125), dated not later than *c.* A.D. 245 (*ibid.*, 96), but the range of forms at the latter site includes vessels of late second–early third-century date which are absent in the Dover group. Whether or not there are problems with the stratigraphy at New Fresh Wharf (*ibid.*, 125), the combination of types seen at Dover suggests a date after the mid third century rather than earlier.

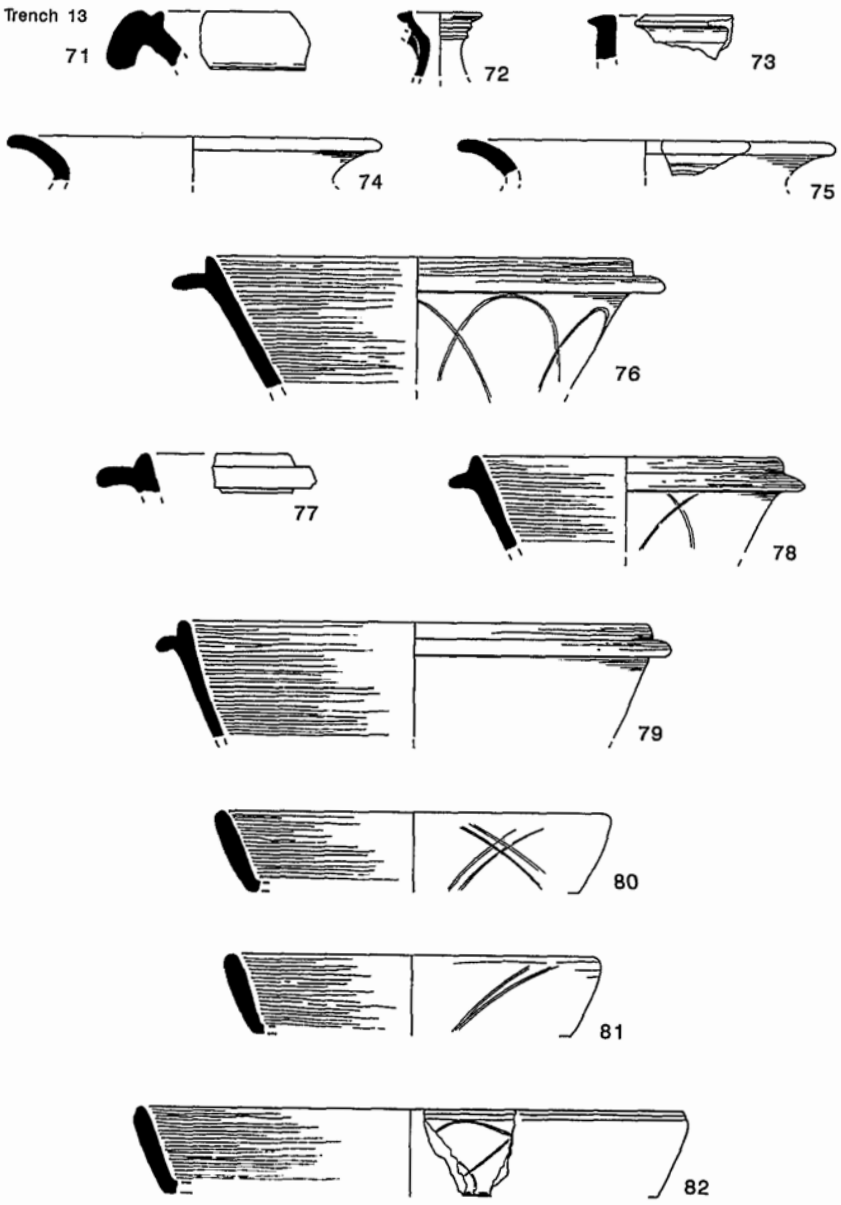


Fig. 17. Roman pottery from Trench 13 (Nos. 71–82).

Evidence from northern Britain supports this (though it is possible that particular vessel types did not reach all parts of Britain synchronously). At Vindolanda, Bidwell concluded in discussion of Gillam (1970) type 228 that 'the earliest contexts for bowls with true flanges . . . were . . . no earlier than c. 275' (1985, 177). Evidence from other Saxon Shore forts is lacking. At Portchester, there are no significant groups dated before A.D. 300 (Fulford 1975a, 46); by which time the absence of BB1 bowls other than fully flanged types is to be expected (Fulford 1975b, 336, type 85). At Lympne, the small assemblage contained jars and dishes in BB1, but no bowls (Young 1980, 280). Elsewhere in Dover fully-flanged bowls in BB1 are recorded from deposits assigned to Period VII (dated A.D. 210–70) at the 'Painted House' (Willson 1989, Nos. 217–8). Illustrated flanged bowls in the Period VIII deposits from the same site are all in late grog-tempered fabrics, but it may be presumed that BB1 examples were also present. Other aspects of the Period VIII groups from the 'Painted House' closely parallel the evidence outlined above, as would be expected in groups which were deposited to prepare the site for the construction of the Saxon Shore fort. These include the BB1 jars (e.g. *ibid.* Nos. 268, 270) and the presence of Nene Valley products including indented beakers (*ibid.* Nos. 272–3).

In summary, the forms of the Nene Valley colour-coated vessels, the range of types in BB1 and the relatively high representation of late Roman grog-tempered ware, the first appearance of which in east Kent is in the late third century (Pollard 1988, 129) combine to suggest a *terminus post quem* of at least *c.* A.D. 275 for the construction of the Saxon Shore fort rampart. The date of the assemblage could be as late as the early years of the fourth century but the earlier date is preferred here (see above, The Date of the Saxon Shore fort).

88. Fabric Q43, type BB. Context 842.

This vessel is from a post-Roman context. The form occurs in the material associated with the Dane John kiln at Canterbury (Kirkman 1940, 129–130, no. 53, a precise parallel) and at Canterbury Castle (e.g. Macpherson-Grant 1982, 144–145, no. 373, in 'buff-pink ware' in a probable late second-century context (*ibid.*, 149)).

Trench 15

89. Fabric F46, type EC. Context 924.
90. Fabric F55, type EC. Context 924.
91. Fabric R81, type C. Context 924.
92. Fabric R81, type C. Context 924.
93. Fabric R82, type C? Context 924.

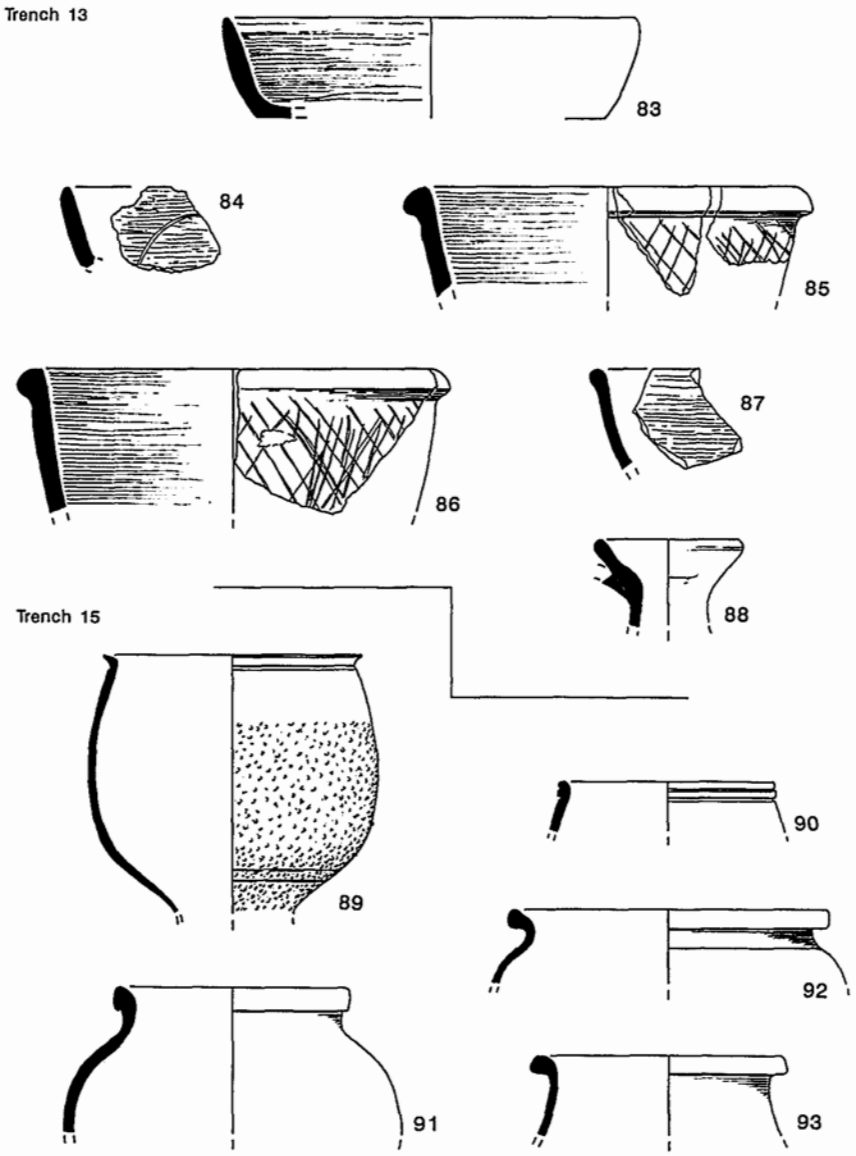


Fig. 18. Roman pottery from Trench 13 (Nos. 83–88) and Trench 15 (Nos. 89–93).

This group, from a small salvage-recorded area near Trench 13, is from a layer beneath a wall of a probable *Classis Britannica* fort building. The date of the group, which includes?Cologne and Colchester colour-coated vessels (Nos. 89–90) and Canterbury sandy reduced wares (Nos. 91–2) is entirely consistent with this and probably lies in the second or third quarter of the second century.

ACKNOWLEDGEMENT

The help of Richard Pollard in identifying certain sherds and discussing wider aspects of Roman pottery in Kent is gratefully acknowledged. He is not, however, in any way responsible for the deficiencies of this report.

THE ANGLO-SAXON, MEDIEVAL AND POST-MEDIEVAL POTTERY

Catherine Underwood-Keevill

A small assemblage of Anglo-Saxon, medieval and post-medieval pottery was recovered from Trenches 11, 12, 13 and 14 and from small assessment trenches (including Trench 1). All of the pottery was considered together initially to try to establish a preliminary fabric and form series for medieval and post-medieval Dover.

A total of 270 sherds weighing 3.76 kg was recovered from stratified contexts in Trenches 11, 12, 13 and 14. The material was grouped into fabric types on the basis of the identification of the predominant rock and mineral inclusions within the clay body. Fabric types were defined according to paste colour, hardness, texture and fracture as well as inclusion type. Details of inclusions are recorded according to the Peacock system (Peacock 1977b). A type series of typical sherds has been retained for reference purposes and cross-referenced, where possible, to equivalent fabric types recovered in Canterbury.[63]

All the sherds were divided into groups according to their main inclusion type as recognised by macroscopic and microscopic analysis with reference to the Peacock guidelines. These were assigned a numerical code: Group 1, sandy wares include 1, 10–19, 100–199; Group 2, shelly and limestone gritted wares 2, 20–29, 200–299, etc. It should be noted that not all the numbers have been used within each

[63] All sherd counts, weights and drawings of other diagnostic sherds have been retained with all other Level II archive material at Oxford Archaeological Unit, to be transferred to Dover Museum.

group. Inevitably with such a small assemblage, some fabrics are represented by very few sherds, including only one example in several cases. The later post-medieval material has been assigned to Group 4, tin-glazed wares 4, 40–49; Group 5, salt-glazed and stonewares 5, 50–59; Group 6, red earthenwares 6, 60–69, 600–699 and Group 7, factory produced wares 7, 70–79. For the very fine sandy wares in Group 1 and for the red earthenwares in Group 6 a x20 microscope was used to aid the identification of fabric types. All fabric types were counted and weighed for each context. Rim and base types and decorated body sherds in each fabric were noted in each context and each new type drawn for reference purposes and retained in archive.

DISCUSSION

The majority of the medieval pottery was recovered from Trench 12, 129 sherds weighing 1.9 kg. The main fabric type was fabric type 1 which comprised 68 per cent of the assemblage from this trench by number and 61 per cent by weight. The imported, mainly Northern French, wares made up 14 per cent by number and 18 per cent by weight. The other major types were the shelly wares forming 18–19 per cent by number and weight, with the predominant type being the soft shelly ware, fabric type 20.

The majority of the material could be dated to the late eleventh to twelfth century on the basis of the local sandy wares, fabric type 1. Contexts such as 536, due to the presence of a twelfth- to thirteenth-century cooking bowl form and a small sherd of Aardenburg type ware, fabric type 15, may be thirteenth-century in date. It should be noted that several contexts have only one sherd in them and the more productive contexts such as Contexts 520, 544 and 549 have 24, 16 and 15 sherds in them, respectively. It is noticeable that these contexts also contain the larger quantities of imported material which date to the eleventh and twelfth centuries.

The Ipswich ware sherd was recovered from Context 546, which otherwise has eleventh- to twelfth-century fabric type 1 sherds. Other contexts have earlier material in them, such as fabric type 22, a late eighth- to ninth-century coarse shelly rim in Context 520 and fabric type 25, a ninth- to tenth-century fabric in Context 541.

Trench 11 has a total of 102 sherds weighing 1.3 kg. The only context from this trench with a medieval assemblage is Context 363. This context also has the largest pottery assemblage by number and weight of all the contexts in this trench. The only other contexts with large amounts are Contexts 312 and 315. Context 312 has some residual medieval and early post-medieval fabrics such as fabric type 12, but has mainly seventeenth- to eighteenth-century red earthenwares and seventeenth-century Surrey white wares. Context 315

is very similar in composition, but it is notable for a possibly late medieval sherd, fabric type 103 which is unusual in fabric and decoration. Context 363 is dominated by fabric type 1, but also has one sherd of fabric type 119, Normandy Black ware and a residual eighth- to ninth-century sherd, fabric type 26.

Trench 13 contexts are mainly grave fills and the ceramic assemblages tend to reflect this with mainly seventeenth- to eighteenth-century earthenwares being present. The numbers of sherds, however, is extremely limited, with a total collection of 36 sherds weighing 0.4 kg. Trench 14 is also very limited with 3 sherds weighing 21 gr. recovered from Contexts 902 and 908. The two sherds from Context 908 are body sherds in a dense coarse sandy version of fabric type 1. The sherd from context 902 is a sixth- to seventh-century rim sherd.

This assemblage indicates strong affiliations with fabric types from Canterbury, with some early middle-Saxon wares which were unknown as far afield before. The dating from the sandy ware fabric, fabric type 1 and of the Northern French imports tends to suggest that the assemblage is predominantly late eleventh- to twelfth-century in date, especially the main medieval contexts from Trench 12. Occasional cooking bowl rims from Contexts 535 and 536 suggest some late twelfth- to early thirteenth-century material. Very little thirteenth- to fourteenth-century material is present, with the exception of the few Aardenburg-type sherds.

The main imported wares appear to come from Northern France and Flanders, although the small quantity of material available may be misleading. It does suggest that, like Exeter and Southampton, there was a strong commercial link with northern France. Imported fabrics occur in Exeter in the tenth to eleventh century, but most of the stratified finds are in deposits dated to the twelfth century. In Southampton, some of the richest groups are attributed to mid to late twelfth century, and this trade expanded during the thirteenth century. The small amounts of imported material and the lack of diagnostic sherds make it difficult to ascertain with any degree of certainty the main period of trading activity from this assemblage. Other imports published from Dover, such as Hamwih type 15, grey wares from Flanders of eleventh- to twelfth-century date (Hodges 1977, 250), and a Normandy pitcher of late eleventh-century (Dunning 1945) could support the suggestion that this was the main period of trading activity in Dover.

There is, however, a small amount of residual mid-Saxon material especially in Contexts 363 and 520. The one sherd that may be *in situ* is a sixth- to seventh-century sherd (fabric type 13) from Context 902, Trench 15. The Ipswich ware sherd from Context 546 is residual, but adds greatly to our knowledge of the distribution of Ipswich ware

especially within Dover since only a few examples have been recorded from the town previously.

A brief description of identified fabric types, the main form types for each fabric, their possible derivation and equivalents in Canterbury and elsewhere are listed below. Illustrated examples (Nos. 94–109) appear on Figure 19–20.

Sandy wares

Local: Group 1, Fabric types 1–12

Fabric type 1
This is the most common fabric type in the medieval contexts. The fabric is highly variable in colour from orange-red to grey surfaces and margins, with a dense sandy matrix consisting of common-abundant, clear sub-angular quartz and occasional coarse haematite and ironstone inclusions. The fabric is equivalent to Canterbury type EM1, dating from the eleventh to the twelfth century and is probably a product of the Tyler Hill kilns (Blackmore 1988). The forms are mostly limited to bevelled everted-rim cooking-pots with sagging bases, with knife trimming around the base (Nos. 99–102) and a few examples of wide-mouthed cooking bowls similar to No. 103.

Fabric type 10
Dense sandy fabric with sub-angular common, medium-fine white quartz, occasional medium-coarse red-brown grog inclusions and fine red sand. Burnished exterior, rough interior. Late eighth- to mid ninth-century Canterbury local sandy ware (N. MacPherson-Grant, *pers. comm.*). This fabric was represented by one sherd from an unstratified context.

Fabric type 13
This is a compact very dense sand-tempered fabric with clear medium-fine quartz and very occasional white chalk in a dark red-brown clay with burnished brown-black surfaces. Only one rim sherd of this fabric type exists in Context 902 (No. 95). The fabric is equivalent to Canterbury local sandy ware of the sixth to seventh century (N. Macpherson-Grant, *pers. comm.*).

Fabric type 11
This fabric type is represented by two very small sherds and, therefore, cannot be confidently attributed to a source. The fabric has common clear angular white quartz inclusions, and a grey colour with white-grey margins under a thick olive-green glaze. It is possibly a Canterbury local fabric.

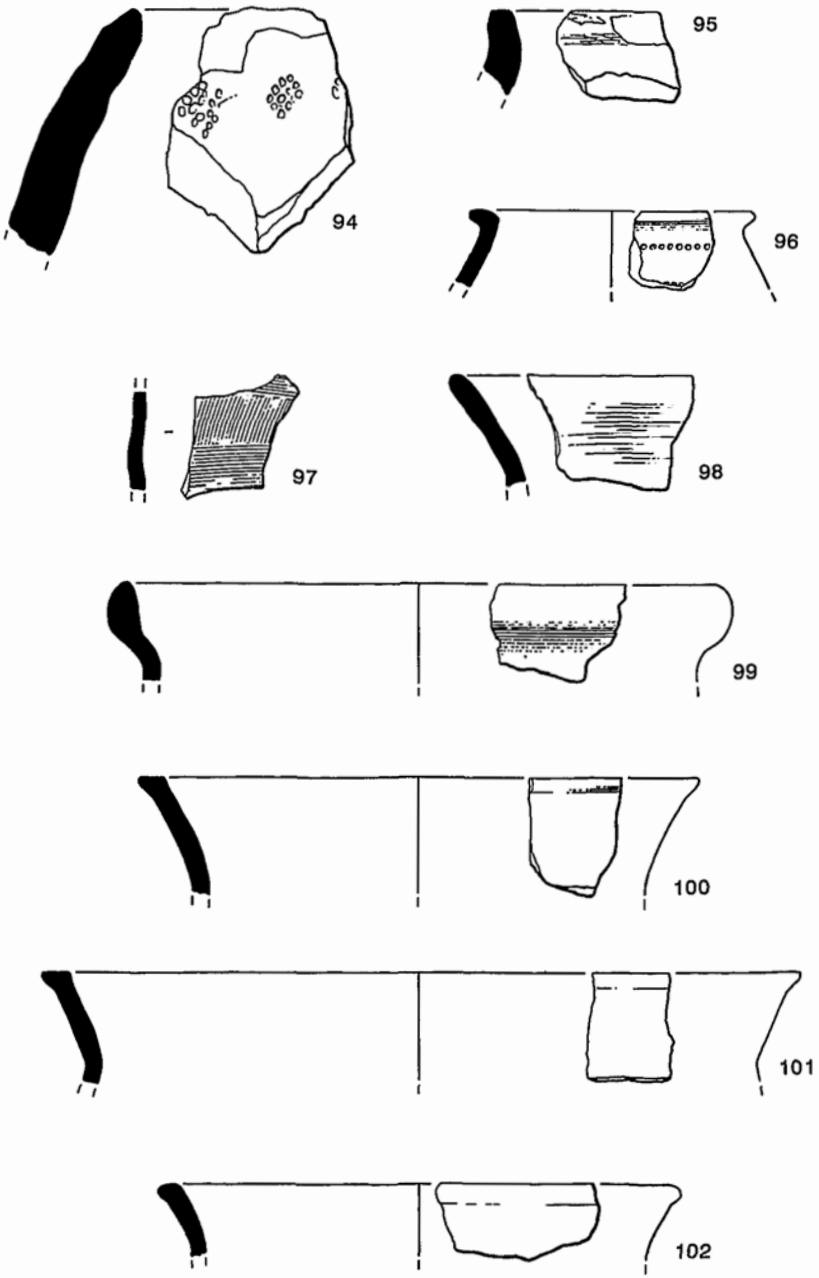


Fig. 19. Early medieval and medieval pottery (Nos. 94–102).

Fabric type 12
This is a fine sandy fabric with very fine quartz and occasional red iron ore in a soft light orange-pink clay. The decoration consists of a very distinctive bright green, frequently patchy glaze. Rim forms are infrequent but indicate open bowl forms and pancheons. This is probably a late medieval to post-medieval fabric and could possibly be a south coast imitation of Hants.–Surrey Border ware, a fourteenth- to fifteenth-century product.

Sandy Wares

Non-local: Group 1, Fabric types 14, 16, 103–119
Most of the imported material is limited in the number of sherds represented in each fabric type group. There is also a distinct lack of diagnostic sherds such as rims and bases to establish any corpus of dated vessel types.

Fabric type 14, Ipswich Ware
A soft, light grey fabric with pink/grey core. Inclusions are very fine, with clear mica the only visible inclusion type especially on the surfaces. Rough fingering and wiping on the interior indicate a very pliable, plastic clay with ridges and indentations very apparent. Decoration on this example consists of punched decoration of a series of eight dots laid out in a roughly rectangular motif set diagonally in a line across the vessel. Burnishing is also evident below the line of stamps. This example (No. 94) was from Context 546, in Trench 12. Ipswich ware is dated to *c.* A.D. 650–850, but in Canterbury it is mainly found in eighth-century contexts. Other examples of Ipswich ware have been recovered in Dover from Yewden Court (Dunning 1957).

Fabric type 16
This fabric type is a very hard grey ware, with dark red-brown core and very fine abundant sub-round clear quartz and moderate honey-coloured quartz which gives a rough granular feel. The body sherds are of an even thickness with finger dimpling especially on the interiors indicating a hand-made construction. The decoration comprises fine combed detail as illustrated by No. 97, Context 847 and simple vertical combing as in an example from Context 312 (not illustrated). An out-turned elongated bead rim with linear punched-dot decoration in the same hard dark grey fabric from Context 837 is the only other example of this fabric (No. 95). It is possibly imported northern French/Flemish (Hodges 1977, 249–52), on the basis of its fabric type, although there is as yet no parallel for the decoration.

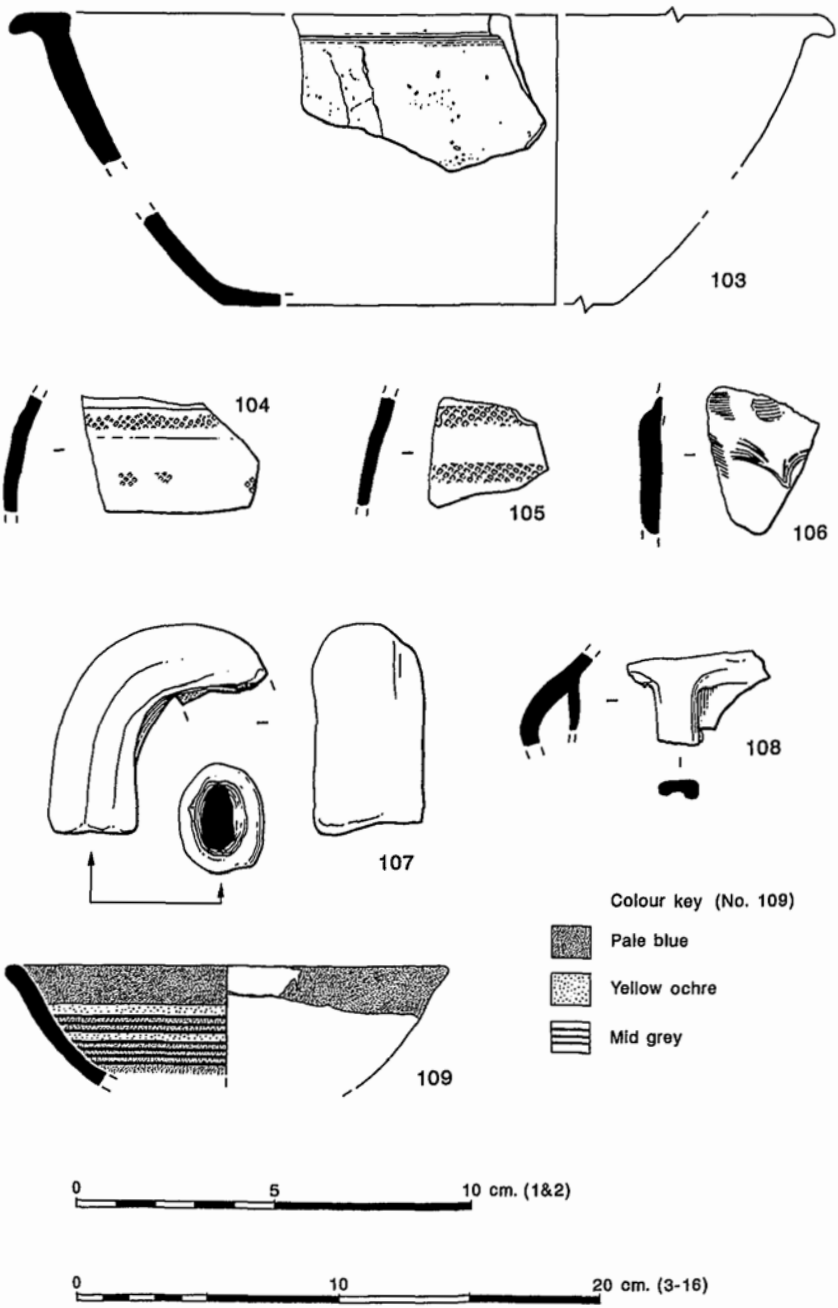


Fig. 20. Medieval and post-medieval pottery (Nos. 103–109).

Fabric type 103
Only one sherd of this fabric has been isolated from Trench 11, Context 315. The fabric is dark orange to red in colour, very hard with very fine quartz and occasional medium ill-sorted white limestone. The decoration type consists of combed oval motifs with a thick green glazed exterior and light orange-brown partial dripped glaze interior. The form suggested is of a high shouldered angular pitcher, imitating metal prototypes (No. 106). Possibly late-medieval Dutch by comparison with material from Norwich (Jennings 1981, 32).

Fabric type 114 and fabric type 115, Aardenburg type ware
A very hard, light orange coloured fabric with fine-medium well-rounded white quartz with a white slip and clear yellow-green glaze. Fabric type 115 is softer with a sandier texture with moderate fine rounded white quartz and a white underslip and green-orange glaze. Two sherds came from topsoil, Context 301, and one sherd from Context 536, Trench 12. This fabric dates from *c.* A.D. 1250–1400 and in the assemblage from Dover Castle was dated to *c.* A.D. 1300 or later (Cook *et al.* 1969, 97–8).

Fabric type 105
Only two sherds of this fabric type could be observed, in Context 549, Trench 12. The fabric is white to pink-white with visible red-orange tinged quartz, 0.25–0.5 mm. in size. A bright yellow to light green glaze is also evident as is prominent rilling or wheel-marks. This fabric is similar to the Normandy gritty ware fabric type 113, but the sand grits are not so large. This may be the same fabric type described as Normandy gritty glazed ware (14), which is dated normally from the twelfth to the thirteenth century but can date back to the eleventh century (Hodges and Mainman 1984, 14).

Fabric type 112
Northern French red-painted ware
Only two sherds of this fabric type were present, from Context 520 in Trench 12. The fabric is very fine, soft and light pink to light orange in colour with very fine sub-angular quartz and black very fine possibly dark mica inclusions. The decoration consisted of a light red-brown slip wash with thicker red diagonal lines painted over it. Beauvais type ware has been dated to the twelfth to thirteenth century (Barton 1970).

Fabric type 113, Normandy Gritty Ware
Only two sherds of this fabric type were identified: one from Context 520, Trench 12, the other from topsoil Context 301. The fabric is buff to light pink, with prominent red-orange sub-angular quartz grits. This

is dated as twelfth- to thirteenth-century, but can date back to the eleventh century (Hodges and Mainman 1984, 14).

Fabric type 117, Northern French Blackware
This fabric type has dark grey to black surfaces with a dark red-brown core with moderate well-rounded, fine, ill-sorted clear quartz and coarser (1–2 mm.) red-stained quartz. Only body sherds were recovered from Context 261, an assessment context and Context 544, Trench 12. This is possibly dated to the eighth to tenth century (N. MacPherson-Grant, *pers. comm.*).

Fabric type 118, Northern French Grey Sandy Ware
A hard, dark grey fabric with very fine clear sub-angular quartz and sparse very fine white limestone inclusions. The decoration is limited to rouletted bands and occasional roulette impressions on the main body of the vessel (Nos. 104–5). Three examples of this fabric type were recovered from unstratified contexts in Trench 13. This may be comparable with fabric and decoration types at Exeter attributed to the Loire Valley and of probable eleventh-century date (Hodges and Mainman, 1984, 16).

Fabric type 119, Normandy Black Ware
This is a cream-buff fine sandy fabric with very fine clear and honey coloured, sub-angular quartz and black rounded inclusions, and dark grey surfaces. The exterior surfaces are partially knife trimmed.

Limestone and Shelly wares: Group 2

Fabric type 2
Limestone and sand-gritted ware, with common rounded ill-sorted limestone, moderate angular grey flint and common red-brown well-rounded quartz. The fabric varies in colour from dark grey to pink-orange to light grey. A similar fabric type has been recognised at Folkestone (N. MacPherson-Grant, *pers. comm.*).

Fabric 20, Soft Shelly Ware
This is similar to St. Neots-type ware, with dense medium to coarse plate-like angular ill-sorted shell in a soft pink-orange to grey clay. The one rim observed is of a cupped everted rim cooking pot form (No. 98).

Fabric type 21, Shell-dusted sandy ware
This fabric has been recovered and described in Canterbury, type coded EM/M1 (Blackmore 1988, 252; and by comparison with Canterbury reference series in the British Museum). It has abundant clear to red-

brown quartz and occasional sub-rounded coarse shell on the surfaces. This fabric type is dated to the late twelfth to early thirteenth century in Canterbury (*ibid.*; N. MacPherson-Grant, *pers. comm.*). The only examples of this fabric are represented by a base sherd and rim sherd of a cooking bowl (No. 103) from topsoil, Context 301. Cooking bowl rims of a similar type also occur in the sandy fabric, fabric type 1.

Fabric type 22, Coarse Shell-tempered Ware
A soft grey fabric with very coarse 2–3 mm. shell additions. The shell appears to be roughly ground-down cockle shell. This fabric is equivalent to Canterbury type MS4, a middle Saxon fabric type dated to the late eighth to the mid ninth century (N. MacPherson-Grant, *pers. comm.*). The only example of this fabric type is a poorly-preserved rim sherd from Context 520, Trench 12.

Fabric type 23, South Coast Shelly-type Ware
A very lightweight fabric with sub-rounded shell and shell voids apparent in a light grey to light pink clay with occasional grey flint and moderate amounts of sub-angular clear quartz. One body sherd was recovered from Context 363. This type has been dated to the eleventh to twelfth century in Canterbury (N. MacPherson-Grant, *pers. comm.*).

Fabric type 24, North Kent Shelly Ware
This has dense moderate-sized (less than 1 mm.) shell inclusions with coarse shell additions. The vessel type apparent in the assemblage is similar to No. 99, a long everted rim cooking pot. The sagging base appears to be added onto the vessel body. Two sherds are evident from an unstratified layer from Trench 13.

Fabric type 25
A dark grey, gritty fabric with well-rounded moderate red-white quartz, rounded voids indicating shell/limestone inclusions and very fine mica/clear quartz on the surfaces. Only one base sherd from Context 541 was recovered in this fabric. It is dated to the ninth to tenth century and possibly the eleventh century (N. MacPherson-Grant, *pers. comm.*).

Fabric type 26
A sandy fabric with moderate to sparse shell. A fine fabric with soapy texture, clear fine common quartz and ill-sorted fine to 1 mm. sized shell in a red-brown clay with black surfaces. Fine burnishing is apparent on the exterior and haphazard burnishing/smoothing on the interior. Only one sherd is evident from Context 363, Trench 11. Canterbury fabric, MS5, dated to the late eighth century to the mid ninth century (N. MacPherson-Grant, *pers. comm.*).

Post-medieval Fabrics

Fabric type 100, Surrey Yellow-glazed White Wares
White, fine sandy fabric with clear yellow glaze. Only small-sized examples were apparent from Contexts 841, 842, 312 and 315. The rim sherd from 841 is similar to a cupped everted rim type from Dover Castle from a pipkin, and a tripod foot from 312 indicates the presence of tripod pipkin forms. At Dover Castle this type was dated to the seventeenth century (Mynard 1969, 38).

Fabric type 101, Tudor Green type
Only very small sherds survive. The fabric is a fine white to pink with fine pink stained quartz and a thick green glaze. Further material from Dover may indicate the range of vessel forms.

Tin-glazed wares: Group 4

Fabric type 4
A buff-pink fabric with red iron ore stains. The only example of this fabric is a semi-complete profile of a shallow bowl with a light blue band around the rim and painted black lines with yellow infills from Context 301 (No. 109). This is a probable import from Liguria in north-west Italy, and dates to the seventeenth century (Hurst *et al.* 1986, 26–9; Blake 1981, 114). Other examples have been recovered in Dover and in Canterbury, and decorated examples with painted scenes are known from London, Southampton and Exeter (J. Cotter, *pers. comm.*; Hurst *et al.* 1986, 26).

Fabric type 40
Blue and white English printed; tin-glazed, dated to the eighteenth century. One example from Context 313.

Fabric type 41
Netherlands Maiolica? A light pink fabric with very fine black inclusions. Yellow and blue painted pattern, from a backfill context.

Salt-glazed stoneware: Group 5

Fabric type 5
A light grey fabric with fine dark grey margins and dull, matt, light brown glaze. The only example is a handle and body wall sherd from a small drinking jug, the handle having an 's' shaped profile, from Context 313 (No. 108). This may possibly be Beauvais stoneware,

similar to a small jug found at Norwich (Jennings 1981, 75–6). The fineness of the sherd may date it to the fifteenth century.

All the other stoneware types consist of seventeenth- to eighteenth-century English stonewares mainly from Context 301.

Red Earthenwares: Group 6

This group forms the majority of the post-medieval wares. The fabric types have been divided on colour, glaze types and any inclusions that may be visible under a x10 eyeglass. The main type is fabric 65, dark red with moderate fine sand and a dark orange green glaze on the interior surface and a splashed metallic brown glaze on the exterior. This is used in the manufacture of large bowls and pans. Grittier versions of this fabric exist, such as fabric 600. Fabric type 68, a dark orange-red, micaceous fabric with a yellow 'fern' type motif under a dark orange glaze from Context 842 may be a seventeenth-century Metropolitan slipware product but only two sherds exist so it is difficult to attribute at present. A collection of lead-glazed earthenware from Dover Castle (Mynard 1969, 42–5) indicates that the red earthenwares are dated from the seventeenth century onwards, and the majority probably derive from the Wrotham potteries in north Kent. The earthenwares were mostly recovered from Contexts 312, 313, 315, 324, 328 and 301 in Trench 11 and 831, 832, 833, 837, 839 and 842 in Trench 13.

The factory-produced nineteenth- and twentieth-century wares, Group 7, formed only a small proportion of the assemblage, mainly from grave contexts in Trench 13. These have not been described in detail, and the descriptions and sherd counts are in archive only.

Catalogue of Illustrated Examples

94. Decorated body sherd, fabric type 14, Ipswich ware. Context 546.
95. Rim sherd, simple rim with burnished flat top and burnished exterior, fabric type 13. Context 902.
96. Rim sherd, slightly out-turned rim with punched dot decoration in a single line on the shoulder, fabric type 16. Context 837.
97. Decorated body sherd, combed diagonal incised lines, fabric type 16. Context 847.
98. Rim sherd, cupped rim, fabric type 20. Context 520.
99. Rim sherd, long everted cooking pot rim with rounded rim top, fabric type 1. Context 363.
100. Rim sherd, everted bevelled cooking pot rim, fabric type 1. Context 363.
101. Rim sherd, everted bevelled rim, fabric type 1. Context 363.
102. Rim sherd, everted bevelled rim, fabric type 1. Context 363.

103. Rim and base sherds, flat topped rim and sagging base of cooking bowl, fabric type 21. Context 301.
104. Decorated body sherd, rouletted double band decoration, fabric type 118. Unstratified.
105. Decorated body sherd, rouletted single band and occasional single roulette stamps on the rest of the main body of the sherd, fabric type 118. Unstratified.
106. Decorated body sherd, combed oval patterns under a thick yellow-green glaze. Partial orange-yellow glaze on the interior. Fabric type 103. Context 315.
107. Hollow handle. Soft red sandy fabric, possibly north-west French. No exact parallels have been noted. Context 503.
108. Handle, small drinking jug. 'S' shaped section to handle. Stoneware with matt red-brown glaze, fabric type 5. Context 313.
109. Profile of shallow bowl. Tin glazed with light blue glaze and painted yellow band within black-painted lines, blue and yellow glaze on exterior. Ligurian, Genoa. Fabric type 4. Context 301.

ACKNOWLEDGEMENTS

I would very much like to express my gratitude to Beverley Nenk at the British Museum for her help with the Medieval Pottery Reference Collection, and to Nigel Macpherson-Grant and John Cotter of the Canterbury Archaeological Trust for providing information on fabric types recovered in Canterbury and elsewhere in Kent. Their help was invaluable. Any mistakes or conclusions drawn are entirely the responsibility of the author.

THE WORKED BONE AND STONE

Catherine Underwood-Keevill

No. 110
Top half of bone pin, with spherical head. Length: 34 mm. shaft. Diameter: 1 mm., thickening at top to 2 mm., and top diameter measuring 6 mm. Crummy (1979) Type 3, dated *c.* A.D. 200 – late fourth century. Small Find No. 1. Location: Trench 1, Context 16.

No. 111
Incomplete bone pin. Tapering shaft with point and top missing. Length: 71 mm. Diameter: at top – 3 mm., at bottom – 1.5 mm. Location: Trench 1, Context 28.

No. 112
Fragment of polished bone, possibly bird bone.
Length: 56 mm. Small Find No. 21. Location: Trench 1, Context 30.

No. 113
Bone fastener/toggle. Tapering bone pin with wedge-shaped cut in the centre. Hand-finished rough surface, with striations from attempts to smooth the surface. Flattened sides to the top half of the pin and angular sawn top with three irregular surfaces. Length: 38 mm. Diameter: at top 4 mm., at point 2 mm. Small Find No. 43. Location: Trench 11, Context 333.

No. 114
Incomplete bone pin. Slightly tapering bone pin shaft with both top and point broken off. Length: 51 mm. Diameter: at top 3 mm, at bottom 2 mm. Small Find No. 82. Location: Trench 11, Context 387.

No. 115
Bone pin. Probably re-used from a larger original. Flat sawn top and blunt point. Length: 31 mm. Diameter: at top 3 mm., at point 3 mm. Small Find No. 93. Location: Trench 11, Context 409.

No. 116
SF 95. Bone pin. Complete pin with three horizontal grooves beneath a conical head. The point is made by slicing a small diagonal section from one side of the bone. Length: 61 mm. Diameter: at top 3.5 mm., at point 2 mm. Crummy (1979) Type 2, dated *c.* A.D. 50–200/250. Small Find No. 95. Location: Trench 11, Context 413.

No. 117
SF 98. Bone pendant? Incomplete boars tooth with large hole drilled through one end; larger diameter hole one side than the other. The larger hole is poorly executed with stress fractures visible. Comparable to bone tooth pendant from Fishbourne: Fig. 67, No. 13 (Cunliffe 1971). Small Find No. 98. Location: Trench 11, Context 409.

Stone Objects

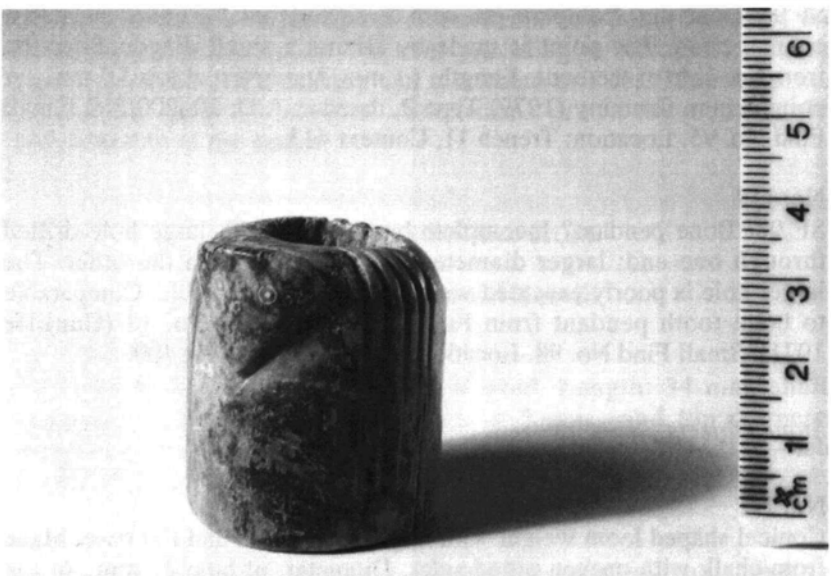
No. 118
Conical shaped loom weight with large drilled hole and flat base. Made from chalk with uneven pitted sides. Diameter: of hole 21 mm., of top 35 mm., of base 49 mm. Height: 31 mm.
Small Find No. 32. Location: Trench 2, Context 57.

A BONE CHESS PIECE

David R.P. Wilkinson (with Kay Proctor)

No. 119 (Plate II)
Bone chess-piece (knight). Cylindrical and made hollow by removal of cancellous tissue; probably from a horse metatarsus. Highly-polished and decorated with three sets of five vertical incised lines. The sets are evenly distributed around the cylinder. A single inverted triangle projects from the top and is asymmetrically placed between two sets of lines; it bears two ring-and-dot eyes to form a stylised head. The Dover piece is unfortunately not from a stratified context, but the style is that of the earliest (eleventh- to twelfth-century) chess-pieces known from this country (MacGregor 1985, 137–8). Single-headed pieces are identified as knights, and the centre of the piece may have originally been plugged, as was the case with other more elaborate examples, such as that from Helpstone, Northamptonshire (*ibid.*, Fig. 73a).
Small Find No. 183. Location: unstratified.
(The authors are grateful to Arthur MacGregor for examining and commenting on the above piece.)

PLATE II



Eleventh- to twelfth-century chess piece (knight) from the White Cliffs Experience site, Dover (No. 119).

THE ROMAN TILE

Leigh Allen

INTRODUCTION

All the Roman tile from the excavations at the White Cliffs Experience site was recovered. In the final instance it was decided not to examine fragments found in backfill from the 1970s excavations, as it was unclear whether these had been previously analysed. The remaining tile weighed a total of 69.094 kg., the bulk of which came from the tip layers in the rampart of the Saxon Shore fort (particularly 835), and to a lesser extent from contexts relating to the *Classis Britannica* fort itself. A very small proportion (4.6 per cent) was from medieval contexts.

METHODOLOGY

Each fragment of tile was examined macroscopically with a x10 magnification hand lens to identify the fabric. The width, length and thickness of these tiles were recorded where a complete dimension existed; all the fragments without a measurable dimension were grouped according to fabric under a miscellaneous heading. Individual characteristics such as *tegulae* flanges, the curve on *imbrices*, box flue-tile keys and any graffiti, animal marks or signatures were recorded separately. Twenty-four fragments of tile bore traces of *Classis Britannica* stamps (including one complete example) and these are discussed below.

TILE TYPES

Seven different types of tile were identified. The *tegulae* were distinguishable either by a flange, a groove at the base of the flange or a semi-circular signature at the top end of the tile; they made up 15.5 per cent of the assemblage. The average thickness of these tiles was 20–26 mm. *Tegulae* flange heights varied from 46–55 mm. and were of a standard form, the most common type being either square-headed or gently sloping on the inside edge. The *tegulae* were manufactured predominantly in Fabric 1 – two examples of flanges in Fabric 5 were noticeably taller and more slender, possibly denoting either a separate production site or that Fabric 5 was an easier medium with which to work.

The *imbrices* were distinguishable by their curve and made up 12.1 per cent of the sample; their average thickness lay between 16 and 22 mm. The roof-tiles made up the second largest group in the assemblage.

The box flue-tile or *tubuli* fragments were distinguishable by the presence of a key for plaster or remains of perforated side panels through which hot air could flow. These tiles made up only 5.5 per cent of the total assemblage. They had an average thickness of 17–21 mm. and were predominantly manufactured in Fabric 5. One example was recovered with a complete width, measuring 156 x 19 mm.; it is similar to the Type 3 box flue found at Dover on the 'Painted House' site (Willson 1989, 101). The keys were all simple comb patterns being either straight lines or curving designs made with combs with more than five teeth.

The fourth group consists of all those fragments of tile that showed none of the above characteristics, and was the largest group making up 36.4 per cent of the total assemblage. The range of thicknesses lies between 15 and 39 mm. and this may include fragments of tiles from other groups that could not be distinguished as such. Given that the largest thickness measured so far is 26 mm., it is possible that all fragments from this group with a greater thickness are floor or bonding tiles. Unfortunately, only one fragment from this group had a measurable dimension other than thickness – at 300 x 38 mm. it is possibly an example of a *lydion* (average measurements being 403 x 280 x 41 mm.) often used in lacing- and bonding-courses. Brick bonding-courses are known to exist in a bastion in the south wall of the Saxon Shore fort (Philp 1984, 190).

The fifth group consists of large bricks with a thickness ranging from 40–48 mm. These tiles represent 9 per cent of the total sample (this is in fact only ten fragments). Other than thickness there is an absence of complete dimensions and it is, therefore, impossible to say more about the tile types except that due to their sheer weight they would have been floor- or bonding-tiles possibly *lydia, pedales* or *sesquipedales*.

The sixth group consists of three examples of *mammae*. These have been placed in a separate group due to the lack of measurable thickness for the tiles. The *mammae* are complete and they are all shallow and circular with diameters of 37, 51 and 70 mm. Only one of the three examples is actually attached to a fragment of tile. *Mammae* are either used on floor-tiles to act as a key for the mortar, or to divide stacked tile in the kiln (these are later chipped off). In this case the former explanation is more plausible, as it would seem more likely that *mammae* were removed on the production site.

Group 7 is the miscellaneous category and comprises 21 per cent of the total assemblage.

FABRICS

Examination of the tiles with a x10 magnification hand lens revealed four distinct fabric types. Fabric 1 is predominant, comprising 88 per cent of the total sample. In general, it is a reddish-pink fabric with a variable degree of streaks and swirls of white clay. Inclusions consist of abundant black- or red-brown iron ore, mostly less than 1 mm. across but with occasional fragments up to 2 mm. across. Also present were very fine quartz and mica inclusions and occasional voids. This fabric corresponds in general to Peacock's Fabric 2 which is believed to originate from the southern central Weald (Peacock 1977a).

Fabric 2 makes up 6 per cent of the sample. It is a red-orange fabric characterised by very abundant tiny fragments of quartz and mica with very occasional larger fragments of red-brown iron ore.

Fabric 3 makes up 5 per cent of the sample. It is red-orange in colour and is characterised by very large inclusions including grog and flint with some fragments measuring up to 5 mm. across. There is also a very small quantity of iron ore, quartz and mica.

Fabric 4 makes up 1 per cent of the sample. It is a buff-coloured fabric with common spherical lumps of red-brown iron ore measuring up to 1 mm. across and occasional larger fragments of quartz up to 2 mm. across.

STAMPED TILES

Twenty-four fragments of tile had stamps of the *Classis Britannica* type. Rubbings were taken of each one in an attempt to find parallels. One complete stamp was recovered, while 9 examples were too fragmentary to identify. The stamps appear exclusively on *imbrices* and floor-tiles. Twenty-three of the 24 examples were on tiles manufactured in Fabric 1, the other being Fabric 5. No matching dies were found amongst the sample. The stamps were compared with those from G. Brodribb's (1980) work on stamped tiles of the *Classis Britannica* and W. Williams's (1981) work on the stamped tiles from the Dover forts. Exact parallels were found for all the stamps, and they have therefore not been illustrated here. They fall into six distinct groups as follows:

Type 1 (one example only)
Brodribb Type 33; Williams Type K4. Complete examples contain the letters CLBR in an oblong frame with squared corners. This example includes the letters BR only. The B has serifs top and bottom. The R has a big foot and serifs at top and bottom. The length is not known. Width 23 mm.

Type 2 (five examples, all fragmentary)
Brodribb Type 2; Williams Type F1. Complete examples contain the letters CLBR in an oblong frame with square corners. The letters are crude and unequally spaced. The C is plain and the L is heeled. The B and R have serifs at the top and the R leans back slightly. Width 27 mm.

Type 3 (7 examples, all fragmentary)
Brodribb Type 1C; Williams Type H1. Complete examples contain the letters CLBR set in an oblong frame with square corners. The letters are large, simple and plain – without serifs. One feature of this type is an irregularity in the letter B. In one case it has a bulge along its back. Width 31 mm.

Type 4 (one complete example)
Brodribb no parallel; Williams Type G2.
Complete examples contain the letters CLAB in an octagonal frame. The C and the L are attached at the top and bottom. The A is uncrossed and the B is open at its top and bottom. Length 45 mm. Width 27 mm.

Type 5 (one fragmentary example)
Brodribb Type 15; Williams Type E2. Complete examples contain the letters CLBR is an oblong frame with rounded ends. The letters are simple. The B and R are inverted. The R uses the straight back of the B and touches the stamp frame at the top and bottom. Width 26 mm.

Type 6 (one fragmentary example)
Brodribb Type 28; Williams Type E1. Complete examples contain the letters CLABRI set in an oblong frame with rounded corners. The letters are close together. In this example the L has a short foot, the A is uncrossed and joins the back of the B. No measurement possible.

CONCLUSION

The evidence suggests that the bulk of the tiles from the White Cliffs Experience site originated from the tile workshops of the southern-central Weald. All types of tile were being manufactured in this fabric. To a lesser extent tiles were also being supplied by other smaller sources. There is no evidence to suggest the use of French material. The majority of the tiles are either roof- or floor-tiles with very few fragments of box flue-tiles. This agrees generally with the evidence from the 1970s excavations on the *Classis Britannica* fort (Williams 1981).

THE SEDIMENTOLOGY

Anthony J. Barham and Martin R. Bates

The O.A.U. excavation programme involved specialist support provided by staff of the Geoarchaeological Service Facility (GSF), University College, London. One important element in the joint strategy was to identify sedimentological characteristics within the area of the excavations which might be traced laterally as 'markers' into the off-site environment. The other element was to try and elucidate further the chronology and processes responsible for the abandonment and destruction of structures on the site, and their relationship to an overlying sand deposit, recorded previously in the area by other workers (Mynott 1981) as the wind-blown sand.

The sites of both the *Cl. Br.* and Saxon Shore forts are located around the 10 m. contour on the south-east seaward-facing margin of a low promontory formed of an outcrop of the Middle Chalk, overlain by Chalk Head (BGS 1977). This promontory extends out into the floor of the Dour Valley and gives rise to a pronounced eastward curving meander in the modern river course (see Fig. 1).

The western margin of the estuarine inlet also deferred around the promontory in the Roman period (Rigold 1969) and would have placed the southern perimeter of the forts in a relatively exposed position (see Fig. 1), subject to wind fetch from easterly and south-easterly directions. This estuarine inlet had, on the evidence recorded from a deep roadworks shaft in York Street, infilled from -2.20 m. to +0.30 m. O.D. by the late Roman period (Bates and Barham 1993). It is in the area on the south side of the Shore Fort, currently between Queen Street and Town Wall Street to the north and south, and bounded by York Street to the west and Bench Street to the east, that extensive spreads of well-sorted sands have been recorded (Mynott 1981). The sand unit stratigraphically overlies the infill deposits, and therefore the onset of sand deposition must post-date harbour infilling at least in this area of the estuarine inlet.

A NORTH–SOUTH BOREHOLE TRANSECT AND THE LABORATORY ANALYTICAL DATA

The stratigraphic relationship between the well-sorted sands and underlying topography and deposits is shown as a transect running north-north-west to south-south-east from the White Cliffs Experience site (Borehole 01), via the Zion Chapel site (Mynott 1981) to observations made in the roadworks shaft at York Street roundabout

(see Figs. 1, 21). Figure 21 clearly illustrates the unconformable relationship between the sand unit and the underlying deposits. The sand unit thins landwards and upslope from > 3.50 m. thickness at the York Street Shaft (where at +2.50 m. O.D. coarse gravel to cobble-size well-rounded flint clasts are bedded within the sands), to *c.* 1.6 – 1.0 m. at the Zion Chapel site and Borehole 01. The unit forms a drape over a pre-existing land surface sealing waterlain deposits at +0.30 m. O.D. at York Street Shaft, the Roman metalled surface at +6 m. O.D. at the Zion Chapel site, and deposits with reworked occupation debris in Borehole 01 at +6.85 m. O.D. The basal contacts of the unit onto underlying deposits are typically sharp and unmixed. This suggests the onset of sand deposition was relatively sudden and subsequent deposition rates were fast. Upper contacts of the sand unit are probably locally truncated and therefore total thicknesses as logged for the unit are minima as shown in Figure 21.

At the White Cliffs Experience site (Trench 12, Fig. 10), sand deposits also interdigitate with (Context 919), and overlie (Contexts 903, 904, and 905) poorly-sorted fine matrix supported and clast-rich (diamict) deposits (Contexts 902 and 911) within Trench 14 of the O.A.U. excavations. These deposits are thought to represent the direct collapse and subsequent downslope reworking of the fort wall structures and associated debris.

The results from the O.A.U. excavation at the site were supplemented by G.S.F. work. This included: stratigraphic recording, monolith sampling and the manual augering of two boreholes. Monoliths, and samples from the two boreholes were analysed by G.S.F. using standard methods (see Appendix I). Only the detailed analytical results from Borehole 01, located inside the eastern gate of the *Cl. Br.* fort, and just outside the southern perimeter of the Saxon Shore fort (see Fig. 2), are presented here (Fig. 22) and discussed in detail.

Borehole 01 (BH 01) was manually augered to a depth of 3.50 m. beneath present ground surface (+8.50 m. O.D.) using a Dormers light alluvial drilling kit with 50 mm. diameter sampling barrel. A total of 35 samples of 30–40 gr. wet weight were retrieved at nominal 5 cm. spacings down-profile. The stratigraphic profile is shown on Figure 11.

The sequence as logged (see Figs. 11, 21) comprised very well-sorted clean sands from surface to 0.95 m. depth, continuing to 1.65 m. depth with variable silt partings and occasional gravel inclusions. At 1.65 m. depth a sharp contact was logged, into more compact silts with high frequencies of fine gravel sized clasts of ceramics, tile and flint. This silt unit fined downwards to 2.75 m. depth where there was a transition into cleaner well-sorted silts underlain at 3.05 m. depth by archaeologically sterile clay-silts. The samples from BH 01 were then

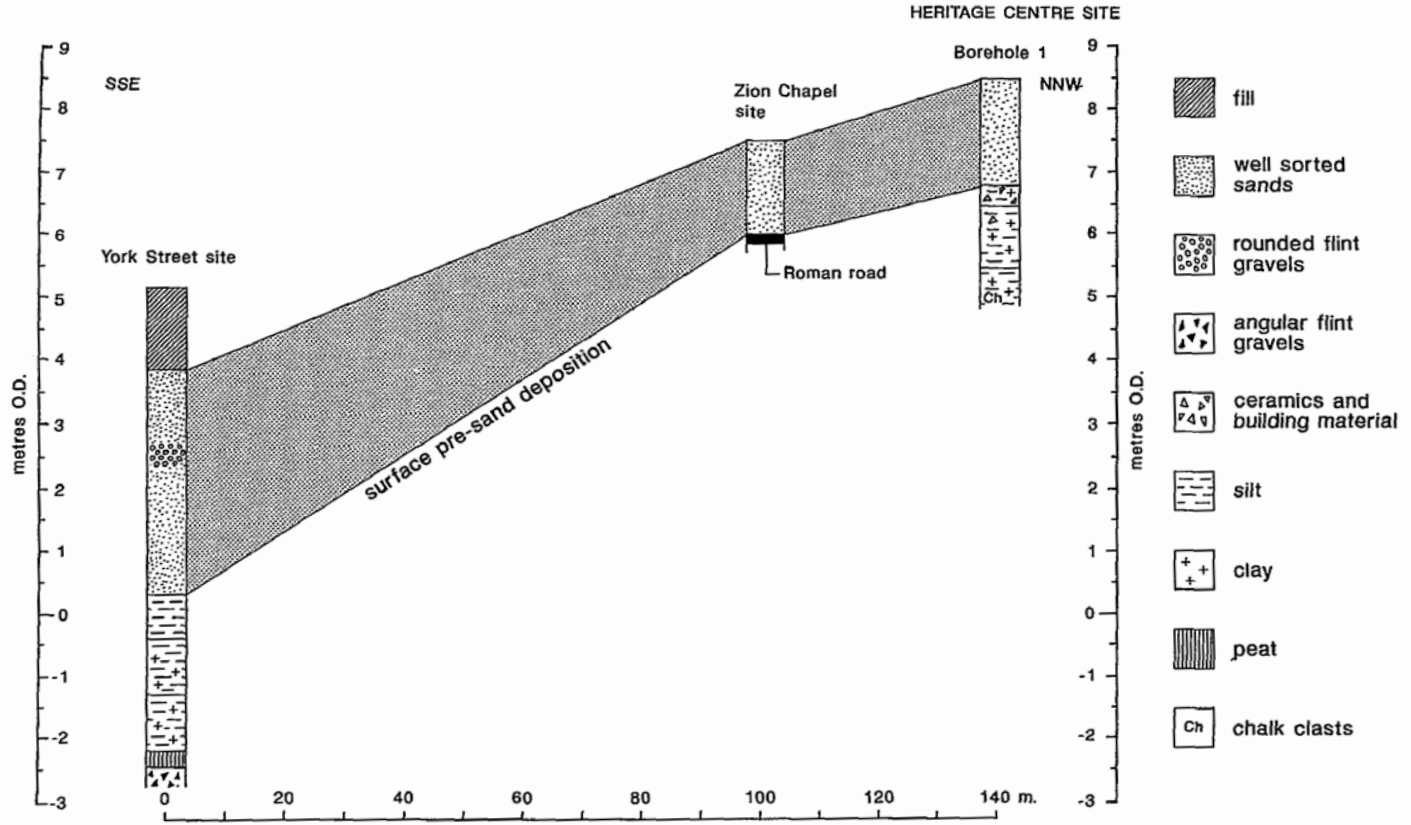


Fig. 21. North–south section across area south of the Saxon Shore fort (see Fig. 1 for location) showing minimum depths of extensive early medieval sand deposit.

analysed using a variety of sedimentological methods and analytical procedures (for details and discussion of results see Appendix I). The results are shown logged against depth down-profile in Fig. 22.

The results confirm the lithostratigraphic distinctiveness of the upper sand unit, and the sharp contact between this unit and the underlying silts, with variable clastic inclusions. The plotted profiles of moisture content and organic content (loss-on-ignition determinations) illustrate the uniform nature of fine sand fractions of the upper sand deposit, and confirm the sharp contact with underlying silts at 1.65 m. depth. The upper sand unit is well-sorted throughout, with a modal particle size of between 250 and 180 microns (fine to medium sand), and a slight skewing to the medium sand sizes in the 250–355 micron range (see Appendix I).

Chemical determinations of total phosphate, and measurements of mass specific mineral magnetic susceptibility (see Fig. 22), show rising trends through the lower silt units reaching maximum values for both parameters at depths of 1.65 to 2.30 m. depth in BH 01. Both properties are sensitive to, and proxy measures of, influxes of anthropogenically-modified sediment (see Appendix I for discussion). At the transition from the silts into the sands, both properties fall in value immediately.

These data confirm that the onset of sand deposition was relatively rapid and resulted in the sealing of poorly-sorted deposits which were rich in anthropogenic clastic material. The chemical and magnetic signatures are consistent with the lower poorly-sorted silt deposits being a downslope fine-grained lateral variant of the coarser units in Trench 14 (e.g. derived from Context 902, Fig. 10). This interpretation would suggest sand deposition commenced later than the sixth to seventh century A.D. in BH 01 (by comparison with Trench 14, where dated archaeological contexts are also overlain by sterile well-sorted sands).

CONCLUSION

Previous reports of the 'wind-blown' sands and the logs shown on Fig. 21 suggest that a drape of well-sorted medium to fine sand was deposited across a variable slope topography south of the sites of the Saxon Shore and *Classis Britannica* forts after the sixth to seventh century A.D. There is no natural source of well-sorted sands either upslope or up-catchment. The thinning of the sand deposit upslope as shown in Fig. 21 and its known geographic distribution suggest a source area to the south, in the vicinity of, or seawards of the junction of Town Wall Street and York Street. The particle size data (see Appendix I) suggest that although a significant component of the sand is wind-blown, it is not far travelled. These data are consistent with the

observation of well rounded gravels (likely to be a beach deposit) at *c.* +2.50 m. O.D. in the York Street Shaft, implying a high-energy beach and/or back-beach environment available as a source for deflating sand in the local area by the seventh century.

The beach/back-beach was probably located to the south of the present site of the York Street roundabout, fed by both longshore drift and fluvial outputs from the Dour catchment and linked to the distal ends of a southerly-migrating gravel beach bar. This palaeotopographic model is consistent with new stratigraphic data currently being analysed from the Dover A20 Road and Sewer scheme project (Bates 1993, Bates and Barham 1993) and earlier surveys of the lower Dour catchment (Barham and Bates 1990).

APPENDIX I

SEDIMENTOLOGICAL RESULTS FROM BOREHOLE 1 (BH 01)

The thirty-five sediment samples from Borehole 01 (BH 01) averaged 30–40 gr. wet weight when sampled, and were recovered as loose disturbed samples specific to 4 cm. depth increments of the borehole profile, nominally spaced at 5 cm. intervals down-core. The auger barrel enables retrieval of clasts up to 6 cm. in size measured along the 'a' long axis of the clasts. Particle size distributions are, therefore, restricted to retrieval of clasts smaller than coarse gravel in size. All samples were described in the field, air-sealed in plastic bags on-site, and then returned to the laboratory for analysis. Analysis was preceded by riffle splitting of air dried samples. Sub-samples were then processed through four separate procedures.

SAMPLE PARTICLE SIZE DISTRIBUTIONS

The bulk of each sample was dry-sieved on a Rotap mechanical sieve-shaker for twenty minutes at 0.5 phi[64] intervals from – 2.5 phi (5.6 mm.) to + 4.0 phi (63 microns), and the mass of each sieve fraction calculated as a percentage of total sample weight. This procedure was applied to each of the 35 samples and then the coarser than 500 micron fractions were hand-sorted under a binocular microscope to establish the presence/absence of inclusions, e.g. mollusca, tile, brick, mortar, ceramic.

Results from the particle size analysis clearly demonstrated two discrete deposits. From the surface to 1.65 m. depth all samples produced particle size

[64] 'phi' units are the standard scales used for particle size determinations, where the particle size is expressed as the negative logarithm, to the base two, of the diameter in millimetres.

distributions of unimodal type similar to that shown for a composite mean of three samples at depths of 0.45–0.60 m. in Fig. 23a. The distribution is well sorted to very well sorted with a single mode (and the median diameter) in the size range of 250–180 microns (medium to fine sand size). The distribution is weakly skewed into the medium coarse sand size range of 250–500 microns.

In contrast, all samples from beneath the contact at 1.65 m. depth exhibited distributions of extreme bimodal type. A composite mean distribution for three samples from between 2.55 m. and 2.80 m. depth is shown in Figure 23b. The samples are typically very poorly sorted in aggregate due to the bimodality, with two modes: a coarse mode of fine-medium gravel size (> – 2.5 phi) comprising approximately 20 per cent by mass, and a fine mode of silt-clay size (< + 4.0 phi) comprising 50–60 per cent of the sample by mass. Very significantly, no samples show any significant component in the fine-medium sand range. The bimodality is a consequence of the admixing of anthropogenically-derived clastic material (pot/tile/ceramic) within an otherwise well-sorted fine clayey silt matrix, which is devoid of significant sand size fractions.

These results indicate (i) the discrete nature of the upper sand unit and the lower poorly sorted clast-rich silt; (ii) the sharp unmixed nature of the contact at –1.65 m. depth down BH 01; and (iii) that the depositional processes responsible for forming the two units are different. The upper sand unit is similar in particle size distribution to an aeolian sand, but slightly coarser than a typical dune sand. Dune sands typically exhibit median sizes in the range 150–250 microns, whereas sand sheets exhibit a coarser mode in the range 250–500 microns (Tsoar and Pye 1987). Short distance wind transport from a coarser sand body source (e.g. a beach) source is inferred, with significant saltation of grains within 1–2 m. of the ground surface (Pye 1987, Nickling 1994). The lower unit could only be produced by a combination of natural processes such as downslope movement of clasts under gravity (or dumping) of the coarser fraction, interspersed with wash/creep processes producing the fine sand fraction. Importantly, there is no evidence of input of wind-blown sand to the lower deposit. It is, therefore, inferred that either aeolian processes were not effective in bringing the sand into the area from a southerly source when the lower unit formed (perhaps because no suitable beach source existed at that time, or extreme wind speeds were less), or the source existed but was more distant from the site (i.e. was further seaward).

Analysis of the hand-sorted coarser than 500 micron fractions showed very diverse microassemblages of tile, mortar, ceramic, bone, edible mollusca such as oyster, and (rolled subrounded) pottery fragments in the lower unit, and only small light particulates such as shell fragments, charcoal, uncharred plant fragments above 1.60 m. depth within the sand unit. This suggests downslope movement of deposits reworking from the area of the forts had ceased when the sand unit accumulated. This could be either (i) because the upslope source deposits had been buried by the sand sheet, and/or (ii) the increased slope permeability produced by sand accumulation had reduced the effectiveness of rainsplash and wash processes as a mechanism for reworking the upslope deposits.

LOSS-ON-IGNITION AND MOISTURE CONTENT

Small sub-samples were weighed into pre-fired crucibles and air dried to constant mass to calculate moisture content as a percentage of original sample mass. Results are shown in Fig. 22.

Loss-on-ignition (LOI) was calculated by firing the pre-weighed air dried samples at 550°C for two hours following the procedure of Dean (1974) and then calculating the loss in mass as a percentage of sample dry weight. Replicates showed a precision of within +/– 0.25 per cent on the values for all samples. The results show a very low organic content for all samples in the upper sand unit, typically in the range 0–1 per cent. The lower poorly-sorted silts show significantly higher values in the range 2–6 per cent, with a rise in organic content up-profile, and confirm the sharp, unmixed nature of the stratigraphic contact at 1.65 m. depth. Values for moisture content exhibit similar trends, with values of 2–6 per cent for the sands (except for a silt-rich lens at 0.65 m. depth) and 15–23 per cent for the poorly sorted silts. These higher values reflect both the organic and silt contents in the lower unit.

MINERAL MAGNETIC SUSCEPTIBILITY

Samples were run on a Bartington MS2 susceptibility meter at a setting of 0.1 measured in SI units. All samples were run as constant volumes and the susceptibility values normalised to a mass constant of 10 grammes. Results are therefore expressed as mass specific susceptibility values (chi) where mass specific susceptibility equals volume susceptibility divided by density, and has units of $m^3\ kg^{-1}$ by convention (Thompson and Oldfield 1986, 25).

The magnetic susceptibility of sediment samples is known to be increased by both natural pedogenesis in topsoil and by heating/firing of natural minerals, which enhance susceptibility through the production of secondary magnetic oxides (Thompson and Oldfield 1986). Addition to the sediment matrix of fired materials, e.g. ceramic and slag, will have a similar effect. The increase in mass specific susceptibility by an order of magnitude (from $<10 \times 10^{-8}\ m^3\ kg^{-8}$ to $>30 \times 10^{-8}\ m^3\ kg^{-8}$ SI) between 2.4 m. and 1.65 m. depth in BH 01 (see Fig. 22) is, therefore, interpreted as a function of sediment input from reworked contexts in the area of the forts. Enhancement reflects high secondary magnetic oxides in both fine grain sizes and clastic anthropogenic debris, possibly associated with weak pedogenesis in the upper part of the silt unit (1.65–2.0 m. depth).

TOTAL PHOSPHATE CONCENTRATIONS

A number of the riffled sub-samples was analysed to determine total phosphate concentrations. The procedure involved combustion of pre-dried, crushed 0.5 gr. samples sieved to remove material coarser than 0.5 mm. Combustion at 600°C for 30 minutes mineralised any organic phosphate present to inorganic

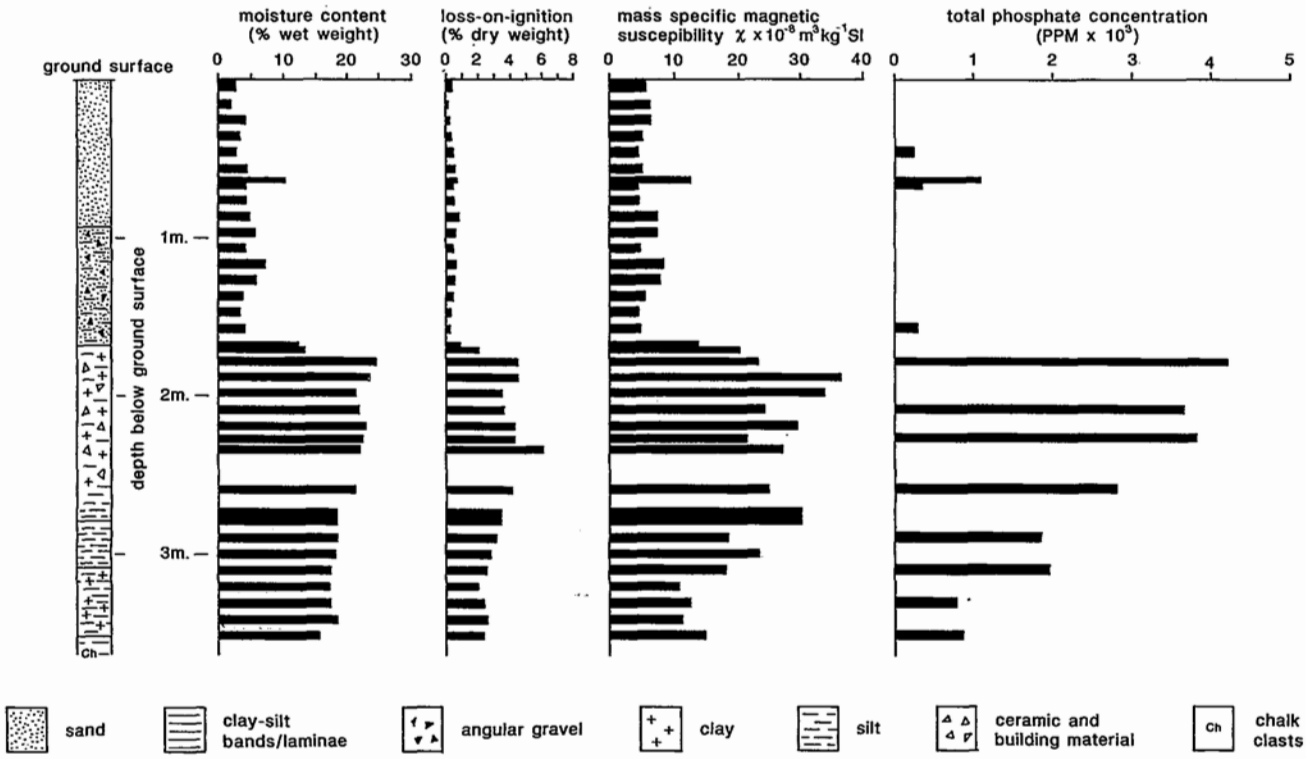


Fig. 22. Analytical data for Borehole 1, showing (i) percentage moisture content; (ii) percentage organic content (LOI at 550°); (iii) mass specific magnetic susceptibility; and (iv) total phosphate concentrations; all logged against stratification and depth.

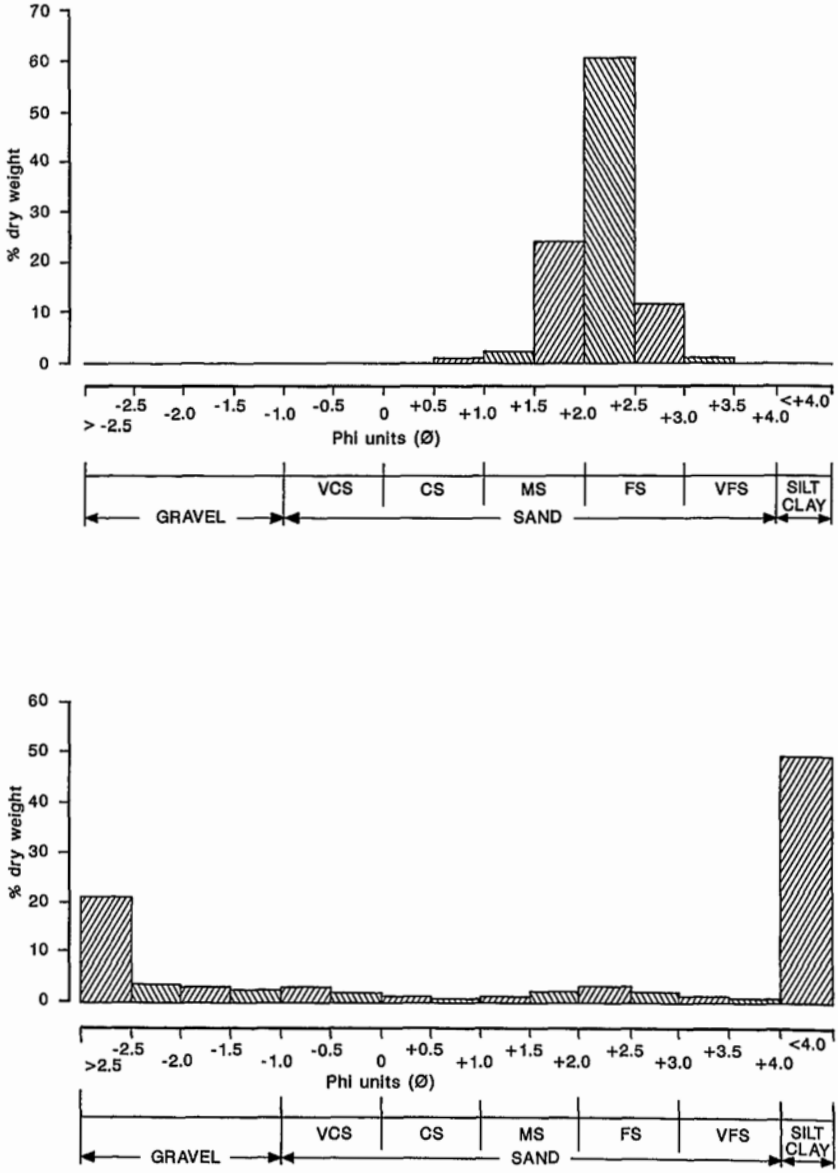


Fig. 23. Particle size distributions for 0.5 ϕ (phi) intervals for Borehole 1: (a) for a composite sample of well-sorted sands 0.45–0.60 m. depth, and (b) very poorly-sorted silt unit at 2.55–2.80 m. depth.

phosphate. Phosphate values were determined using vanadomolybolate reagent on a spectrophotometer at a wavelength of 470 nannometres, to give sample values as Total Phosphate (total P) in parts per million (ppm).

Results (see Fig. 22) show a steady rise up-profile from a background of <1000 ppm at 3.2–3.5 m. depth, to *c.* 2000 ppm where ceramic debris increases in frequency in the lower silt unit, reaching maximum values of 3500 to 4000 ppm in the upper part of the lower silt unit. This horizon was rich in ceramic, mortar, and edible shell fragments in the coarser than 500 micron fraction. There is close correspondence between the magnetic susceptibility profile and total P results for the lower silt unit. Values in the overlying sand are less than 500 microns except where a silt unit occurs at 0.65 m. depth.

It is well established that phosphate values in soil profiles and archaeological contexts can be enhanced by additions derived from domestic refuse, food wastes, plant and animal remains, excreta and/or deliberate applications of manure (Cook and Heizer 1965; Proudfoot 1976, 93–5). Such gains tend to be persistent due to the low solubility, and limited movement within a stratigraphic profile, of phosphates. Such persistence has been recorded previously from buried stratigraphy of Roman age (Mattingly and Williams 1962).

The data produced from BH 01 (see Figs. 22, 23a and b) suggest a phosphate-rich sediment source, or direct input, to the upper parts of the lower poorly-sorted silt unit, and minimal concentrations in the overlying sand unit. The highest values correlate with highest magnetic susceptibility values and high frequencies of anthropogenic clastic debris. This is consistent with the sediment being the downslope lateral variant of the collapsed wall contexts of the Saxon Shore fort, and thus deposition of the unit being contemporary with, or post-dating abandonment of the fort structure.

CONCLUSIONS

Two main conclusions are drawn. First, geoarchaeological methods can stratigraphically link the off-site sediment sequence in the periphery of the forts to probable source contexts within the excavated area of the Heritage Centre site, using geochemical, textural and magnetic properties. Secondly, the onset of sand deposition sealed a landsurface on which substantial degradation of the Saxon Shore fort had already taken place, and aided the preservation of the remaining built structures of the fort. The onset of sand deposition was relatively sudden, producing a sheet cover of well-sorted sands over a wide area, and resulted from deflation of a beach or back-beach landform located to the south of the present York Street roundabout. The onset of sand deposition took place some time after the sixth to seventh century A.D.

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