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Pottery from the Whitehall garden, Cheam, and its place in the medieval Cheam whiteware industry

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*The garden of Whitehall (1 Malden Road, Cheam) was excavated by the Nonsuch Antiquarian Society from 1978 to 1980 in advance of its restoration for public access. The main feature of the garden was a deep chalk-cut well, thought to be roughly contemporary with the house (*c *1500). The main archaeological finds were a large quantity of pottery, including several thousand sherds of Cheam whiteware, most of which were from a large pit around the well. The deposit appears to be a secondary dump of kiln waste. The pottery was catalogued and quantified by volunteers in the* Time Cheam *project (2010–12), together with fragments thought to be from the structure of a kiln. The analysis has created a percentage breakdown of the forms produced, and provides the basis for an attempt to sequence the various kilns and dumps found in Cheam since the 1920s. It also extends the range of forms and constructional and decorative techniques known in the Cheam whiteware industry. There is further evidence of the constructional details of the kiln(s), but much remains an enigma.*

Background

ARCHAEOLOGICAL CONTEXT

The village of Cheam has been known as a source of medieval pottery since 1923, when a kiln and associated pottery were found in the garden of a house in Parkside (Marshall 1924). Further pottery finds were made in the 1930s and 40s north and south of the High Street (Marshall 1936, 73–4; 1941), and in 1969 two kilns were excavated by Martin Morris for the Nonsuch Antiquarian Society (NAS) at 15–23 High Street (site code CA69), one of Marshall's findings (Orton 1982) (see fig 1 for locations). All the kilns were of the double-flue updraught type (Musty 1974 type 2c); the Parkside and the earlier of the High Street kilns appear to have been dug into the subsoil, while the later High Street kiln (which had been cut into the earlier one) had been constructed of Reigate stone blocks and bricks (Orton 1982, 75). The Parkside kiln was unique in that, as reconstructed by Marshall (1924, 81), it included a framework of linked fire-bars rising from the central pedestal and curving to meet the kiln wall. This reconstruction led to much debate and some scepticism (eg Orton 1991) since no similar structures have been discovered in kilns excavated subsequently in Britain.

The main products of the kilns appeared to be jugs and other forms, such as cooking-pots, small dishes, and lids, in a fine sandy white-firing fabric with a sparse green glaze that became known as Cheam whiteware and seen as an aspect of the Surrey whiteware industry (Pearce & Vince 1988, 68–77). However, the later High Street kiln produced a completely different range of forms in a red/grey firing fabric known as Cheam redware (Orton 1982, 65–71, 78).

None of the kilns produced any intrinsic dating evidence, and it was not until excavations of the Thames waterfront in London in the 1970s and 80s that firm dates were provided by dendrochronological analysis of the waterfront timbers behind which much contemporary rubbish (including pottery) had been dumped. These suggest the presence of Cheam whiteware in London between *c* 1360 and 1440 (Milne & Milne 1982, 92–9), with evidence from elsewhere of continuation into the late 15th century (Pearce & Vince 1988, 17–18 and 90).

Several questions about the Cheam whiteware industry remain unanswered: such as its extent, scale, organisation and distribution of its products, and specific ones such as the validity of Marshall's controversial reconstruction.

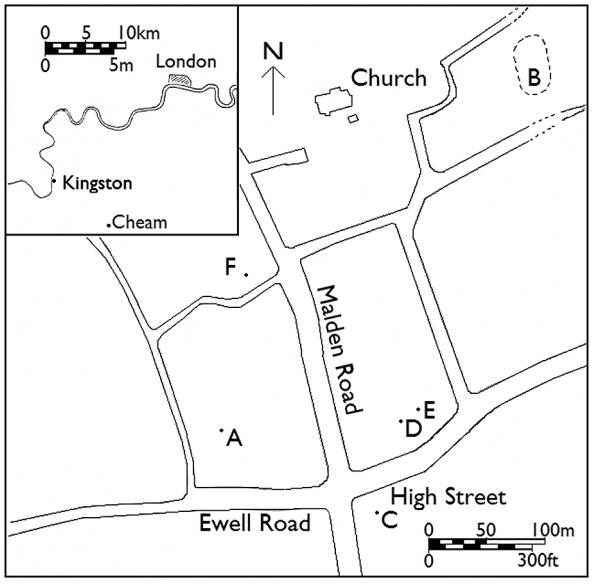


Fig 1 Cheam pottery. Site location plan of Cheam village. Key: A = Parkside, B = clay pit thought by Marshall to be the source of the clay used at Parkside, C = *The Harrow* inn, D = 19 High Street, E = 23 High Street, F = Whitehall.

CIRCUMSTANCES OF EXCAVATION

Whitehall (1 Malden Road, Cheam; TQ 242 637) is a timber-framed building dating to *c* 1500 or a little later (Bradley 1978, 3), with many later additions. It is owned by the London Borough of Sutton (LBS) and has been opened to the public under its management, with the support of the Friends of Whitehall (FoW), since 1978. The works needed to make the building accessible to the public included the renovation of the garden and restoration of a deep well and its surrounding area, thought to be either contemporary with the building, or dating to *c* 1400 and related to a putative earlier building on the site.

The well was located within a large pit cut into the natural Thanet Sand (here about 1.5m deep above the Upper Chalk). The backfill of this pit can broadly be described as 'hardcore'; more specifically, it appeared to include much debris from a medieval kiln site.

The opportunity was taken to excavate most of the back garden, especially the well pit. The work was undertaken in 1978–80 by the NAS under the direction of Norman Nail (site codes WH78 to WH80). A large quantity of finds, including several thousand sherds, was retrieved. Much of the pottery consisted of Cheam whiteware. Norman Nail suffered a serious traffic accident towards the end of the excavation period, and the work was completed by others, principally Stephen Nelson. Norman Nail later retired to Cornwall, where he died in 2000.

POST-EXCAVATION HISTORY

Some initial work was done in sorting the finds and washing and marking the pottery, but it was then stored by the LBS because of the lack of facilities to process it further. Many years later, the present author had already written up and published CA69 (Orton 1982) and was approached to see whether the same could be done for this site. Discussions led to a programme, known as the *Time Cheam* project, to start in 2010 under the joint aegis of the LBS Museum and Heritage Service and the Carshalton and District History and Archaeology Society (CDHAS), since the CDHAS had taken over responsibility for Cheam

from the NAS (now Epsom and Ewell History and Archaeology Society (EEHAS)). The methodology is described briefly below, and in more detail by Orton (2014).

SURVIVING SITE RECORDS

There were three sources of information about the excavation itself:

(a) Site plans and section. There was a sketch plan of the site (fig 2), before the end of the excavation; a more detailed plan of part of the site (fig 3), drawn later in the excavation, and an east–west section of part of the site (fig 4).

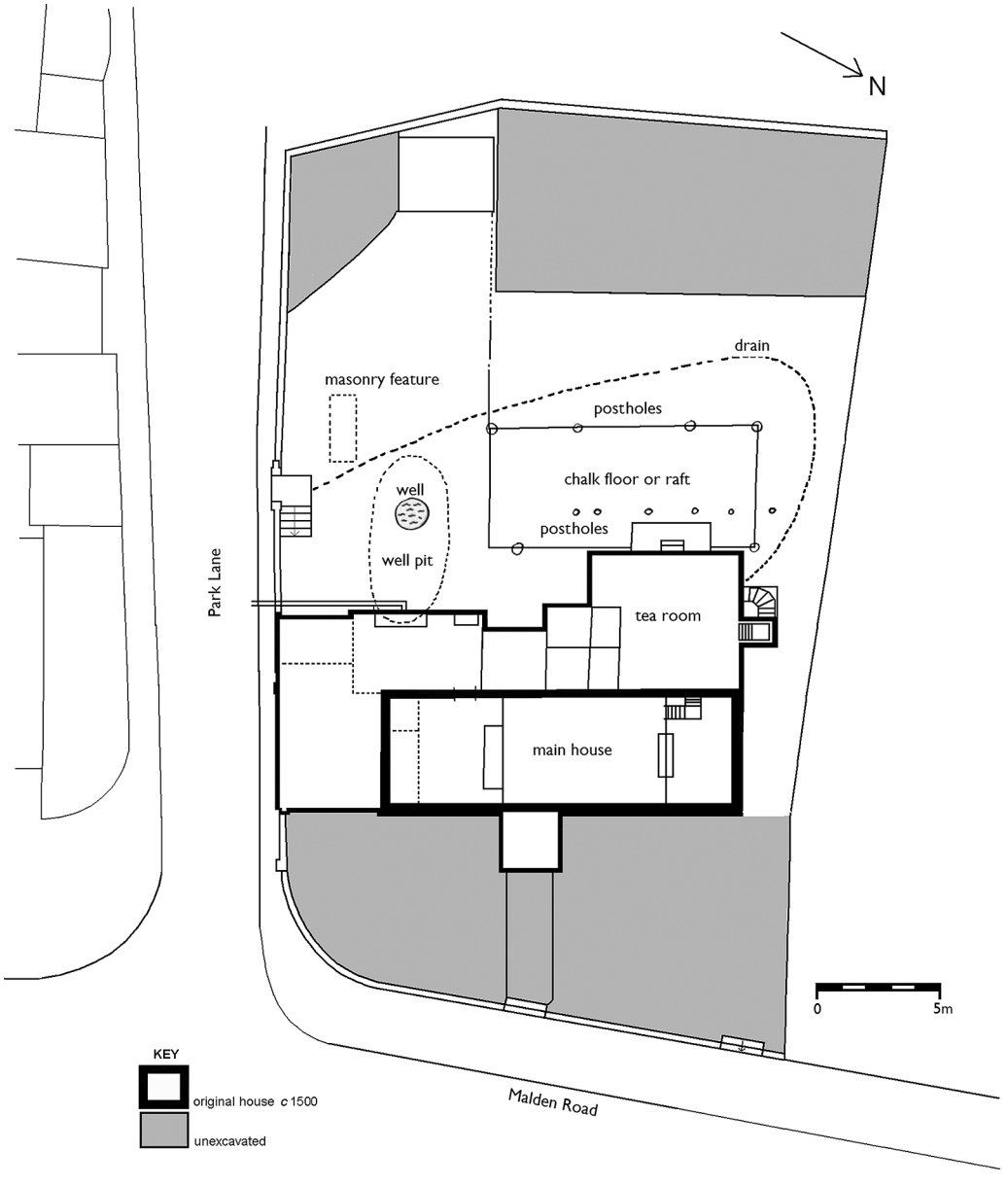


Fig 2 Cheam pottery. Overall plan of Whitehall, its garden and the excavation area (drawn by Norman Nail).

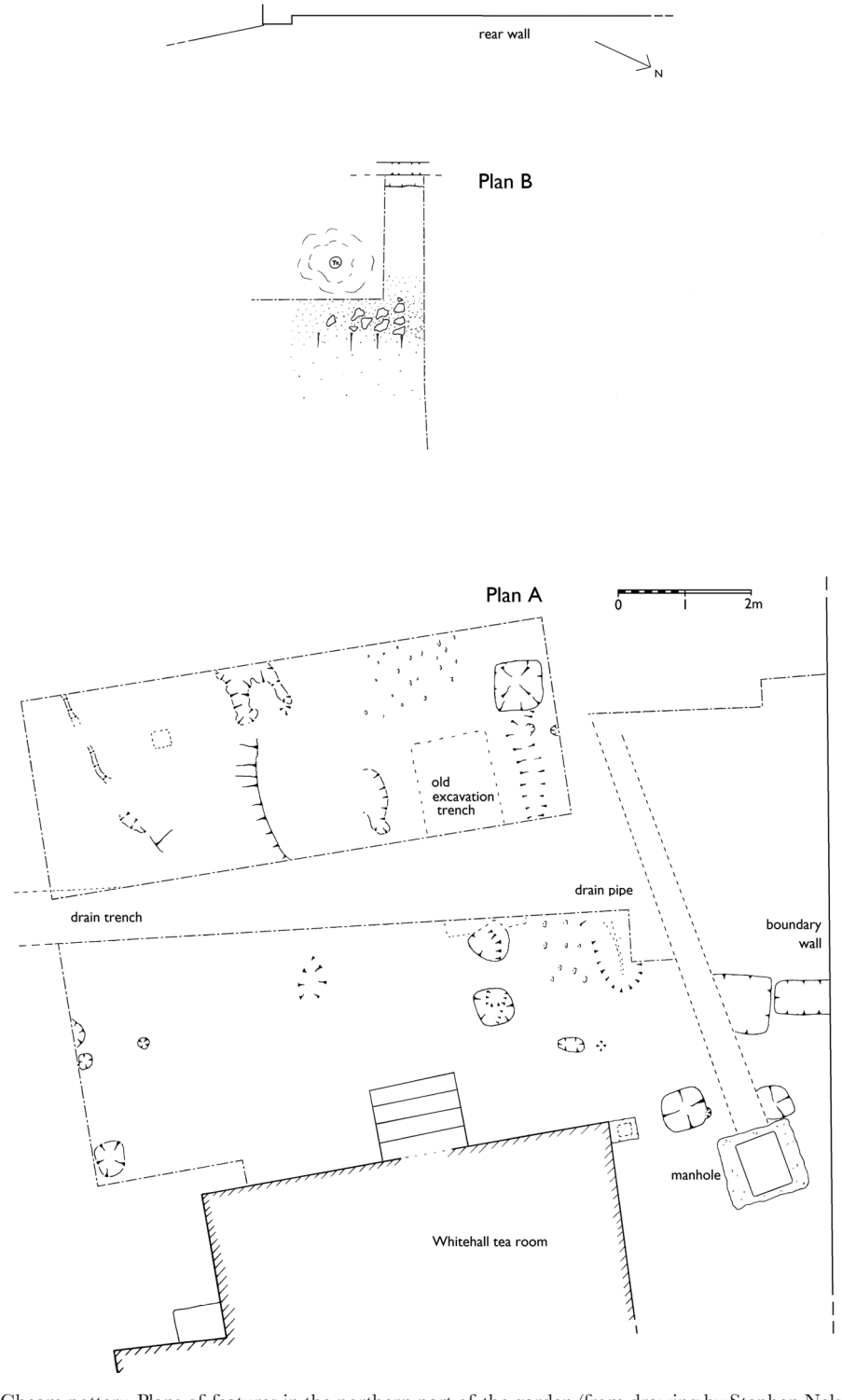


Fig 3 Cheam pottery. Plans of features in the northern part of the garden (from drawing by Stephen Nelson).

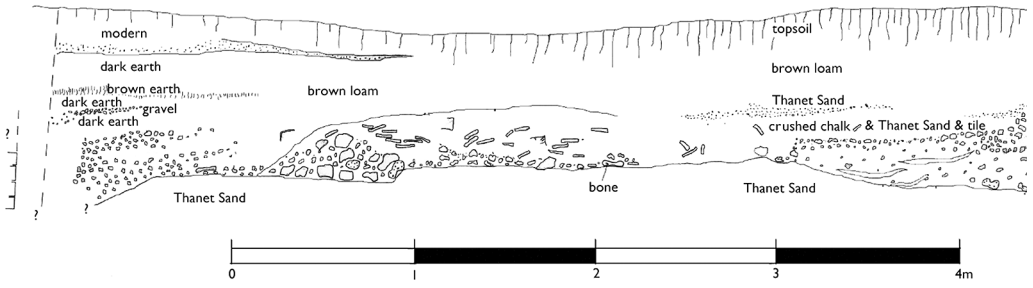


Fig 4 Cheam pottery. Section (from a drawing by Stephen Nelson).

(b) The finds had been stored in trays, most of which were accompanied by a handwritten label. The general format was: site code, context number, brief description and relationships to other contexts and some site features (such as trees). Some abbreviations were used, but they could generally be decoded (eg wst = west).
(c) Photographic record. A collection of 24 colour prints and 51 colour slides, all of which have been digitised. Allowing for duplicates, there are about 50 distinct images, many of which relate to the house as exposed by the excavation. No original listing or index survives.

There was no further documentation, nor could anyone present at the excavation remember the existence of any. This was ascribed to Norman Nail's reliance on his photographic memory and his accident towards the end of the excavation.

DOCUMENTARY EVIDENCE

The earliest record of potters working in Cheam dates to 1374, when 'And to John Pottere of Chayham for two crests made like Knights riding, bought for the hall there at 1s. each, 2s.' appears in the building accounts for Banstead Manor (translated from Exchequer Accounts QR 494, No 18, 46–47 Edw III by Lambert (1912, 129) and re-quoted by Marshall (1936, 73).

Research recently undertaken on behalf of the Merton Historical Society (MHS) has revealed the names of three medieval potters in Cheam (WAM 1833). In documents dating from 1393 to 1397, Walter Potter (also named as William Potter) and Nicholas and Richard Waterservant are mentioned as 'potters of East Cheam', in connection with a case of assault and trespass in the common pasture called Sparwefeld (Sparrowfield) in the North Cheam area. Waterservant may be a misrecording for 'Walter's servants'; if so, Walter the master potter may have had two assistants working for him. Interestingly, Walter Potter and a John Gerard were presented for trespass *with their sheep* (author's italics). This supports the view that potting here was a part-time activity, carried out by people who also farmed, although which of the two was considered to be their primary activity is difficult to say.

There is doubt about in which of the two Cheam manors (East Cheam and West Cheam) Whitehall was located. Topographically, one would expect it to be in West Cheam, but the evidence from Merton (see above) and elsewhere (Anon 1908) suggests East Cheam. According to the TNA Manorial Documents Register there are no known surviving records relating to East Cheam manor for the 14th and 15th centuries, but there are some (non-continuous) court rolls for West Cheam covering the period 1364–98.

Methodology

SITE RECORDS AND PHOTOGRAPHS

The information from the tray labels was collated onto an Excel spreadsheet, giving details of: trench and extension (if any), brief description, equivalent contexts, feature number (if

any), horizontal and vertical relationships. Not all labels contained all types of information. From the vertical relationships, small stratigraphic groups could be constructed. The contexts were divided into four groups on the basis of their descriptions and horizontal and vertical relationships:

(a) the fill of the well pit
(b) the fills of various drain cuts
(c) soil layers
(d) other 'features'.

No account was taken at this stage of information about context assemblages. In the course of this work, some ambiguities and inconsistencies were found (usually as a result of context assemblages being stored in more than one tray, with possibly inconsistent labelling); in the absence of further evidence, arbitrary decisions had to be made.

Group (a) are characterised primarily by their horizontal relationships: either north, east, south or west of the well, or adjacent to it. The most common description is Thanet Sand; others include well pit fill, black earth and rubbish/building material, kiln debris/daub, and chalk and tiles.

Group (b) are all described as fill of a drain trench (drain numbers 3 and 5 are given, but some contexts have no drain number). Four contexts are referred to as parts of Features 1, 2, 12 and 22, and two are described as adjacent to the well pit.

Group (c) are generally characterised by a lack of information, other than being described as black earth, brown earth or topsoil. Some have the vertical relationship of above chalk floor/raft, and some have horizontal relationships to parts of the house, to Park Lane, to the north boundary wall, to the chestnut tree, to the well pit, or to Feature 1. There are several equivalences (mostly to contexts 1 and 2).

Group (d) are characterised mainly by being assigned a feature number as well as a context number, but features that could be assigned to other groups (eg group (b)) were put in those groups. This group also includes contexts that were below features but which did not themselves have feature numbers (eg below cobbles). Descriptions vary: black earth, dump and fill are common.

The earlier site plan (fig 2) showed the location of the well and well pit, a drain running from the north of the house before turning south-east to cross the garden to the Park Lane entrance, and a masonry feature just to the west of this drain. Several apparent postholes are shown to the west of the northern part of the house (the 'tea room'), joined up to form the rectangular outline of what was thought to be an earlier building. The later plan (fig 3) shows (a) the area west of the tea room, with two drain trenches and several small cut features, and (b) a small area in the extreme west of the site. The cut features do not appear to correspond to the postholes shown in the earlier plan. The section (fig 4) appears to be the northern section of area B shown on the later plan. None of the plans and sections gives any evidence for context or feature numbers.

It proved possible to identify the location and direction of almost all the photographic images, but it was not possible to link the features shown in the images with the feature and context numbers on the labels.

FINDS PROCESSING AND INTEGRATION

These sections are available online (see *Endnote*).

Description of the site

GEOLOGY

The site is located on a stratum of Thanet Sand, which here runs approximately east–west. Its thickness is variously reported, but appears to be about 1.5m. Beneath it lies a much

thicker layer of Upper Chalk. The well was dug through the Thanet Sand and into the Upper Chalk, to reach the water table at a depth of about 20m. This geology may explain the need for the main archaeological feature of the site: the well pit.

THE WELL AND ASSOCIATED FEATURES

The well shaft is cylindrical in shape; the excavator believed that it would not have been possible to dig a vertical shaft through the sand without its sides collapsing into the shaft. In his view, it was therefore necessary to dig a conical hole through the sand to the top of the chalk, battering the sides back to beyond the sand's angle of rest. Once the shaft through the chalk had been dug, the well could have been completed by constructing a stone-block section of shaft up from the top of the chalk to the ground level. However, this would have left a very inconvenient space between the top of the shaft and the surrounding ground surface; this space is here called the well pit. It would have been necessary to backfill this pit before the well could be used, and it is from this backfill that the majority of the finds of archaeological interest derive (see below). This interpretation is challenged and discussed below (see *Interpretation*).

The well had been capped by a previous tenant of the house with a thick layer of concrete (described in some contexts labels as octagonal). An attempt had later been made to dig into the side of the well below the capping, leaving a large hole in the stonework. Later still, this hole had been bricked up (fig 5). The well fill was excavated in about 1982, but the finds were not available for this project.

A list of all the features and contexts can be found online (see *Endnote*). A brief list of features referred to in the text is given below:

Well pit fill
F1 chalk floor
F8 below the fill of drain trench 3
F14 dump
F20 posthole associated with F1
F35 uncertain
F37 black earth and chalk.

Fig 5 Cheam pottery. Repair to well, looking north (photograph: LBS archives).

Pottery and kiln fragments

PREHISTORIC, ROMAN, AND MEDIEVAL POTTERY OTHER THAN CHEAM WARE

Prehistoric

Three sherds of a flint-tempered ware, possibly of Iron Age date, were recorded, weighing 14g (average 4.7g). All are from the well pit.

Roman

A total of 23 sherds of Roman pottery were recorded, weighing 212g (average 9.2g). The majority (fifteen sherds) are from soil layers or are unstratified, seven are from the well pit and one is from F8 (=[36]) which, however, contains a majority of modern pottery. There are no fine wares and no feature sherds, and closer dating is not possible. There is no evidence of spatial concentrations.

Medieval pottery other than Cheam whiteware

The pottery was classified using a simplified version of the Museum of London Archaeology (MOLA) fabric, form and decoration codes (MOLA 2014) and quantified by sherd count, estimated vessel equivalent (EVE) and weight.

A total of 321 sherds were recorded, weighing about 3.6kg (average 11.2g). In roughly chronological order, these are:

(a) Shelly ware (simplified code SHEL), possibly Roman rather than medieval. Five sherds (62g, average 12.4g), three from the well pit and two from soil layers. All are body sherds of unidentified form.

(b) Shelly-sandy ware (MOLA code SSW, date 1140–1220: Blackmore & Pearce 2010); two sherds (13g, average 6.5g) from the well pit.

(c) Various 'early medieval' wares (MOLA codes EMS = early medieval sandy ware, date 970–1100, EMSH= early medieval shell-tempered ware, date 1050–1150, EMGY= early medieval gritty ware, date 1080–1200 and undifferentiated simplified code EMED); 143 sherds (1325g, average 9.3g, 0.49 EVEs). Over half (85 sherds) are from the well pit; of the rest, most (36) are from soil layers, with thirteen from drain fills and nine from various features (including three from the chalk floor F1). Most are body sherds of unidentified form; there is also a bowl profile and a rim, a cooking-pot rim and three bases, and a rim of unidentified form.

(d) Medieval greywares (MOLA codes LIMP = Limpsfield-type ware, date 1150–1300, SHER = south Hertfordshire-type greyware, date 1170–1350: Blackmore & Pearce 2010); 83 sherds (827g, average 10.0g, 0.11 EVEs). Most are from either soil layers (38 sherds or from the well pit (37 sherds); there are also five from features (including four from F35) and three from drain fills. Most are of body sherds of unidentified form; there are also a rim sherd, a base sherd and four jug handles.

(e) London-type wares (MOLA codes LOND = London-type ware, date 1080–1350 and LLON = late London-type ware, date 1400–1500: Pearce *et al* 1985); eleven sherds (123g, average 11.2g), six from the well pit, four from soil layers and one (the LLON sherd) from F35. All are from jugs and all have glaze and/or slip, except for the late London-type ware sherd (LLON).

(f) Earlswood-type ware (MOLA code EARL, date 1200–1400: Turner 1974); 30 sherds (197g, average 6.6g). Most are from either the well pit (sixteen sherds) or from soil layers (twelve sherds); there are also two from F35. Five sherds are from jugs and one from a bowl; the rest are of unidentified form. There is one base sherd but no rims.

(g) Kingston-type ware (MOLA code KING, date 1240–1400: Pearce & Vince 1988, 19–52). Twenty sherds (242g, average 12.1g, 0.26 EVEs), about half (eleven sherds) from the well pit, seven from soil layers and one each from F35 and F37. Four sherds were identified as coming from jugs, three from cooking-pots and one from a cup, the rest were unidentified. One rim sherd (from the well pit) was of a highly decorated jug (MOLA code KING HD).

(h) Mill Green ware (MOLA code MG, date 1270–1350: Pearce *et al* 1982). One unstratified jug handle (41g).

(i) Tudor Green ware (MOLA code TUDG, date 1350–1500: Pearce & Vince 1988, 79–81). Despite its name, this ware is now regarded as late medieval in date. Two sherds (6g, average 3.0g).One unstratified and one from a drain fill. No forms can be recognised.

(j) Coarse Surrey-Hampshire border ware (MOLA code CBW, date 1270–1500: Pearce & Vince 1988, 52–68). Twenty-four sherds (764g, average 31.8g, 0.16 EVEs); just over half (fourteen sherds) are from the well pit. The remaining ten sherds are from soil layers. Three sherds are rims, two probably from cooking-pots and one smaller one. The rest are body sherds of unidentified forms.

The distribution pattern across the context types is remarkably consistent.

KILN MATERIAL

Cheam whiteware

Fabric

The fabric has been described in detail by Pearce and Vince (1988, 10). In summary, it is buff in colour with either oxidised or reduced margins; it is hard, with a rough feel but a fine texture. The inclusions are abundant quartz, up to 0.25mm in size, with sparse iron minerals and flint, and abundant very small flecks of white mica. The glaze is very variable, both in colour – dark green, light green or yellow – and texture, from thick and glossy to thin and pitted.

The source of the white-firing clay is generally thought to be the Reading Beds (Pearce & Vince 1988, 11; Newell & Hughes 2003), which run in a narrow band roughly east–west across Surrey and pass through Cheam. More specifically, Marshall (1924, 82) suggests that 'a large ancient clay pit at the back of Cheam Church' was the local source. This is shown as an 'Old Chalk Pit' on the 1st edition OS map of 1868, but appears to have been destroyed in the construction of the Sutton by-pass in the 1920s. Other sources in Cheam are of course possible.

Experiments by Newell and Hughes suggest that this clay can be fired to stoneware temperatures (1240–1260°C), although a firing temperature of between 950 and 1100°C seems more likely in the medieval period, particularly as lead glaze has a practical limit of about 1100–1150°C (Newell & Hughes 2003). They make the point that Cheam ware is almost impermeable, and might be called 'near-stoneware'. In other words, the glaze is not needed to make the pottery impermeable, and can be seen as purely decorative.

Stratigraphy

A total of 18,511 sherds were recorded, weighing about 183.2kg (average 9.9g), measuring 178.4 EVEs, giving a brokenness statistic of about 104 sherds/EVE. The brokenness statistic gives the average number of sherds into which vessels have been broken (Orton & Hughes 2013, 206). The average weight per EVE (ie estimated average vessel weight) is about 1.03kg.

About 65% of the Cheam whiteware (CHEA) is present in the well pit, about 15% in the soil layers or is unstratified, about 11% is in the drain fills and 9% in the features (all measured by EVEs). The percentage in the well pit is higher than for most other wares (as one would expect), except for Cheam redware (CHEAR) at 68%. However, this percentage is based on a relatively small total and the difference is not statistically significant. The average sherd weight and brokenness statistic of CHEA in the well pit are very close to the overall figures (9.8g and 107 sherds/EVE, respectively). The proportion of CHEA in the drain fills is higher than that of other major wares, perhaps reflecting the way in which some drain cuts intersect the well pit. The amount in the features is relatively low at 9%, and over half (5.6%) can be accounted for by one feature, F35 = [85], which has an assemblage almost entirely composed of CHEA (97% by sherd count, 99% by weight), which is unusually complete (average sherd weight 22.9g, brokenness statistic 39 sherds/EVE).

It is interesting to compare the different types of context in terms of the proportions of CHEA in each of them (table 1).

Table 1 shows that most of the contexts with a very high proportion of CHEA are from the well pit, while most of the contexts with very low proportions are either soil layers or features. In this sense, the well pit contexts are the most 'primary', but on the other hand their assemblages are no less broken than those from the other contexts. An unusual aspect of this table is the third peak in the distribution at 30–40%, apparently due to a peak here in the features column. No reason has yet been advanced for this unusual trimodal distribution.

Table 1 The numbers of contexts of each type with up to 10% CHEA, 10–20% CHEA, etc (measured by sherd count)

%	Well pit	Soils	Drains	Features	Total
≤10	–	12	–	7	19
≤20	–	3	3	–	6
≤30	–	3	1	3	7
≤40	3	3	–	8	14
≤50	1	2	1	3	7
≤60	2	1	–	1	4
≤70	2	1	1	1	5
≤80	3	–	3	1	7
≤90	3	2	1	1	7
100	13	2	–	3	18
Total	27	29	10	28	94

Forms

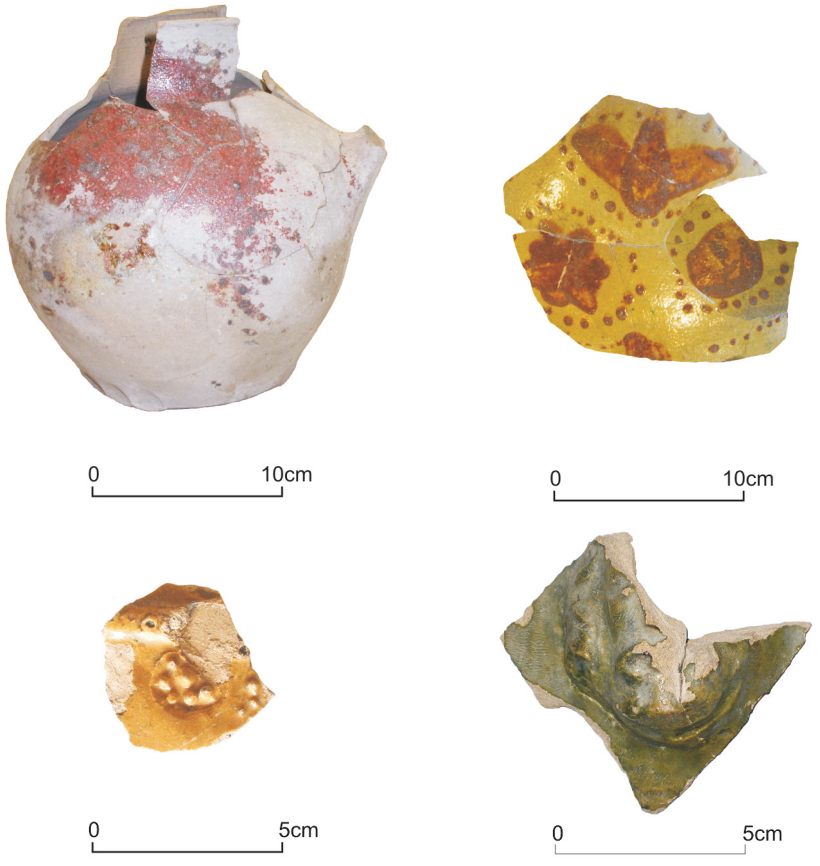
The terminology used here is that of Pearce and Vince (1988), and may differ from that of earlier reports, for example Marshall (1924) and Orton (1982). A main interest in this assemblage is the opportunity it provides to estimate the relative proportions of the different forms in a 'production' assemblage (bearing in mind that the proportions of wasters may not coincide with the proportions in production, but this is probably as near as is possible).

The most common forms are two types of jug also known from the Parkside and High Street sites, biconical jugs (JUG BICON) and rounded jugs (JUG RND), and small dishes (DISH). Together, these two jug types comprise about 90% of the total assemblage, with BICON outnumbering RND by about three to one. The dishes comprise about a further 5% of the total assemblage, with 'minor forms' making up the total.

The biconical jugs match well with earlier descriptions, especially that of Pearce and Vince (1988, 69). They are small, with rim diameters generally in the range 40–100mm, with a very few smaller ones and a few ranging up to 160mm, and base diameters in the range 40–100mm, with a few ranging up to 140mm. They have rod handles, and there is evidence for the distinctive method of attachment called 'skewered' by Marshall (1924; see also Pearce & Vince 1988, 73), although a minority of rod handles were attached by means of an inverted V-shaped cut in the lower body. Glaze is patchy, apparently confined to 'bibs'. Decoration is rare, and where it does occur it is limited to horizontal incised grooving or combing.

The rounded jugs are generally larger, with rim diameters generally ranging from 80 to 140mm, with a few as small as 60mm or as large as 160mm, and base diameters mostly in the range 100–140mm, but ranging from 60 to 200mm. Pouring lips or spouts are present but not common, suggesting that not all had one. They differ from the JUG RND previously recorded at Cheam in that a substantial minority (between 30 and 40%) have sagging bases with thumbing, apparently in groups of two or three impressions, and very rarely four. They have strap handles, often with stabbing that may be of a distinctive 'pin-hole' size. These features are demonstrated on a small and over-fired example from the well pit (fig 6; this jug is not drawn because it cannot now be located). In general, both glaze and decoration are more common and varied than on the biconical jugs. There are examples with large expanses of glossy glaze (both green and yellow), and other examples with red-painted decoration. Particularly distinctive are sherds with red-painted decoration under a glossy yellow glaze (fig 7), and a sherd with similar glaze decorated with prunts (fig 8). Of special interest is a sherd with the image of a human (royal?) head stamped on a boss (fig 9); the design, but not the technique, can be exactly matched at Kingston (Hinton 1980, no 28).

Because of the very fragmentary nature of much of the assemblage, a large number of jug sherds could not be identified to further than just JUG. The rim and base sherds were re-



Figs 6–9 Cheam pottery. 6 (top left): Near-complete CHEA JUG RND; 7 (top right): Decorated sherds of CHEA JUG RND; 8 (bottom left): Sherd with prunts; 9 (bottom right): Sherd with 'head' (photographs: *Time Cheam*).

allocated to either JUG BICON or JUG RND according to their diameter. For example, of the base sherds with a diameter of 100mm that could be identified as either JUG BICON or JUG RND, 40% were BICON and 60% were RND, so of the JUG base sherds of this size, 40% were allocated to BICON and 60% to RND. This was done for each size of rim and of base, and the results were summed to give estimates of the total sherd counts and EVEs for each form, and hence their relative percentages.

The only other common form is the small dish (DISH), sometimes called 'saucer' (Pearce & Vince 1988, 77), which were not distinguished from lids at Parkside and were not identified at all at High Street. They form a homogeneous group of vessels, characterised by a simple conical shape, out-turned rim and (frequently) green glaze on the interior of the base. Rim diameters are usually between 100 and 140mm, ranging overall from 60 to 180mm, and base diameters are from 40 to 140mm.

The 'minor' forms comprise two forms of jug: baluster (JUG BAL) and barrel-shaped (JUG BAR), as well as a range of forms listed below.

Baluster jugs, which are less than 0.5% of this assemblage, are known from Parkside (Marshall 1924, fig 13) but not from other production sites in Cheam. There is only one known example from London (Pearce & Vince 1988, 72, no 558). They are clearly a very minor part of the production.

Barrel-shaped jugs, which are also less than 0.5% of this assemblage, are well known from the High Street site (Orton 1982, nos 20–23) and at *The Harrow* inn (Marshall 1941), less common at Parkside (Marshall 1924, fig 11). There are several examples from London (Pearce & Vince

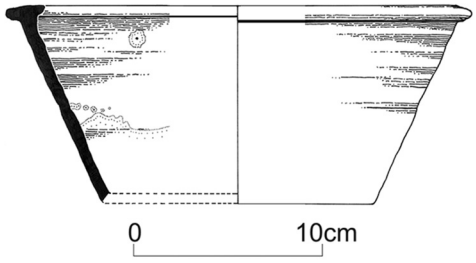


Fig 10 Cheam pottery. CHEA BOWL (drawn by Charlotte Ellinas).

1988, 69). They appear to be a late element in the production at Cheam, probably of 15th century date (*ibid*, 87), which may explain why they are rare here and at Parkside (see *Interpretation* below).

Bowls (BOWL). This form is not found in Pearce and Vince (1988). They are similar to the dishes, but with a rim diameter of at least 200mm (fig 10). They appear to be less than 1% of the assemblage. They are called DISH at High Street, where they comprise about 3% of the assemblage.

Cooking-pots (CP) are about 2% of the assemblage. They are recognised as a minor element of the other Cheam production assemblages, and are also known in London (*ibid*, 75–6). They seem to be slightly less common here than at other sites in Cheam.

Costrel (COST). There is a single small sherd that may be from a costrel. If so, this is the first known example in Cheam whiteware, although the form is known in Tudor Green ware (*ibid*, 80).

Cup (CUP). There are only eight sherds that may be from cups, two of which may be lobed. Again, these are not known elsewhere in Cheam whiteware, but are known in Tudor Green ware (*ibid*, 80–1).

Dripping dish (DRIP). There is a single example of a slab-built vessel with flat bottom and vertical side (fig 11). It is interpreted here as part of a dripping dish; if so, it is the first from Cheam and the first example of a slab-built vessel in Cheam whiteware. Examples are known at Kingston, where they too are slab-built (*ibid*, 46).

Lids (LID) are difficult to distinguish from dishes, especially in small sherds, but appear to comprise less than 0.5% of this assemblage. They are known from the other Cheam sites, and also from London (*ibid*, 77), but are never common.

Measures (MEAS). Only one sherd was identified as coming from a measure. They are well represented at Parkside (Marshall 1924, 86) but are not known at other Cheam sites. They are known, but not common, in London (Pearce & Vince 1988, 75).

Pipkins (PIP), identified mainly on the basis of their handles (rod-shaped, but attached at one end only), are a very small proportion of this assemblage (<0.5%). They are known from Parkside (Marshall 1924, 85) but not from the other Cheam sites. They are also known from London sites (Pearce & Vince 1988, 76).

Pitchers (PTCH). This attribution is based on four bung holes and nine very wide strap handles, similar to those found on large rounded jugs or cisterns in, for example, coarse border ware (*ibid*, nos 432–7). They may be associated with some of the larger JUG RND rims, with diameters of 140 or 160mm. However, bung holes appear to be previously unknown in Cheam whiteware, both locally and from London, suggesting this may be a genuine, but very rare, category.

Skillets (SKIL), or frying pans, are a rare category identified on the basis of their handles, which are of strap form, attached at one end only, and with a distinctive finish, similar to those on some Kingston ware pipkins (*ibid*, no 313). They may be just a variant of pipkins.

The implications of these data will be discussed in the *Interpretation* section.

Fig 11 Cheam pottery. CHEA DRIP (photograph: *Time Cheam*).

Kiln furniture

The term 'kiln furniture' (code KILNF) is used to denote objects thought to have been part of a kiln, or used in a kiln in some way. The material appears to have been pre-sorted, as very little KILNF was found in the first two years (2010 and 2011) of cataloguing (311 fragments, 5.8kg), and the great majority was encountered in the third year, 2012 (2267 fragments, 114kg). The material found in the first two years was probably mistaken for pottery at this pre-sorting stage.

For this reason, a detailed breakdown into categories was not attempted until 2012, when the following were recognised:

Daub, clayey: small amorphous pieces of fired potting clay, but not parts of vessels (321 fragments, 5.6kg, average weight 18g). They may be waste from the potting process, or perhaps used, for example, to fill cracks in a kiln. It is likely that the majority of the KILNF recorded in 2010 and 2011 belongs to this category. If so, it would roughly double the quantity present.

Daub, sandy: small friable fragments that appear to consist of fired Thanet Sand, with occasional inclusions of small pieces of chalk, tile or pottery; two have protrusions that appear to fit into tile peg holes, suggesting proximity to a tile when fired (901 fragments, 21.0kg, average weight 23g).

In addition, some 72 fragments (1.3kg, average weight 17.5g) were simply classified as daub.

Fire-bars: easily the most distinctive category, consisting of fragments of fired clay cylinders, formed by moulding potting clay around a central wattle (fig 12) (173 fragments, 27.4kg, average weight 158g). The fragments are usually flattened ovoids in cross-section (varying from 72 to 134mm in width and from 65 to 91mm in depth) with a central circular hole, usually of diameter 16mm, but ranging from 11 to 24mm. The larger pieces are broken at one or both ends, and frequently lengthwise as well; there are no recognisable free-standing 'terminals', but some end in a flat surface that shows traces of the 'sandy daub', while others have a shape that suggests moulding onto a surface with a right-angled corner. The cylinders themselves are slightly curved. A set of conjoining fragments (fire-bar 1) represents a junction between two cylinders crossing at approximate right angles but curving in opposite directions (fig 13). One appears to curve in a horizontal plane with a radius of curvature of about 3.3m; the other, which curves in a vertical plane, has a distinct 45° angle between an apparently horizontal section and one angled downwards towards a flat terminal. The horizontal surface is coated with an unusual deposit that requires further investigation. All fire-bars have been highly fired and the exteriors are blackened. Two have sherds embedded in the clay, and two have over-fired sherds attached to their surface. They are discussed further in the *Interpretation* section.

Fig 12 Cheam pottery. Fire-bar interior (photograph: *Time Cheam*).

Fig 13 Cheam pottery. Fire-bar junction (photograph: *Time Cheam*).

Shelving tile: a unique but unstratified artefact was discovered in 2014 during re-boxing in the LBS museum store. It is a distorted fragment of a medieval peg-tile (fig 14), with one corner and part of one peg hole present. Its estimated size (measured as if flat) is 140 x 90mm, and its thickness is typically about 12mm. There is a deep crack extending across what is thought to be its upper surface.

Embedded in the upper surface, close to the edges, is part of the rim of a Cheam whiteware jug, probably of the 'rounded' form (based on its estimated rim diameter of 100mm), and in

Fig 14 Cheam pottery. Shelving tile (photograph: John Phillips).

the lower surface, further from the edges, is part of the rim of a second Cheam whiteware jug, again probably of the 'rounded' form (its rim diameter is estimated to be 110mm; this estimate is less precise than that on the 'upper' rim, because less of the rim is present. It would not be surprising if the diameters of the two rims were actually the same). The tile has cracked along a line where it would have been supported by the 'lower' jug, and has fallen away outside that jug. The surface of the tile inside the lower rim appears to be glazed, but this is likely to be due to extreme heating rather than to deliberate glazing. The whole tile shows signs of intense heating – a broken edge shows a brown core, black margins with bubbles, and a conchoidal fracture – and its shape suggests that it has 'melted' in the heat. By contrast, the fabrics of the Cheam whiteware rim sherds appear normal, and do not appear to have suffered from excessive heat. This too is discussed further in the *Interpretation* section.
Stone: fragments of chalk, flint, Reigate Stone and 'stone' were identified. The quantities may not be reliable because the reasons for classifying these as KILNF are not always apparent, although much of the flint is heavily burnt. The quantities are:

Chalk	168	8.9kg	average 53g
Flint	124	20.0kg	average 162g
Reigate stone	9	1.0kg	average 106g
'Stone'	2	89g	average 45g
Total	303	30.0kg	average 99g

Tile and brick: most apparently fragments of roofing tile, some with peg holes (459 fragments, 24.3kg, average weight 53g). Particularly striking is a group of three fused and warped tiles (fig 15). Fused tiles were also noted at the Eden Street Kingston site, where roof tiles were used in the construction of the flue arches of Kiln 1 (Miller & Stephenson 1999, 43 and fig 5). Also included are fragments of brick, mostly burnt (27 fragments, 4kg, average weight 153g).
Other: individual fragments, labelled 'clinker', 'misc.', 'mud brick' and 'nodule'.
Some material that had been classified as KILNF was re-catalogued as pottery.

The following analysis is based on material catalogued in 2012, quantified by weight (which is thought to be more reliable than fragment count, because of the widely varying weight of the fragments). About 94% of the KILNF comes from the well pit, about 4% from the soil layers, 2% from the features and a negligible proportion from the drains. The proportion in the well pit varies from 85% for clayey daub to 96% for tile, 99% for chalk and 100% for brick, although these latter figures may have been artificially increased by the application of the discard policy to non-well-pit contexts. As a baseline for comparison, the proportion for fire-bars is 93%.

The proportions of KILNF in the well pit are far higher than those of any of the pottery types; CHEA for example has only 65% and few wares exceed 50%. This reinforces the idea that the fill of the well pit consists of the debris of a kiln accident.

Fig 15 Cheam pottery. Warped tile stack (photograph: *Time Cheam*).

POST-MEDIEVAL POTTERY

A total of 11,710 sherds were recorded, weighing about 193.5kg (average 16.5g). With the exception of Cheam redware (CHEAR), they were not recorded to the same level of detail as the Cheam and medieval wares, but just counted and weighed. However, they are stored in fabric groups within contexts, to facilitate more detailed analysis in the future. In roughly chronological order, they are:

(a) Cheam redware (MOLA code CHEAR, date 1480–1550). 117 sherds (1480g, average 12.6g, 1.27 EVEs); most (79 sherds) are from the well pit, 28 from soil layers, eight from drain fills and two from features. Most of the identified sherds are of jug forms; there is also a bowl base and an unusual dripping-pan profile from the well pit (cf fig 11).

(b) Cistercian ware (MOLA code CSTN, date 1480–1600). One sherd (2g) from a soil layer, of unidentified form.

(c) London-area post-medieval slipped redware, formerly known as Guys ware (MOLA code PMSR, date 1480–1650). One sherd (50g) from beneath the chalk floor F1, of unidentified form.

(d) Border wares (MOLA codes BORD = Surrey-Hampshire border whiteware, date 1550–1700 and RBOR = Surrey-Hampshire border redware, date 1550–1900). Eighty-two sherds (1010g, average 12.3g). Most are either from the well pit (33 sherds) or from soil layers (32 sherds); there are also eleven from features and six from drain fills. Only two are of redware (RBOR). Most are of body sherds of unidentified form; there are also sherds from cups, dishes, bowl and a plate.

(e) Essex-type post-medieval black-glazed redware (MOLA code PMBL, date 1580–1700). Three sherds (91.5g, average 30.5g); one from the well pit, one unstratified, and one from F14. The only identifiable form is a tyg base.

(f) English tin-glazed ware (MOLA code TGW, date 1570–1846). 967 sherds (4179g, average 4.3g). A large majority (659 sherds) are from soil layers, with lesser amounts from the well pit (159 sherds), features (86 sherds) and drain fill (63 sherds). Most sherds are very small and cannot be identified to form.

(g) Staffordshire-type combed slipware (MOLA code STSL, date 1660–1730). Sixty-three sherds (644g, average 10.2g), nearly half (29 sherds) are from soil layers, fifteen are from the well pit, ten from features and nine from drain fills.

(h) Various brown stonewares (MOLA code FREC = Frechen stoneware, date 1550–1700, simplified codes BSGSW = brown salt-glazed stoneware, STON = other stoneware). These categories are merged because precise identifications may not always be reliable. 448 sherds (8367g, average 18.7g). Over half (246 sherds) are from soil layers; 126 are from the well pit, 38 from drain fills and 38 from features. Noteworthy are a bottle with the Arms of Amsterdam, a Fulham stoneware sherd with a fragment of a medallion showing the Arms of England (cf Green 1999, no 336), and a jug marked 'J.Walker, Wine & spirit Merchant, 150 Corner of Old St & Goswell St'.

(i) Westerwald stoneware (MOLA code WEST, date 1590–1900). Three sherds (11g, average 3.7g), two from the well pit and one from a drain fill. No forms were identified.

(j) White salt-glazed stoneware (MOLA code SWSG, date 1720–1780), also known as salt-glazed whiteware. Seventy sherds (257g, average 3.7g). Most (48 sherds) are from soil layers, twelve are from the well pit, and ten from drain fills.

(k) Chinese porcelain (MOLA code CHPO, date 1580–1900). 24 sherds (135g, average 5.6g). All are from soil layers except for six from the well pit.

(l) Post-medieval redwares, including flower pots (simplified code PMR, date 1580–1900). 5606 sherds (142.8kg, average 25.5g). Over half (3094 sherds) are from soil layers; there are also 1198 sherds from the well pit, 731 from features and 583 from drain fills. Apart from 174 sherds recognised as belonging to flower pots, none was identified to form. There could be more sherds of flower pots that were not recognised as such.

(m) Other 'modern' ware (simplified code MOD). This 'rag-bag' grouping includes transfer-printed whitewares, creamwares, and various 19th and 20th century wares. There is a small group that appears to be an imitation of BORD, but with anachronistic interior glaze. They may be from an 'art' pottery, thought to have operated nearby in the 1920s and 30s. In all, 4325 sherds (34.5kg, average 8.0g). The majority (3193 sherds) are from soil layers, with lesser amounts from the well pit (558 sherds), drain fills (292 sherds), and features (282 sherds).

Overall, nearly 20% of the post-medieval wares are present in the well pit, just over 60% in the soil layers or are unstratified, and about 10% each are in the drain fills or the features, but there are wide variations around these proportions. In particular, Cheam redware (CHEAR) has the highest proportion in the well pit (68%, very close to CHEA's 65%) and is also the closest to it in date. The border wares (BORD + RBOR) are well above average at 40%; they are also relatively early in this sequence. Stonewares are a little (but significantly) above average at 28%, while the most modern wares (MOD) have the lowest proportion (13%). This shows a definite trend of a decreasing proportion of a ware in the well pit as they go from the 16th to the 20th century.

Interpretation

LOCAL INTERPRETATION OF THE SITE

The earliest feature on the site appears to be the well and its associated well pit. Although there are over 300 sherds of 'pre-Cheam' medieval pottery, there are no apparent concentrations, and they can best be seen as a scatter deriving from activity near, but not on, the site. This is not surprising in the context of a medieval village. The presence of more than twenty sherds of Roman pottery is more surprising, as only stray finds have previously been recorded in and around Cheam (John Phillips, pers comm), and the nearest known Roman settlement is at Ewell, some 2.5km to the west. They are most likely to represent agricultural activity at some distance from the settlement, although there may have been an unknown settlement nearby.

The dates of the well and the well pit are debatable. There are four main views about these dates:

(i) the well is contemporary with the production of the Cheam whiteware from the pit fill, suggesting a date firmly in the 14th century and perhaps as early as *c* 1350 (see below);
(ii) the well is contemporary with the building of Whitehall, which is thought to date to *c* 1500 (see above);
(iii) the well is later than the building of Whitehall, perhaps as late as the 18th century;
(iv) whether the well is earlier than or contemporary with Whitehall, the well pit is later, possibly 18th or 19th century in date.

View (i) is linked with the idea that the chalk floor or raft (F1) and associated postholes (F20 and possibly others) represent an earlier building, which the well was dug to service. In view (ii), F1 represents the upcast from the well, perhaps spread to provide a yard behind the house, and the pit was backfilled from a convenient dump situated nearby.

Both views (i) and (ii) face the question of why pottery and kiln waste were used to backfill the pit, when there must have been so much chalk (and sand) available from the recent digging of the well. A rough calculation indicates that about 18m^3 of chalk could have been derived from the well (assuming a bulking factor of 150% (Earthworks 1997), of which about 5m^3 would have been needed to backfill the pit. This suggests that uses other than backfilling were considered more important: for example, the chalk floor or raft, and that a less useful material (eg kiln fragments and sherds) was brought in to backfill the pit. This supports view (i), but the construction of an earth-fast post building in the 14th century is unlikely (Goodburn 1995), and there are appreciable quantities of later pottery from contexts that appear to underlie F1 (contexts 40, 124, 128, and especially 125). View (ii) requires the survival of a substantial dump of kiln waste (or even a collapsed kiln) very close to Whitehall, as it seems unlikely that the backfill material would have been moved far.

An argument against views (i) and (ii) is the shape of the well pit itself. If the Thanet Sand here is incapable of supporting its own weight, the pit should take the shape of a roughly circular cone with the well at its centre. However, the site plan shows an elliptical shape (oriented east–west) with the well towards the western end. Most of the contexts in the well pit are recorded as being either east or west of the well, and none are to its north. A further argument is the relatively high proportion of post-medieval wares in the pit fill, ranging from about 40% for the 17th century wares to 13% of the 'modern' wares (post *c* 1770). Although this pottery could simply have settled through the topsoil and come to rest on the surface of the pit fill, the density here is higher than in the rest of the garden, suggesting a deliberate concentration. This leads to view (iv) that the well pit was dug to facilitate repairs to the well lining (perhaps caused by the digging of drains nearby), and that in doing so, a 14th century pit close to the well was disturbed and its contents were augmented by later material.

The combination of a low average weight of Cheam whiteware sherds in the backfill (less than 10g per sherd) with the presence of some large sherds with fresh breaks, suggests that the upper contexts of the fill had been subject to trampling. The fact that the proportion of

Cheam redware (conventionally dated to *c* 1480, see Orton 1982, 82) found in the backfill (68%) is almost the same as that of Cheam whiteware (65%) suggests a relatively late date for the filling.

The most 'primary' deposit of Cheam whiteware appears to be in F35 (99% Cheam whiteware, average sherd weight more than 20g), which cannot be located on the site documentation. In this report, view (ii) is therefore preferred.

The presence of a substantial proportion of Cheam whiteware elsewhere in the garden needs explanation. After allowing for the well pit and F35, about 30% of the total remains. Some 12% of the total is unstratified and may be from the well pit, leaving 11% from the drains (some of which cut the well pit) and only 3–4% each from the soil layers and other features. These can be accounted for by disturbance from gardening activity, or (less likely) as material that was dropped en route to the well pit.

The various post-medieval wares are thought to represent domestic debris and gardening activity (especially the flower pots). The relatively high proportion of tin-glazed ware may indicate the status of the house, but its tendency to fragment into very small pieces may exaggerate its importance. The only substantial features that can be dated to this period are a series of drain cuts, some of which still contain drainpipes.

This section considers the evidence that the fill of the well pit represents the outcome of a kiln accident. There are two sources: the pottery itself and the fragments thought to derive from a kiln structure. Only a small proportion of the Cheam whiteware sherds show direct evidence of mishaps within a kiln. The most common type of evidence consists of sherds that are over-fired and, in a minority of cases, also distorted. The small average size of sherds means that many sherds are not large enough to show distortion, even if they come from a distorted vessel. Much less common are sherds with other types of evidence: glaze that has flowed over broken edges (fig 16) and sherds encrusted with small ceramic fragments (fig 17). Such sherds have also been observed, for example, at Farnborough Hill (Pearce 2007, 159–60), where about 20% of the waster vessels appear to have exploded in the kiln, and almost a further 20% to have cracked. Comparable figures are not available for Whitehall, because of the high level of fragmentation. Other reasons have been put forward for glazing over breaks, such as the use of sherds as spacers in a kiln (Miller & Stephenson 1999, 34), the re-use of sherds as test pieces for glazing techniques, and the deliberate cutting of holes in vessels before firing. However, there are no known examples of Cheam whiteware with cut holes, and the use of experimental test pieces is not known elsewhere in the region at this date (but this cannot be entirely ruled out, see below). Despite these striking examples, only a small proportion of the sherds are from definite waster vessels. This is a common feature of medieval kiln sites, as many of the faults that make vessels unusable (eg cracked bases) are not apparent on small sherds. It is always possible that some of the fill consists of domestic debris, but if so it cannot be separated reliably.

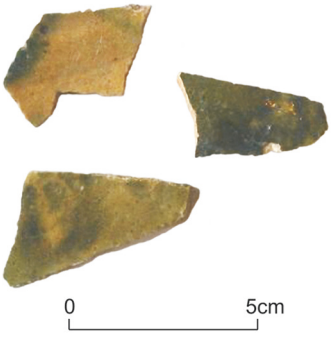


Fig 16 Cheam pottery. CHEA sherds glazed over breaks (photograph: *Time Cheam*).

Fig 17 Cheam pottery. CHEA 'shrapnel' sherd (photograph: *Time Cheam*).

The strongest evidence comes from the fragments that are thought to be parts of a kiln structure, in particular the fire-bars and the fused and warped tiles described above. In all these aspects, the fragments closely resemble parts of the enigmatic structure apparently found in the Parkside kiln (Marshall 1924, fig 3). Marshall's photographs (Orton 1991, figs 4, 5) appear to show straight, not curved, cylinders, and for this reason his reconstruction was rejected in favour of a more orthodox one of straight fire-bars radiating from a central pedestal (*ibid*, figs 6, 7). Newell (1999, 132) suggests that they may have been tubular kiln props, used in conjunction with tile shelving, which were bent and deformed by extreme heat in a kiln accident. The shelving tile appears to have the function of separating one tier of jugs from the next. The upper tier appears to be inverted. This is the first direct evidence for the use of tiles inside a kiln of this type, supporting Newell's suggestion of the use of tile shelving.

The existence of tile shelving may help to explain the purpose of the fire-bars. If the lowest tier of jugs stood on the central pedestal, there would be a space between them and the sides of the kiln, which would allow heat to escape too readily. A layer of tile shelving, standing partly on the jugs and supported at its outer edge by the fire-bars, would trap the draft and diffuse the heat more evenly through the kiln. Another tier of jugs would stand on the shelving; above this there would be an unknown number of further tiers of jugs and possibly other vessels, perhaps separated by further shelving.

The presence of the fire-bars, unknown except here and at Parkside, raises the question of whether the fill derives from that kiln, or from a similar one elsewhere. The distance between Whitehall and Parkside (100m) might suggest the existence of a second kiln, as would the differences in pottery forms found at the two sites, especially the sagging bases found at Whitehall but not at Parkside. Alternatively, it could be argued that the Whitehall material derives from an earlier firing accident at Parkside, which was cleared to a nearby dump and the kiln rebuilt and continued in use until the final firing, represented by the material found there. The existence of a second, as yet undiscovered, kiln, is thought to be more likely.

THE WIDER CONTEXT

This excavation should be set in the context of previous work on potting in medieval Cheam, and to try to integrate it all into a coherent picture. This will be done under three headings: dating and sequencing, the products and their markets, and the technology and organisation.

Dating and sequencing

The site provides no new direct evidence for the dating of Cheam whiteware, for which the City waterfronts must be relied on (Milne & Milne 1982, 92–9; Pearce & Vince 1988, 17–18 and 90), which provide a starting date of between 1340 and 1360, and a closing date later than 1430 (see above). These of course are dates at which Cheam whiteware was available in London; it is possible that purely local use started earlier or continued later. However, we can begin to see a chronological pattern in the four known dumps of Cheam whiteware: Parkside, High Street, *The Harrow* inn and Whitehall. Whitehall seems to be the earliest site, with sagging-base rounded jugs, found at earlier sites in Kingston (Pearce & Vince 1988, 34) but not elsewhere in Cheam. Next is Parkside, which shares a similar range of forms, but where the rounded jugs have only flat or indented bases. High Street is broadly similar to Parkside, but lacks red-painted decoration, and has very few of the small dishes found at Whitehall and Parkside, and more barrel-shaped jugs, while *The Harrow* appears to be the latest, as the assemblage there appears to be dominated by barrel-shaped jugs, which are rare at the other sites, and which are known to occur on 15th century deposits in London. This sequence hints at a north–south chronological trend of Whitehall–Parkside–High Street–*The Harrow*, although not too much should be made of

this as the distances involved are small and only two of the four assemblages (Parkside and High Street) are strictly *in situ*.

It is interesting to note that sagging bases do not seem to appear at the Eden Street kilns in Kingston (Miller & Stephenson 1999), which are dated *c* 1300–40, although there is an example with continuous thumbing (*ibid*, fig 34). However, rounded jugs with sagging bases are known in the latest phase at Kingston, *c* 1360, as dated from the London waterfront deposits (Pearce & Vince 1988, fig 41).

Products and markets

The quantification of the Whitehall assemblage (the first time this has been attempted at Cheam) reinforces the view of Cheam as a 'niche' producer of jugs (about 90% of the total, within which biconical jugs outnumber rounded jugs by about three to one. As the former have a typical capacity of about 1 pint and the latter about 2–3 pints, this suggests that the total capacity of the jugs produced in each form was about the same. More speculatively, this hints at the marketing of 'sets' of one rounded jug and two or three biconical jugs, reflecting their respective roles as 'pouring' and 'drinking' jugs (Orton 1982, 80, where the term 'break of bulk' is used for 'pouring').

The only other common form is the small dish, the function of which is unknown. All three common forms are relatively small, and suited for overland transport on account of their size and robustness. The size range of the dishes suggests that they could have been stacked for storage or transport.

All the other forms are numerically insignificant at Whitehall, and may have been produced as side-lines for local consumption. Exceptions are the Cheam whiteware cooking-pots and pipkins, which are well known in London (Pearce & Vince 1988, 75–6) and at Parkside, and are present in small quantities at High Street. They may have had a short span of production, concentrated on the middle part of the Cheam sequence. The largest forms of Cheam whiteware (bowls and pitchers) are not known outside Cheam.

Technology and organisation

Just as there are chronological trends in the forms produced, there appear to be trends in both technology and decoration. The trend towards simpler forms and less decoration has already been noted (Orton 1982), reflecting perhaps a decline in technological ambition. As examples, the secure 'skewered' method of attaching handles on biconical jugs gives way to simple luting on barrel-shaped jugs, the use of red paint stops after Parkside, and the overall amount of glaze used appears to decrease. Whitehall reinforces this picture, with some examples of high-quality glaze, both green and yellow, more complicated use of red-painted decoration and the presence of some sherds glazed over the breaks. Further support for the idea of an ambitious start to production comes from the recorded supply of two 'crests made like Knights riding' supplied to Banstead Manor in 1373/4 (see p 73 above; Marshall 1936, 73; Harp 1998). This suggests a technological enthusiasm at the beginning of a new industry, which is gradually dampened by the realities of life, including no doubt kiln failures, one of which may be represented in this deposit.

The work of Newell and Hughes suggests that the glaze is not a functional necessity, as the pottery is already almost impermeable. The decline in its use may therefore reflect increasing attention on the functional rather than the decorative aspects of the pottery. Their observation that the clay could have been fired to stoneware temperatures may shed light on the end of the local whiteware industry. The co-existence of Cheam whiteware jugs with (unglazed) Siegburg jugs in the late 14th and 15th centuries (Vince 1985, 69), contrasts with its rapid demise upon the arrival of large quantities of (salt-glazed) Raeren mugs from about 1480 (Orton 1982). This may suggest that what killed off the industry is not competition from stoneware as such, but the introduction of salt glazing,

which produced a glossy surface that could not be matched by other stonewares or near-stonewares.

The question of the nature and construction of the kiln(s) is still open to discussion. It is strange that, if Marshall's original reconstruction, now reinforced by the shelving tile and fire-bars from Whitehall, is correct, no similar kiln structures have been found elsewhere.

The documentary evidence suggests that at least some of the potters may have been part-time, with a secondary (or even primary) occupation in farming, specifically sheep-rearing. This would fit with what is known about the likely seasonal nature of potting at this time, particularly in a rural setting.

Location of the archive and future work

The archive is divided into three parts: the physical archive (the finds), the paper archive (the catalogue sheets and paperwork relating to the project), and the digital archive (text files, spreadsheets and images).
Physical archive: London Borough of Sutton Museum and Heritage Service
Paper archive: London Borough of Sutton Museum and Heritage Service, and Local Studies Library
Digital archive: London Borough of Sutton Museum and Heritage Service, and Archaeology Data Service (ADS).

Endnote

The information listed below is available on the Archaeology Data Service website – http://archaeologydataservice.ac.uk. Select 'archives'; accept the terms and conditions; select 'Journals and series'; select 'Surrey Archaeological Collections', then 'volume 99'. The files are stored as supplementary material under the title of the article. Copies are also available from the Society's library at Castle Arch, Guildford GU1 3SX.
Finds processing
Integration
Feature and context listing

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