EXCAVATION OF AN EARLY POST-MEDIEVAL KILN AT TEMPLE STREET, BRILL, 1983

P. A. YEOMAN

Limited excavation revealed the plan of a large two-phase kiln, the latter phase of which incorporated an earlier flue as a loading gate. This later kiln was probably designed as a triple-flued rectangular structure with a raised floor and no permanent roof. Both roof tile and pottery were produced in this kiln during the early sixteenth century. An eighteenth-century waster dump was found nearby. The entire site has subsequently been developed as a housing estate.

Introduction

The kiln was discovered by the author during the course of a watching brief (commissioned by HBMC) on a vacant plot immediately to the north of the fire station in Brill (SP6554 1412). The site initially appeared, during topsoil stripping, as an extensive spread of brick fragments and red burnt sand. An arrangement was made with the developers, Basil Wyatt & Sons, Oxford, to leave this area undisturbed for a five-week period to enable a full investigation to take place. Subsequently, the kiln was partially destroyed by the construction of a service road on the new housing estate. The remaining part is now buried.

A magnetometer survey was conducted by Andrew David, DOE Ancient Monuments Laboratory, but no other kilns were identified. Mr David also took archaeomagnetic dating samples from the possible brick clamps and from kiln 2 demolition material.

The finds and archival material are held by the Buckinghamshire County Museum, Aylesbury (ref. CAS 5293 site code BTS 83). The project was funded by the Inspectorate of Ancient Monuments, DOE, and executed by the County Museum, Aylesbury with the consent of the landowners, Aylesbury Vale District Council. During the excavation, the author was assisted by Barbara Hurman, who subsequently produced the pottery report. Thanks are also due to Jane Lilley for the tile report. The success of the excavation was assured by the continued support of the County Museum Archaeological Group, notably Janet Chaffey, Helen Larminie, Katherine Simcox and Bambi Stainton. Gratitute is owed to the developers, Basil Wyatt & Sons, for allowing free access to the site, and general assistance in many ways. As ever, I am grateful to Michael Farley, Field Archaeologist, County Museum, for his advice and encouragement during the excavation and post-excavation work. The initials CAS below refer to sites recorded in the County Sites and Monument Record.

Previous Investigations

In the past thirty years at least twelve kilns have been excavated in the northern part of the village, ranging in date from the thirteenth century to the nineteenth century (Fig. 1). A summary of the documentary references to Brill ceramic production along with a description of the local geology has previously been published (Farley 1979, 129).

Four kilns were excavated in 1953 by Professor Jope, dating from the thirteenth and fourteenth century (CAS 0576, Jope 1954, 39). A further kiln was located on this site in 1961, and re-examined in 1978 (CAS 4394, Ivens

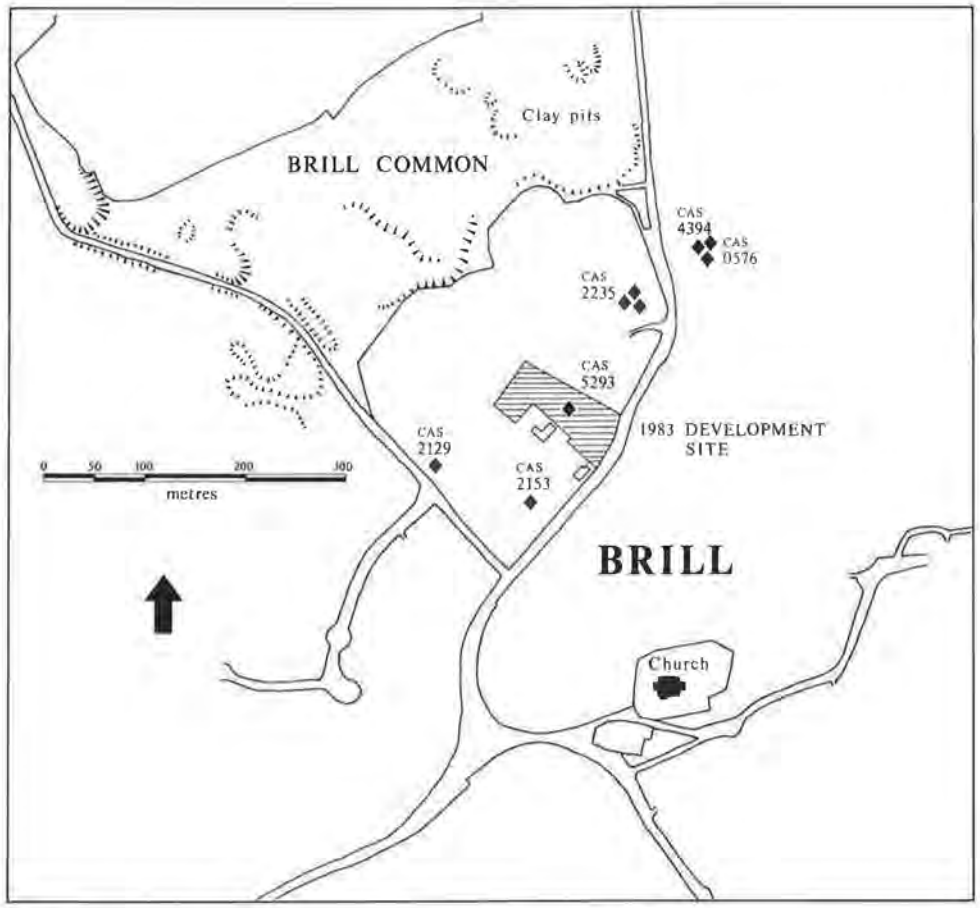

Fig. 1. Location of 1983 excavation and of earlier discoveries of kilns.

1981, 102). All of these kilns were variations on the double stoke hole, central pedestal design.

In 1974 a sub-circular brick-built pottery kiln was excavated in Windmill Street, and was found to date from the late sixteenth/early seventeenth centuries (CAS 2129, Farley 1979, 129). The products of this site are the most closely comparable to the finds from the 1983 kiln, discussed here (see p. 135). In the following year, two seventeenth-century kilns were investigated by the County Museum at Tram Hill, Brill (CAS 2235, Farley 1979, fig. 3, 133). A large brick-built kiln of the eighteenth century was discovered during building work at Prossers Yard in 1977, and was excavated by P. Locke (CAS 2153, Cocroft 1985). The most recent pottery kiln in Brill belonged to the Hubbock family and went out of use in the 1860s. This was found on the Tram Hill site in 1975 (CAS 2235, Farley 1979, 134).

The Brill brick and tile industry also originated in the medieval period, and in the post-medieval period overtook the pottery industry in importance. There is at least one documentary reference, broadly contemporary with the use of the Temple Street kiln, which refers to the carriage of bricks from Brill to Oxford in 1465/6 (Gee 1952, 120).

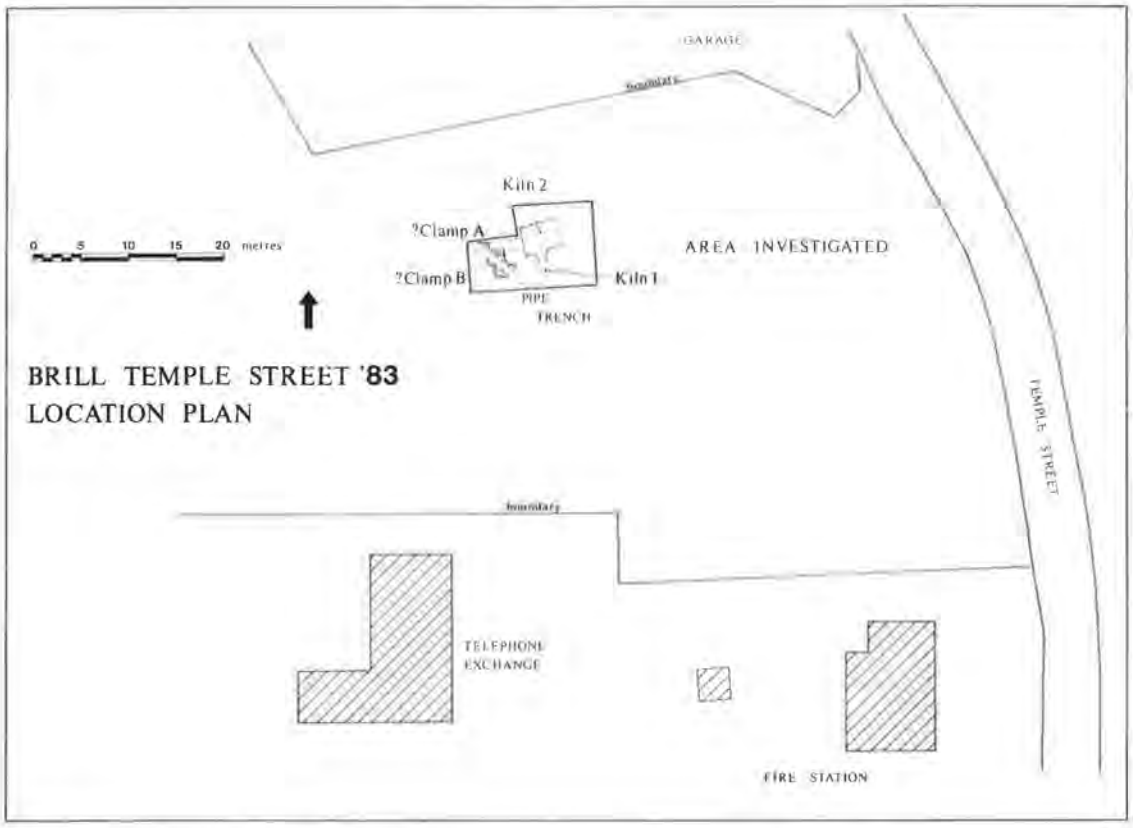

Fig. 2. Excavation at Brill 1983.

The Excavation

Fired Clamp Bases A and B (Fig. 3)

An irregularly-shaped, multicoloured clay spread (clamp base A) was exposed in plan 3.2 m W of the W wall of kiln 2, measuring 2.4 m E–W by 1.8 m. A section was provided by the cutting of a modern pipe-trench, and revealed a bowl-shaped feature which to the north sealed the filling of trench 65 (Fig. 5, a).

The southern edge of base A was sealed by a similar deposit (clamp base B), 2 m E–W by 2.6 m, also cut by the same modern pipe-trench running SE. This had a very similar cross-section to base A, was bowl-shaped to a depth of 0.25 m, and sealed by a surface deposit of highly fired, multicoloured clay. In the southern part, the burnt natural found at the base of both spreads was cut by a U-shaped feature, 0.3 m SE–NW by 0.2 m deep, filled with grey clay/ash.

It is possible that these features are the bases of simple clamp kilns for firing bricks, although the poor state of preservation made a positive identification impossible. A less likely alternative interpretation is that they may represent fires associated with the use of one or both of the kilns, possibly related to drying pots in bad weather.

Linear Cut and Western Pottery Dump

The earliest feature was a linear cut (65), of unknown length, sealed by the west wall of kiln 2 (Fig. 3). This U-shaped trench or ditch was on average 1 m wide, and sloped down E–W. The depth at the splayed E end was 0.5 m compared

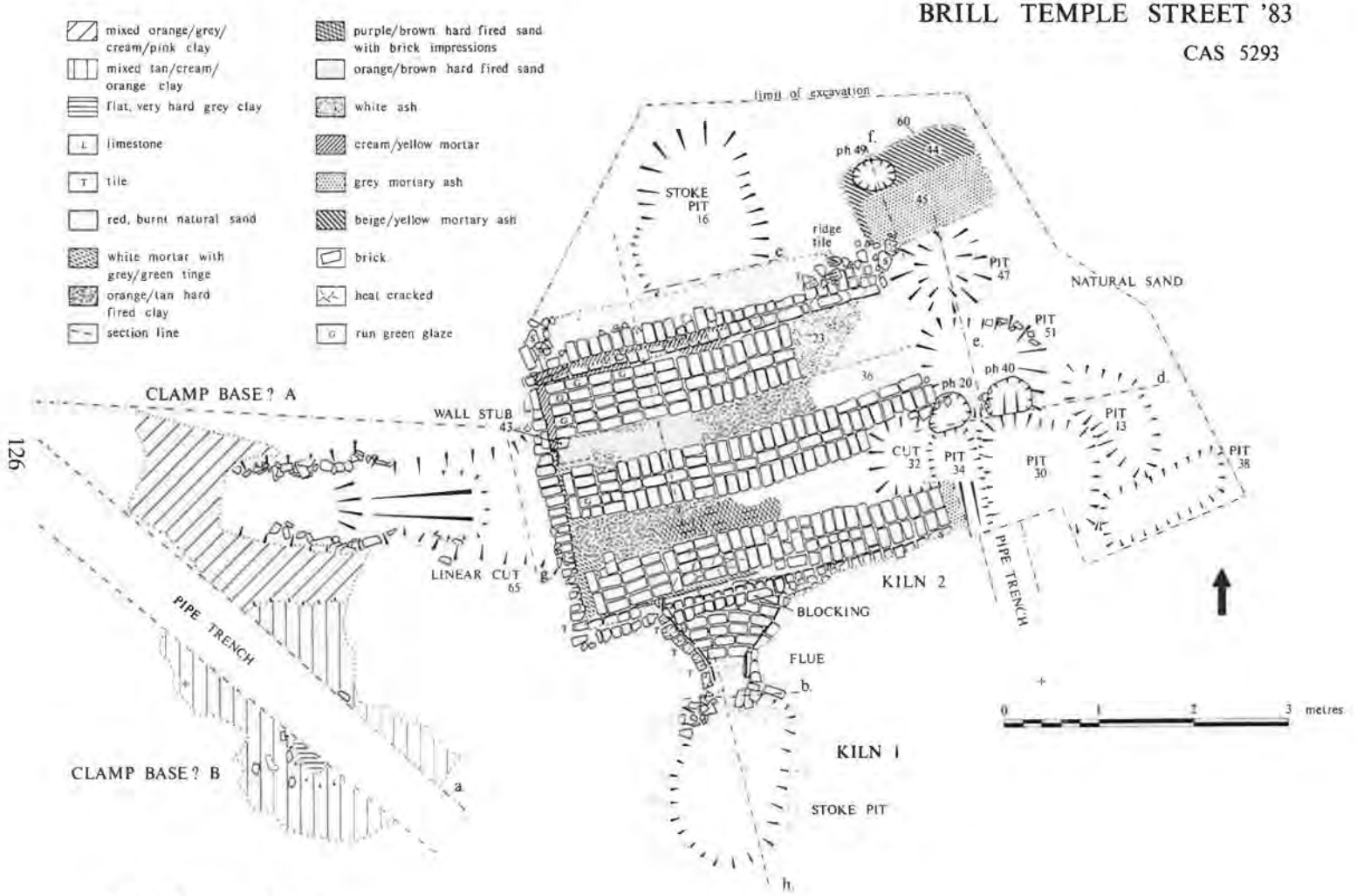

Fig. 3. Excavated area.

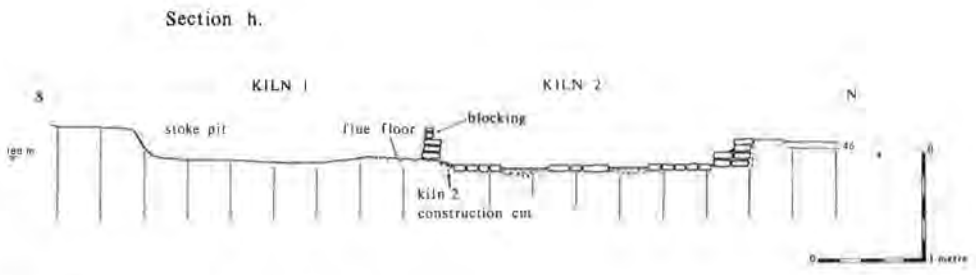

Fig. 4. Section through Kiln 1.

with the maximum of 1.4 m at the W end (Fig. 5, g). In places the sides appeared to be brick lined (Pl. XVII), and the two main filling layers contained large quantities of shattered bricks, along with pottery and tile of the same forms as those produced in kiln 2.

Owing to the absence of any sign of firing, it is unlikely that this trench was a flue associated with kiln 1. It is possible that it was related to the storing or drying of ceramic prior to firing; or alternatively it may have been a drainage feature for the kilns, as seen in a shallower form with a kiln at Hartfield, Sussex (Freke 1979, 82).

During machine stripping of the adjacent western area, a circular spread of wasters was revealed 1.5 m in diameter. This pottery dump lay 9 m W of kiln 1, with which it appears to be contemporary.

Eastern Pit Group (Fig. 3)

The N and E sides of kiln 2 sealed a group of six pits and one post-hole cut into the natural yellow sand (13, 47, 51, 38, 30, 34, 40) (Fig. 5, d, e/f). Most of the pits were large, vertical-sided cuts with flat bottoms and homogeneous unitary fillings of pot and tile. The deepest was 1.6 m, the shallowest 0.45 m.

Most of the pits contained a few lumps of unfired clay which may suggest that they were dug to provide storage, possibly during the weathering of clay. None of the pits were lined, and with the exception of the single post-hole there is no evidence that they contained structural timber uprights. It is possible that they were simply quarries for sand, a commodity which would have been required in large quantities during the firing process.

All these features immediately pre-date the rectangular kiln and contained pottery of exactly the same type as that from the kiln. They represent part of a ceramic production complex, probably associated with workshop/storage structures and the earlier kiln 1.

Kiln 1

Kiln 1 had been largely destroyed by Kiln 2. The southern flue, its main surviving structural element, was funnel-shaped in plan with gently curved sides opening into a maximum width of 1.4 m. The stoke-hole was 0.32 m wide, leading into a well-laid radial brick floor, of the same build as the walls. The floor appeared to have originally continued north into the firing chamber of this proposed earlier kiln, but had been truncated by the construction of the south wall of kiln 2 (Fig. 4). When complete the flue may have had an arched superstructure with an internal height of over one metre.

On excavation the radial floor was found to be covered in an 0.08 m thick deposit of wood ash, charcoal and sand laminae (Fig. 5, b). The only fuel used was wood. The stoke-hole base opened onto, and was at the same level as, a large stoke pit cut to a depth of 0.37 m with sharply sloping sides adhering to which were the patchy remains of a yellow clay lining. The lower filling deposits were very similar to those found in the flue.

The southern pit was matched to the north by a similar pit (16), which was partially sealed by the north kiln wall, and contained a series of

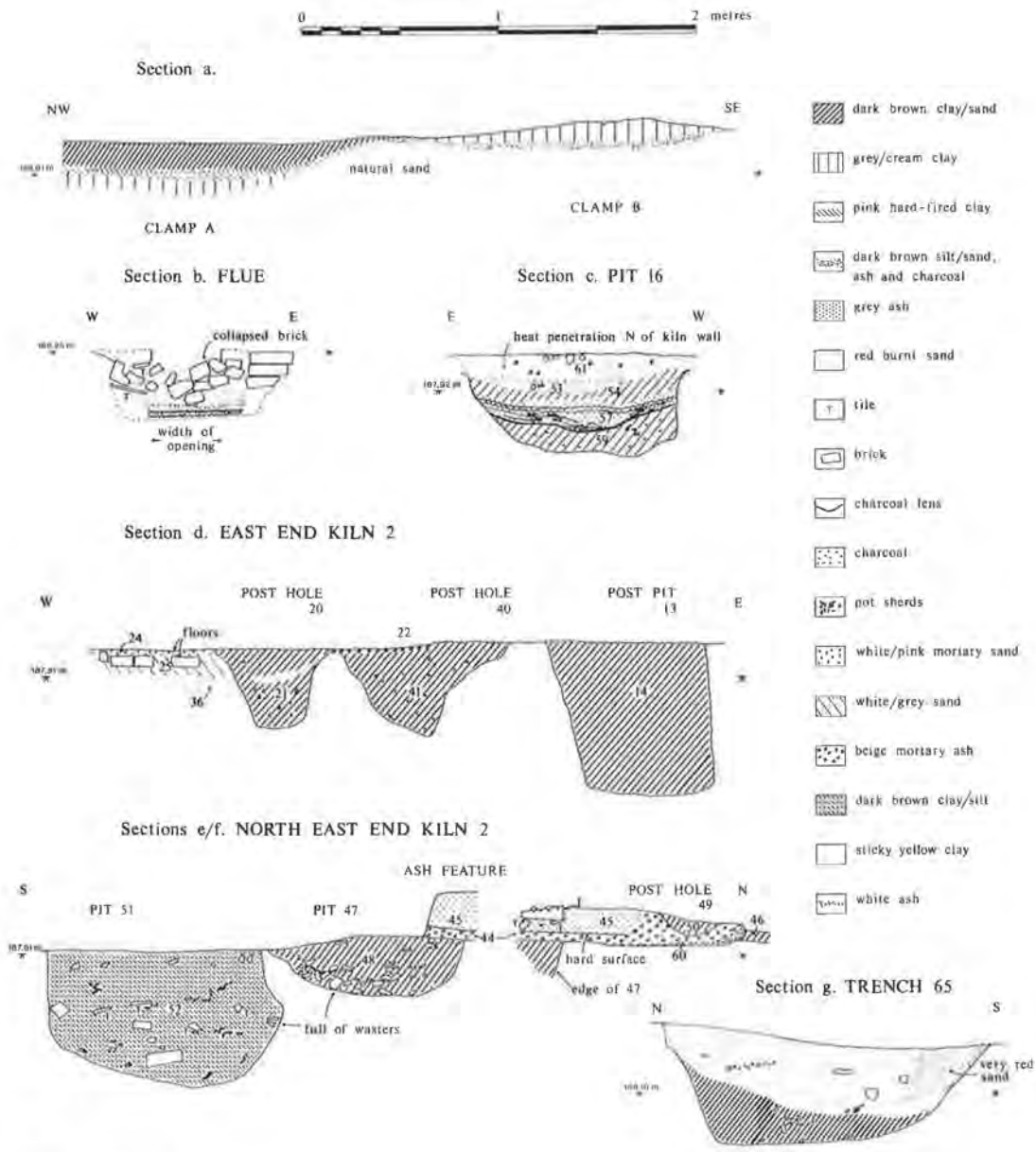

Fig. 5. Sections.

fillings with ash and charcoal laminae, quite unlike those in the other pits (see Fig. 3 and Fig. 5, c).

The top filling was sealed by a thick layer of red burnt sand (61) associated with the structure of the kiln.

Kiln 2

Introduction

Large quantities of kiln demolition material were removed to reveal a structure which consisted of three brick walls, a mortar skim which sealed an underlying brick floor, and a compacted ash dump. The surviving wall courses form a brick facing to a rectangular hole dug for the kiln, which measured 3 m north–south, by 4.4 m, by at least 0.5 m in depth. The flue of the preceding kiln 1 appears to have been incorporated into the south wall as a wicket (loading entrance) (Pls XIX–XX).

A few general comments can be made concerning the substructure of the kiln. The fabric was all of brick apart from limestone blocks found at three of the four corners. The bricks were well-fired and most of their faces within the firing chambers were cracked and vitrified grey and red in colour, with all the appearance of having been subjected to tremendous heat. The walls were built in an irregular bond of thin bricks which measured 45 by 100 by 220 mm (1¾ by 4 by 8¾ inches). In many places the bricks were mortared only in the horizontal joints, and not in the vertical.

The south wall survived to a maximum height of 0.34 m with five courses of brick. The flue blocking and the bricks to the east of this were headers, whereas the western length, into the corner, were stretchers. White mortar with a grey/green tinge obscured the lowest course of the eastern stretch, which terminated on a large limestone block partially covered with white mortar. Three courses of headers, forming part of the south wall, were built through the flue without interruption. This in turn was sealed by a course of part bricks, generally headers, roughly bonded with yellow mortar. It is likely that the wicket would be partially blocked during firing and fully blocked during cooling, and this upper blocking may therefore belong to the final firing of the kiln (Mayes 1965, 92).

The west wall was just over 2.5 m in length and had a maximum surviving height of 0.3 m. The bricks were laid mainly as stretchers with the exception of the south end adjacent to the corner, where they were laid as soldiers over a length of 0.6 m, eight bricks wide. The wall in this part appeared to rest on a higher ridge of burnt natural sand. A number of bricks in the mid and northern parts of the west wall were spotted with vitrified olive green glaze, probably dribbled off pots or tiles resting on a suspended floor. Keyed into the northern part of the wall were the remains of a brick cross-wall structure (43). This was 0.3 m wide built in the northern recess (28) and consisted of two headers below one partial stretcher. It appears to be a primary feature although somewhat obscured by a thick deposit of cream/yellow mortar which had been plastered over the lower part of this and the north wall (Pl. XXI).

The broadest band of external heat penetration (46) was found beyond the north wall; some 0.3 m in breadth by 0.15 m deep (Fig. 4). This wall was more substantial than the other two, being 0.4 m wide×0.26 m (Figs. 3 and 4). The same deposit of cream/yellow mortar was found sealing the base, and parts of the face of the west end of this wall. Where this plastering was absent, at least two bricks were found with run, dark-green glaze.

No trace whatsoever was found of an east wall; however, the position of the east-end of the kiln was clearly delineated by a sharp edge to the heat-affected subsoil.

The Brick Floor

It appears that the tripartite brick floor (25), interrupted by two slightly recessed channels (26, 28), was the original furnace-chamber floor in kiln 2 (Figs. 3 and 4). The individual strips of brick flooring varied slightly in width, but on average measured just less than 0.6 m wide. The bricks were well-laid, either as two headers or as four stretchers, or else as a mixture. The

various configurations probably indicate isolated repairs. Subjection to high temperatures had resulted in the bricks having a grey exterior and brown interior, along with heat cracking. Due to their overfired, fused condition, it was impossible to tell whether or not the bricks had been mortared together. They appeared to have been laid on a levelled natural sand surface after the removal of the earlier kiln, bricks from which may have been reused. No part of the floor was keyed into the chamber walls except in the south-west corner. Thick patches of dark green, run glaze were found on the floor in the north-west corner. In the south-east corner the floor had slumped into the back filled earlier pits. The floor was not found in the north-east corner, where it may have been destroyed by repeated firing, having been replaced by a deposit of compacted pink/white, mortary ash (23).

The two channels between the three strips of brick floor are important features, the interpretation of which is central to the reconstruction of the internal arrangement of the kiln. Both channels contained highly fired and decayed sand and clay deposits, and the southern contained a number of brick impressions. These had been intensely and regularly fired, and are likely to be remains of decomposed brick. Only burnt natural sand was found at this level at the east end of both channels.

The brick feature keyed into the west wall of the kiln (43), suggests one interpretation for the function of the channels. It could be the remains of a pier, one of a number located at regular intervals with the channels serving to support a raised floor keyed into the walls of the firing chamber (see Discussion p. 132). Alternatively, it is possible that such a floor was supported on two continuous spine walls. There was certainly no evidence whatsoever of pots or tiles having rested directly on the brick floor.

The Later Mortar Floor

The second phase of flooring consisted of an uneven skim of pinky-yellow mortar, which contained white ash along with large quantities of brick and tile fragments (24). This was laid over the whole area and did not respect the recessed channels. Again, there was no indication that pots or tiles had been resting on the surface during firing. In places the skim was up to 0.07 m in thickness and reached double this thickness in an isolated ridge abutting the north wall in the north-west corner of the chamber. Apart from this thickening, no other features survived which could be interpreted as providing a base for a floor support; however, the original surface of the mortar may have contained indications of this, now lost. The mortar floor surface partially sealed the remains of the brick feature keyed into the west wall (43), indicating that the entire earlier raised-floor structure had been dismantled prior to the deposition of the mortar skim.

Owing to firing, the mortar floor surface became very hard, and was similar in colour and texture to the mortar used in the upper blocking course of the wicket (p. 129).

Features External to Kiln 2

Slumping of the top filling of the pit (34) beneath the south-east corner, necessitated the dumping of a 0.10 m deep layer of burnt sand and ash, prior to the construction of kiln 2. The position of the destroyed east wall was marked by further dumps of ash, abutting the south-east corner. The central strip of the brick floor, and the later skim, extended beyond the line by about 0.3 m; the reason for this is unclear.

One post-hole (20) clipped both floors, having been cut to a depth of 0.4 m. It is not unknown for timber structures to be in such close proximity to a kiln, although it is also possible that this feature belonged to an unknown structure which immediately post-dated the demolition of the kiln.

Adjacent to the north-east corner an unusually solid mass of ash was found. It formed a rectangular deposit and had been compacted to such an extent that it had taken on the consistency of mortar. Resting on the surface were a number of shattered limestone blocks along with brick and tile fragments. The deposit was 1.4 m E–W by 1 m wide, and was made up of three separate layers (Fig. 5, e/f). The latest of these (45) was a light grey ash which filled an

Plate XVII. Brill 1983 kiln. Trench 65 with possible brick lining.

Plate XVIII. Radial brick floor of south flue, cut by construction of the floor of kiln 2.

Plate XIX. Excavated kiln with earlier stoke pits to north and south. Pit complex to east.

Plate XX. Kiln 2 cut through earlier stoke pit 16.

Plate XXI. Detail of west wall of kiln 2, with wall stub 43 and both wall channels.

Plate XXII. Pottery wasters from kiln 2.

Plate XXIII. Eighteenth-century kiln dump (63) cut by modern footings trench.

L-shaped hollow in the pre-existing feature. The whole is interpreted as an ash dump situated against the north side of a large stoke hole, the complete dimensions of which are unknown. The unusual cross-section of the compacted ash layers may have stemmed from sporadic cleaning-out.

Just to the north of this slope the ash was cut by the base of a small post-hole (49), which may be related to the similar post-hole (20) found 2.6 m to the south.

Immediately to the north of this was a layer of chocolate-brown clay/sand, which contained a high percentage of redeposited natural admixed with sherds and charcoal (46) (Fig. 5, e/f). At this point the layer had almost run out, compared to a thickness of 0.14 m where it sealed the northern pit (16). Originally this may have been a massive deposit which sealed the heat-penetration and abutted the kiln wall on the north side rising to an unknown height (see Discussion p. 133).

Post-demolition Features

The only later feature to disturb the inside of the kiln was a large, shallow pipe-trench (32) (Fig. 3), which cut the later floor and the east end of the southern recess, as well as the tops of the earlier pits. This did not appear to have been cut deep enough to disturb the kiln, although it is possible that it may have removed demolished fragments of the east wall.

Evidence of an Eighteenth-century Pottery

A large pit (63) was found full of eighteenth-century waster sherds, 12 m SW of the sixteenth-century kiln. No evidence of an associated kiln was found (Pl. XXIII). This material has not been examined at present.

Summary of Excavated Features

Phase I: Construction and use of the western trench (65) as a possible storage or drying feature. Digging of the earliest pits in the eastern group.

Phase II: Construction of the proposed brick-built double-flue pottery kiln (kiln 1) with flues and stoke pits to the north and south. Digging and use of the later eastern sand pits, and one post-hole.

Phase III: Construction of the rectangular kiln 2 utilizing part of kiln 1, with three flues fired from the east end, and a large shallow stoke pit. Kiln 2 fired both roof tile and pottery. Clamps A and B may be associated with this phase. The brick walls revetted the hollow excavated for the kiln, and were built of headers, stretchers and soldiers (bricks set on end), bonded with yellow mortar in the horizontal joints only. Three sections of brick floor were laid east–west, originally separated, it is thought, by brick piers supporting a suspended floor. The structure exhibited signs of regular repair. Outside the kiln, ash tip-layers indicated the extent of the stoke hole.

Phase IV: Further repairs were indicated by two mortar spreads. The original floor was bonded in places to the furnace walls with patches of grey-green tinged white mortar. Cream-yellow mortar had been plastered onto the walls in the north-west corner, presumably to combat heat-shattering of the bricks.

Phase V: Alteration of the internal arrangement of the firing chamber by laying a second floor. This consisted of a fairly even, thick skim of pinky-yellow mortar, sealing the earlier floor and recessed channels. The inference is that the proposed supported floor was dismantled and rebuilt at a higher level. The existence of an adjoining, eastern structure was suggested by the presence of two post-holes.

Phase VI: Demolition. At a later date an eighteenth-century pottery was built in the immediate vicinity.

Discussion

Pre-Kiln 2 Features

The western trench (65) remains an enigma, although it is possible that this was a drain, or else some form of heated pot-drying feature. One possible analogy is the pot-drying kiln at Yardley Hastings, Northants (Moorhouse 1980, ffig. 86). It was sealed by the fired clay bases, which may possibly be the remains of brick

clamps used to provide bricks for the construction of the kiln, similar to the arrangement found in a far better state of preservation at Boston, Lincs (Mayes 1965, 91).

There is no doubt that the brick-built funnel-shaped feature on the south side of kiln 2 was the flue of a preceding kiln (kiln 1). Although utilized by kiln 2 it is extremely unlikely that it was used as a flue at that time, as this would have resulted in an impossible firing pattern (S. Moorhouse pers. comm.) The lowest three courses of the southern wall of kiln 2 were built through the earlier flue mouth, and the radially-laid flue floor of kiln 1 was clearly truncated by the construction of the primary brick floor of the later kiln (Fig. 3). The sides of the flue mouth appeared however to have been combined into the south wall of kiln 2, which suggests that this partially demolished feature was retained, if not as a flue, possibly as a walk-in loading entrance, known as a wicket. This interpretation is upheld by the fact that the remains of a blocking wall were found above the lowest courses, apparently associated with yellow mortar similar to that used in the later phases of the kiln. A wicket would be blocked during firing. The kiln of which this flue must originally have been part possibly took the form of a standard-shaped, twin-flued, pedestal kiln. The demolished remains of this kiln may have been used to backfill trench 65. It seems likely that the northern pit (16), cut by the later kiln 2, was the northern opposing stoke pit of kiln 1.

The proposed structure of kiln 1 must have been reasonably intact when the rectangular kiln was purposefully positioned to take advantage of the earlier flue. The eastern pot group may have been associted with the earlier kiln.

Kiln 2

The design of kiln 2 is directly comparable with that of other known tile kilns, but is unusual in that it was producing both flat and crested ridge tiles as well as pottery. This important point will be discussed further. A complete rehearsal of all aspects of these kilns is unnecessary, and is already well covered by Drury (1981).

The quantity of wood ash and charcoal surviving from the eastern stoke area, clearly demonstrates that the fuel used was wood. Analysis of the species represented (specialist report below) shows oak to have been the preferred wood.

The proposed interpretation is based on the premise that this kiln was of the parallel-flued, updraught variety, with a single stoke-pit, feeding three stoke holes.

The excavated evidence suggests that there were three east–west flues, the bases of which are represented by the parallel lengths of internal brick flooring. The intervening recessed channels must therefore be seen as the location of the two spine walls from which arches were sprung to support a raised floor separating the firing channels (flues) from the firing chamber which held the ceramics. Brick impressions in the southern recess and the fragment of a brick structure in the northern recess do indeed indicate that internal supports existed here. There could have been piers rather than continuous stub walls.

The use of laid floor channels has been recorded at a number of sites including Shouldham, Norfolk (Smallwood 1978, 47) and Clarendon Palace, Wilts (Eames 1968, Pls XV and XVI). The floor-tile kilns at both these sites had double rather than triple flues.

Thus the kiln can be reconstructed with a triple arch lower part. The arches would not have been continuous vaults, but rather would have been a series of individual arches to allow the hot gases to be drawn into the firing chamber. Arches could be permanent or temporary; in the latter case arches would be constructed from unbonded waste tiles and bricks, resting directly on the furnace floor. A rare example of this was found in a fourteenth-century roof-tile kiln at Boston, Lincs, which was triple-flued with a sophisticated arrangement for exhaust removal (Mayes 1965, 93).

The Brill kiln is more likely to have had permanent arches, the outer series of which would have engaged with the faces of the north

and south walls. Indeed it may be the case that these walls were built specifically for these arches, and that the firing chamber walls were stepped back, and do not survive at all. An example of this kind of structure was found at Glory Farm, Penn (Trench 1977, unpublished archive report CAS 2931). This post-medieval kiln which measured 2.2 m by 2.1 m had seven pairs of arches and two flues; this is a very common design of floor tile kiln and other local examples include the two found at Little Brickhill, Bucks, the earliest of which was smaller than the Brill kiln and had at least six pairs of arches (Mynard 1975, 58). The Brill kiln could therefore have accommodated a series of ten or more triple arches.

The floor in the Penn kiln was raised 0.90 m above the base of the flues. This height was 0.65 m in kiln 1 at Danbury, Essex, with a single series of arches spanning a width of 2 m (*ibid.*, figs. 43 and 45). The individual arches in the Penn kiln were sprung at a height of 0.50 m above the flue base. At Little Brickhill kiln 1 this measurement was 0.40 m. Owing to the comparatively poor state of preservation at Brill it is impossible to speculate on the likely dimensions of these features, although they are likely to be within these margins.

The arches in all these examples would have supported temporary floors of flat tile wasters combined with kiln bars. The positioning of the flooring could be regulated to create the best control of heat (Drury and Pratt 1975, 144). The construction of the Penn kiln allowed for base vents, created between the arches, which measured 0.47 m by 0.10 m. A closer comparison with the Brill kiln can be made with the triple-flued example excavated last century at Farringdon Road, Clerkenwell in London. This kiln measured 5 m by 3 m, and was dated to the fourteenth/fifteenth centures. It was constructed with 0.30 m wide internal double piers which supported a series of triple arches, allowing floor vents of 0.60 m by 0.12 m (Jones 1866, 31). A further triple flued floor tile kiln, similar in size to the Brill kiln, was found at North Berwick, Lothian. This had arches sprung from pillars engaged within the kiln walls, and was dated to the thirteenth century (Richardson 1928, 281). No evidence of such pillars was found at Brill, and it is more likely that the arches were sprung directly from the north and south kiln walls or else from a raised wall offset as found at Little Brickhill kiln 1 (Mynard 1975, 59).

To recap, the large size of the Brill kiln favours the interpretation that this was a triple-flued kiln with permanent sets of piered arches which supported a floor upon which the load was placed.

All evidence of the east wall arrangement seems to have been destroyed by the construction of a recent pipe-trench. It is likely that a large, shallow stoke-pit existed, as found on other sites, into which large amounts of ash had been dumped from the kiln rake-out.

The mortar layer which sealed the brick floor and the recesses can be attributed to a major rebuild of the kiln interior at least. It is likely that the entire furnace floor base was raised, an occurrence paralleled at Shouldham where this happened no fewer than three times, with a considerable make-up layer between each tiled floor (Smallwood 1978, 47).

There is no way of knowing the original internal height of the kiln, although it is likely that a man must have been able to crouch while standing on the raised floor, suggesting a height of around 2 m. How much of this would have been above the contemporary ground level is unknown. The northern layer which abutted the wall may indicate the presence of a soil dump against the three enclosing walls. This would have encouraged heat retention. A temporary roof would probably have been constructed for each firing, made from wasters and flat clay plates which rested on top of the load within the kiln allowing the exhaust to escape. Some of the recovered daub lumps may have been used within this covering (see Tile Report p. 144).

Whether or not it contained permanent arched firing tunnels, the kiln would have been stacked by passing the load through the wicket to someone within the structure. Loading would be finished by stacking from above, through the

open roof. Tile wasters were found with pot base and rim scars, clearly indicating that they were used as separators during loading. Simple props of unfired clay were also used (see Tile Report p. 148. Following construction of the temporary roof, fires of brushwood or faggots would then be laid and stoked along the length of the firing tunnels and the temperature gradually raised until the firing temperature was reached. The wicket and flues would then be blocked, along with any other unnecessary observation holes in the structure. The complete process including cooling may have taken a fortnight, with firing normally taking place only in the summer months. A certain amount of rebuilding would be necessary after each firing.

It is impossible to estimate the length of time the kiln was in use.

Associated Structures

Kiln 2 was undoubtedly but one part of a ceramic production complex which would have extended into the adjacent areas, unfortunately unavailable for investigation. Complete tile yards have been excavated at Danbury, Essex; Lyveden, Northants; and Boston, Lincs, where workshops and covered drying areas were found along with clay stacks, fuel stores and tile stores (Drury 1980, 136; Steane and Bryant 1975, 33; Mayes 1965, 91). The three post holes found outside the east end of the kiln may represent the remains of one or more phases of timber framed structure adjacent to the kiln. A roofed structure was found attached to a kiln at Limpsfield, Surrey (Moorhouse 1980, 101, fig. 85), and kilns have also been found inside workshops (Drury 1980, 136). Open topped kilns may have been protected by temporary structures when not in use (Moorhouse 1980, 100).

Production of Tiles and Pottery

During the excavation, very large quantities of pottery wasters were found in direct association with this structure. The ratio of pot to tile was so high that it was at first assumed that kiln 2 was primarily a pottery kiln (ratio 3:1, pot:tile, by weight). Some of the surrounding pottery scatters could have originated from the earlier kiln 1. The watching brief and magnetometer survey did not identify any other kilns in the vicinity, so this possibility could not account for the mass of material sealed directly within the rectangular kiln. It is possible that the kiln was designed to fire roof tile, and was then adapted to pottery production possibly still taking occasional loads of tile.

This situation requires another category in Musty's kiln-type series, of which this kiln would ostensibly be a type 4b, and does bring into question the strict division that has been drawn between tilers and potters (Musty 1974, 47).

Rims were found fused to bases indicating that the larger vessels were stacked one directly on top of the other. Saggers were used to protect small, dark-glazed, Cistercian-type cups, and are an early example of this technique (for a discussion of saggars see Mayes and Pirie, 1966, 260). The bricks used in the kiln structure are also early for Brill, a village which in later centuries supported a flourishing brick industry.

Over 75 kg of roof tile fragments were removed from the kiln. The manufacturing techniques relating to the tile are considered in some detail below by J. Lilley (Tile Report and microfiche). This group consisted of flat peg-hole tile and crested ridge tile, in a proportion of approximately 3:2. The kiln was built twenty years or so after the Statute of 1477 which defined the minimum dimension of tiles such as these. Here, as was noted at Danbury, the peg tile thickness was less than the $^{5}/_{8}$ in (16 mm) stipulated in the Statute.

Although the tile was subdivided into five fabrics during processing two of which were overfired versions of the other three, the clay is clearly very local, and therefore the minor variations in the inclusions, on which the classification was based, may represent different batches of firings.

Five different crest designs were found on the ridge tiles, a few probably having an applied band of glaze along the crests typical of tiles

produced during the period. The majority of the tile was unglazed, although some were found with glaze splashes. It is likely that this occurred accidentally, with glaze dripping onto the tiles from pots stacked above. The composition of the glazes was analysed and found to be similar on both pottery and tile (see p. 148).

The Pottery
by Barbara Hurman

A fuller discussion of the forms is presented in fiche.

Introduction

This transitional pottery group is an important Brill assemblage, datable on ceramic grounds to the later medieval/early Tudor period. Close parallels to these kiln products were found at the Hamel, Oxford, the pottery being dated by exceptional coin and documentary evidence, to the fifteenth century and well into the sixteenth (Mellor 1980, 161). Parallels are also to be found amongst the products of the Windmill Street kiln excavated in 1974 (Farley 1979) and the Temple Farm kiln, 1978 (Ivens 1982). The former kiln was tentatively dated to the early part of the seventeenth century but may well be earlier.

Pottery sherds weighing 124.46 kg and sagger sherds weighing 84.62 kg were recovered from this excavation. Vessel forms were evenly mixed throughout all parts of the site. There were few joining sherds.

Sherds which were obviously residual were principally sandy grey wares; there was one flinty calcareous sherd and two Roman coarse ware sherds.

Fabric

The orange/pink, fine sandy, close-textured Brill fabrics of the late medieval period have previously been discussed in detail (Yeoman in Allen and Dalwood 1983, 20). This is consistent with fabric AM in Mellor's Oxfordshire group III (Haldon in Durham 1977, 112). By comparison, the fabric of the later transitional period (late medieval/Tudor) domestic wares at Brill is a brighter orange in colour, typified by a sherd thin-sectioned by Dr Williams (Farley 1979, 137). The products of the 1983 kiln were hard, wheel-thrown and on the whole well-made, as were the fine Cisterchian wares. As would be expected from a kiln dump, there are waster sherds showing overfiring, distortion, kiln scarring, fusing of sherds, and wide variations in colour.

The following vessel forms were present and are illustrated in Figs. 6–12.

Finewares (Fig. 6)

Cups were found amongst the fineware products. The manufacture of pottery cups was introduced to this country towards the end of the fifteenth century and is characterized by so-called Cistercian wares (Moorhouse 1971, 42). Although no firm date can be given for the termination of production of these cups, they were generally replaced by the Tyg forms of the seventeenth century. Within the general cup form, regional groups can be defined; Moorhouse (1971) has previous suggested that production occurred in the Oxford area; evidence from the 1983 kiln proves Brill to be a production centre. Cups of Cistercian type, in characteristic black or brown glaze, are present but very fragmentary and it is difficult to be certain of forms. There was one lid of this type and also two bases with characteristic cheese-wire marks.

Also present were sherds of fine cups and jugs in green and orange glaze, possibly transitional wares preceding the production of Cistercian forms here, or alternatively may simply represent differential kiln reduction (Mayes and Pirie 1966, 269).

Coarse Wares

Jugs and Pitcher (Fig. 7)

The large handled vessel (No. 1) has been classified as a pitcher. The squared jug-rim tradition of the thirteenth century was carried on and this form is still seen at the Hamel in the mid sixteenth century. The jugs had underglaze, lined and grooved decoration, and cordons and bands on neck or shoulder. Some clear glazes showed orange with iron particles

visible, and a speckled or mottled finish showed from the copper particles in the green glazes. Other glazed jug sherds were a brown-green khaki colour and others brown and red, well illustrating variations of firing within the kiln.

A bifid rim with a plain strap handle (No. 11), a flanged type (No. 14) and a type with narrow channelling on top of the rim (No. 16) are examples of other forms of jugs present.

Brill/Boarstall type large jug handles were represented by the familiar sharp slashed strap with side ridges (Fig. 11, Nos. 1–6), stabbed rods (Fig. 7, Nos. 20–2), and examples of thumb impression were the handle joins the jug (Fig. 7, Nos. 22–4). This thumbing technique is also known within the region on late medieval Hertfordshire glazed jugs (Jenner and Vince 1983).

There were several pinched or pulled pouring lips (Nos. 12, 15, 17).

Pots/Jars (Figs. 8–9)

These were well represented and included the Brill standard undercut rim (Fig. 9, Nos. 8–9). The 'stubby' upright rim form can be paralleled with material from the Windmill Street kiln, Brill, excavated 1974 (Farley 1979). A handled sample was also present (Fig. 9, No. 1).

Miscellaneous (Figs. 8, 10, 11)

The following forms of pots were present, but often only represented by a small part of the whole. Cauldrons (Fig. 8, Nos. 1, 2, 16); tripod pipkins (Fig. 8, Nos. 7, 13–15); skillets (Fig. 8, No. 4, Fig. 11, No. 13, see also Fig. 10, No. 10); bunghole jars (Fig. 8, Nos. 11–12); Dishes (Fig. 8, Nos. 17–19); chafing dishes (Fig. 11, Nos. 22–3). Among the single finds was a costrel lug (Fig. 11, No. 25) which can be paralleled with a similar find from Brill in 1974 (Farley 1979, 147).

Bowls (Fig. 10)

There were a range of bowl forms both large and small. A close resemblance was noticed between the wide-mouthed bowls (Fig. 10, Nos. 2, 6) from this kiln and those from the Brill 1974 kiln (*ibid*). A distinctive feature of this group was the pronounced shoulder line (Fig. 10, No. 7). It is pointed out that although Fig. 10, Nos. 10–12, have bowl characteristics, the former may be said to be a skillet, the latter a chafing dish. A perforated small bowl is illustrated (Fig. 11, No. 26).

A few pieces, possibly intrusive, may date to the late sixteenth or possibly early seventeenth century. Several heavily-grooved brown-glazed sherds from one pot (not illustrated) can be paralleled with a cup base sherd discovered during the excavation of an eighteenth-century kiln near Temple Street, Brill (Cocroft 1985) although they too may have been residual. A perforated sherd probably from a colander (Fig. 11, No. 24) would also fit this date (Moorhouse 1971, 47) although this form is known to go on into the nineteenth century. It should be noted that a pit (63) containing later waste material, not discussed in this report, was also present on site (see p. 131).

Saggars (Fig. 12)

The saggars from this kiln have a variety of rim forms (Fig. 12). The vents had no uniformity of size or shape, or in their placing on the body of the saggar. On the rim lines they were found to be sharp and V-shaped (No. 8) and on the heavier thick rims were shallow and curved (No. 7). Those on the body of the saggar were crudely executed, either circular and pushed through (No. 1) or rectangular, coarsely cut out, leaving rough edges (No. 2). On the other hand the larger rimmed and thinner saggars seem to have better finished vents and often showed tool cut-marks leaving a jagged edge (Nos. 3–4). There was no evidence to suggest that the saggars were manufactured here, although it is likely that they were.

The presence of glaze on some roof tiles, and in a few cases circles of glaze, indicate the use of tiles as separators, possibly in conjunction with inverted saggars. Other evidence for kiln furniture is discussed further on.

Conclusion

It is clear that both late medieval and Tudor forms of pottery were being manufactured,

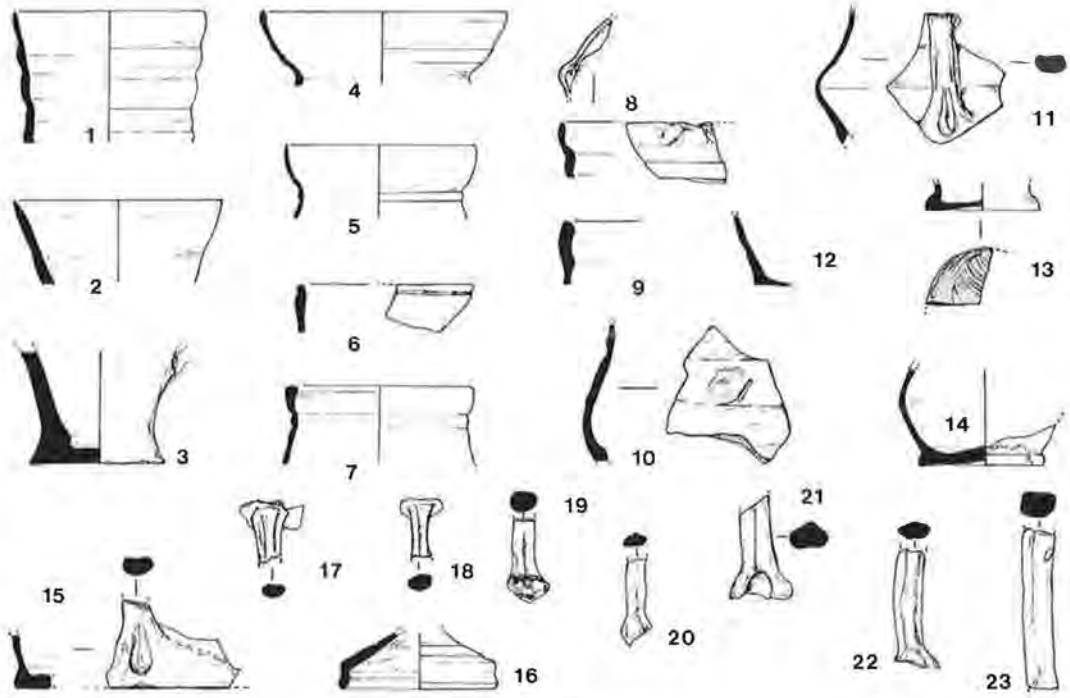

Fig. 6. Cups (1–3, 11–12, 15), Cups/Jugs (4, 6, 9–10), Cistercian type ware cups (5, 13–14), Jugs (7–8), Lid (16), Handles (17–23). (¼ scale)

Thus the ceramic evidence, combined with the fact that there were at least two kilns present, would suggest that production was continuous on this site during these periods.

Pottery production at Brill extended over a relatively small area and was long-lived. Kilns were rebuilt on the same location, earlier deposits disturbed and wasters disposed of in a random manner. Not surprisingly therefore dating problems from intrusive and residual material do occur; a example from this site is provided by the fine slashed, glazed handles, normally ascribed to the thirteenth and early fourteenth centuries.

Catalogue of Illustrated Pottery

Context numbers are given in parentheses after each entry.

Fineware (Fig. 6)

1. Waster glazed int/ext. Brown-grey fab., outer edges orange blistered, yellow glaze int/ext. ? result of a galena-based glaze being fired in an unventilated space (Brears 1971, 127). Example in (68) not illus. shows handle patch. (10)
2. Possible rim type for base No. 3 below. Well rilled int. All over green-yellow glaze shows yellow speckles, core brown grey, orange-fired patch on rim. (14)
3. Narrow cup. Grey core, good ext./int. glossy green-yellow glaze reaching within 8 mm int. of base, single handle stump. Possible base for rim No. 2 above. (31) joins with (33)
4. Brown orange core, yellow-brown glaze, some very small yellow dots, small metallic patches, very glossy all over glaze. (31)
5. Band below rim, hard fired. Grey-brown core, all over chocolate-brown glaze, a few metallic spots. (52)
6. ?Jug. Orange fab., groove below rim, glossy green-yellow glaze int/ext., groove not very well executed, some waste clay attached. (10)
7. Small thick jug rim, green, khaki and brown glaze with band below the rim. Hard grey fab., orange buff edges. (10)
8. Waster, overfired. Lip from banded jug. Dark green-khaki, over purply-grey surfaces. (65)
9. ?Jug. Thick rim, waster, bright orange fab. ext. yellow glaze showing iron grains. Diam. uncertain. (65)
10. Cup/jug, orange fab., green thickish yellow glaze etc., little on int. shows brown-purple, handle scar ext. which has unusual chalk intrusion. (65)
11. Sherd showing thumbed handle, brown orange core, grey ext. Some dark green-black khaki glaze remaining

on ext/int. (65)
12. Hard fired grey core, brown surfaces wiped. Some khaki-green glaze int/ext., kiln debris underside base. (65)
13. 'Cheese-wire' cutting marks underneath. Glazed int/ext. Khaki yellow-green-black glaze running under base edge, brown red fab. and where no glaze shows purple-brown firing. (10)
14. Some lines across base, side distorted, hard red-brown fab. Some glazing ext. purple-black. (52)
15. Base with distinctive thumbed handle stump, fab. orange, good green glaze some iron staining on int. little ext. Base int. good throwing lines, pronounced rise in the centre. (31)
16. Hard fired, grey core, int. orange brown, ext. purply-black glaze with metallic dots. (69)
17. Cup/jug handle semi rod, central shallowing, olive green glaze iron stained, grey fab. shows handle junction. (17)
18. Cup handle, purply-black glaze etc. shows handle junction. (31)
19. Rod, orange fab. ext. yellow glaze, kiln scarring on front. (59)
20. Good glossy purple black glaze, thumbing at base, reddish brown core. (31)
21. Semi-rod handle, (central ridge may be glazed) good thumbing lower end. (17).
22. Plain flattened semi-rod handle, waster, orange fab. khaki glaze. (59)
23. Variation of semi-rod, kiln scarred, orange fab. glossy green yellow glaze. (58) joins (59)

Coarsewares (Fig. 7)
1. Pitcher, thumb decorated 'frilled' neck and rim, grooved strap handle, orange fab. patch of clear glaze showing orange with iron specks below the neck, rough scored lines on body. (59)
2. Flat top squared rim, buff fabric, brown ext. surfaces, with small splash speckled green glaze, grooved decoration. (66)
3. Flat topped squared rim, orange fab. fine grooves, patch of live glaze on ext/int.
4. Squared rim similar No. 3 above but int. edge sharp, grooved. Some very small splashes ?clear glaze. (67)
5. Flat top, upright neck, orange fab. brown surfaces, some green glaze and fine lines. Shattered handle of strap form, remains of splashes showing. (66)
6. Upright neck, flat topped, orange fab., splash of olive green glaze. Thumbed application to handle, shattered remains suggest semi-rod. (67)
7. Flat topped, plain necked, orange fab. brown surface, small patch blistered glaze. (10)
8. Waster, some olive glaze over fracture but mainly on body. Flat topped slightly everted rim, slashed strap handle, three slashes at the top and one centrally placed. Large side thumbing. Olive green glaze. (67)
9. Similar No. 7 above, buff-grey surfaces, little orange glaze ext. rim. (66)
10. Flat topped, greyish core, surfaces buff-orange; sharp protrusion on ext. ?Undercut. Some speckled copper green glaze. (67)
11. Bifid rim; plain strap handle has central shallowing orange-pink, buff fab. (65)
12. Lip, wide, pinched, buff orange fab. core showing orange grey; good green glaze, copper and iron dotting. (67)
13. Handle, semi-rod, shallow side thumbing attached upright rim, orange fab. some speckled orange green glaze, under handle. (10)
14. Flanged rim, variation in firing, fab. good orange, brown-grey surfaces one side of jug. Cordon on body. Plain strap handle, centre shallowing, rounded thumbed attachments, from flange. Some khaki glaze showing metallic iron spots. Lip not possible to illustrate. See No. 15 below. (59)
15. Waster, grey good example of type of lip for jug No. 14 above, distinct thumbing on the lip. (65)
16. Shattered handle, everted rim, outer rounded edge slightly lower than interior. Crude finish int/ext. lip, fingering visible. Band lower neck. (52)
17. Sharp pinched lip, orange fab., brown surfaces; distinctive push to spout with thumb imprint. (17)
18. Buff orange fab., yellow glaze covering ext. iron dots showing, grooved. Diam. uncertain. (52)
19. Flat topped rim, with slight channel, gently everted, orange fab. band on neck, splash of glaze showing clear with yellow-green tinge. (65)
20. Orange-red fab., central stabbing, three horizontal stabs at bottom, mottled yellow-green glaze some iron staining. (66)
21. Orange-red fab., central stabbing, three horizontal stabs at top. (66)
22. Overfired, grey brown fab., central stabbing, side thumbing at top. (66)
23. Orange fab., brown surfaces, some patchy khaki glaze int/ext., shows double thumbing at base of handle. Waster, glaze on break. (39)
24. Bright orange fab., some grey colouring, ext. single thumbing base of handle. (65)

(Fig. 8)
1. ?Cauldron. Hard fired, band on shoulder, orange-red fab. (65)
2. ?Cauldron handle; thick, semicircular, rod-like, orange fab. (54) joins with (59)
3. Flat topped pot upright rim, wide plain strap handle buff-orange fab. brown surface, yellow brown glaze down part ext. of handle, only a splash underneath. (12)
4. Orange fab., three slashes at attachment end. (33)
5. ?Pipkin, orange fab. buff core, hard fired, flat topped. (10)
6. Upright angled pot rim, buff orange fab. hard fired. (65)
7. Lid seated buff fab. orange surfaces, single patch glossy green yellow glaze ext. of rim, probably from kiln rather than intentional. Hard fired. (48)
8. Shouldered pot/jar, rounded upright rim, pinky-orange fab. surfaces smoother than other pots illustrated. (54 joins with 59).
9. Shouldered pot/jar with flat topped beaded rim in orange fab. well finished surfaces hard fired. (52)
10. 'Tulip shaped' pot double fingered pinching at top, some green yellow glaze perhaps from kiln firing, fab.

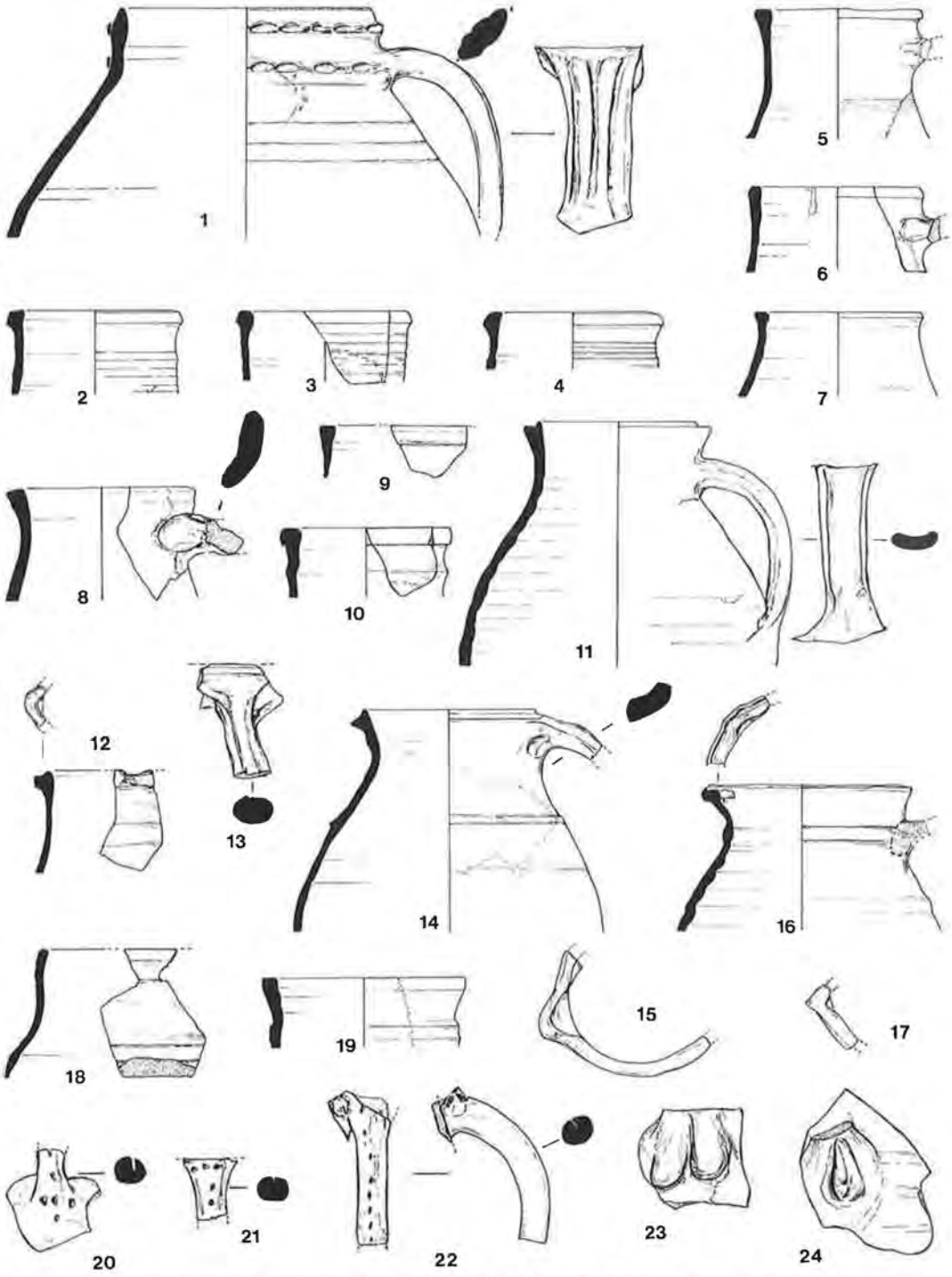

Fig. 7. Pitcher (1), Jugs (2–12, 14, 16, 18–19), pouring lips (12, 15, 17), handles (13, 20–24). (¼ scale)

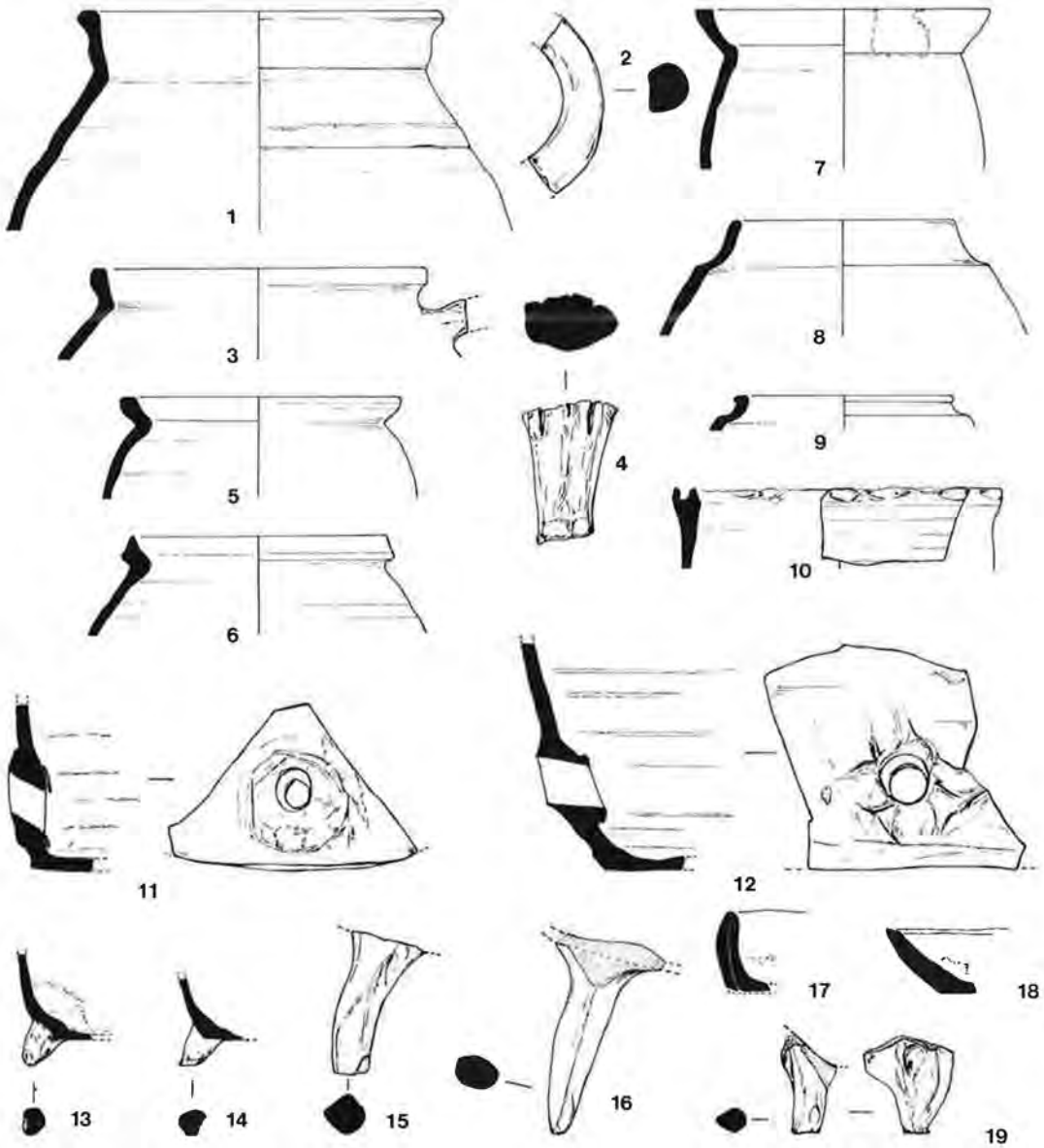

Fig. 8. Cauldrons (1–2, 16), pots/jars (3, 6–9, 10), pipkins (5, 13–15), bunghole jars (11–12), dishes (17–19), ?skillet handle (4). (¼ scale)

orange-red. (65)

11. Bunghole/base, buff orange fab., int. of hole crudely executed, waste clay not smoothed, in fact whole of int. rather rough, although ext. well smoothed. Splash orange glaze ext. Roughness of finish can be the clue to identification of this form when only sherds remain. (59)
12. Bunghole/base, bright orange buff fab. Hole pushed from ext. and clay surplus unfinished on int., but well fingered application on the ext. (65)
13. Pipkin base, foot, overfired grey surfaces. Light orange colour, int. has some purply black glaze. (31)
14. Pipkin foot, waster, similar to No. 13 above. (35) joins with (33)
15. Pipkin foot, buff orange fab. Hard fired. (59)
16. Cauldron leg, bright orange-red fab., ext. brown-grey surfaces. (65)
17. Driping dish shattered base, orange fab., int. patchy yellow glaze, ext. surface brown. (65)
18. Dripping dish waster, overfired grey throughout, patch

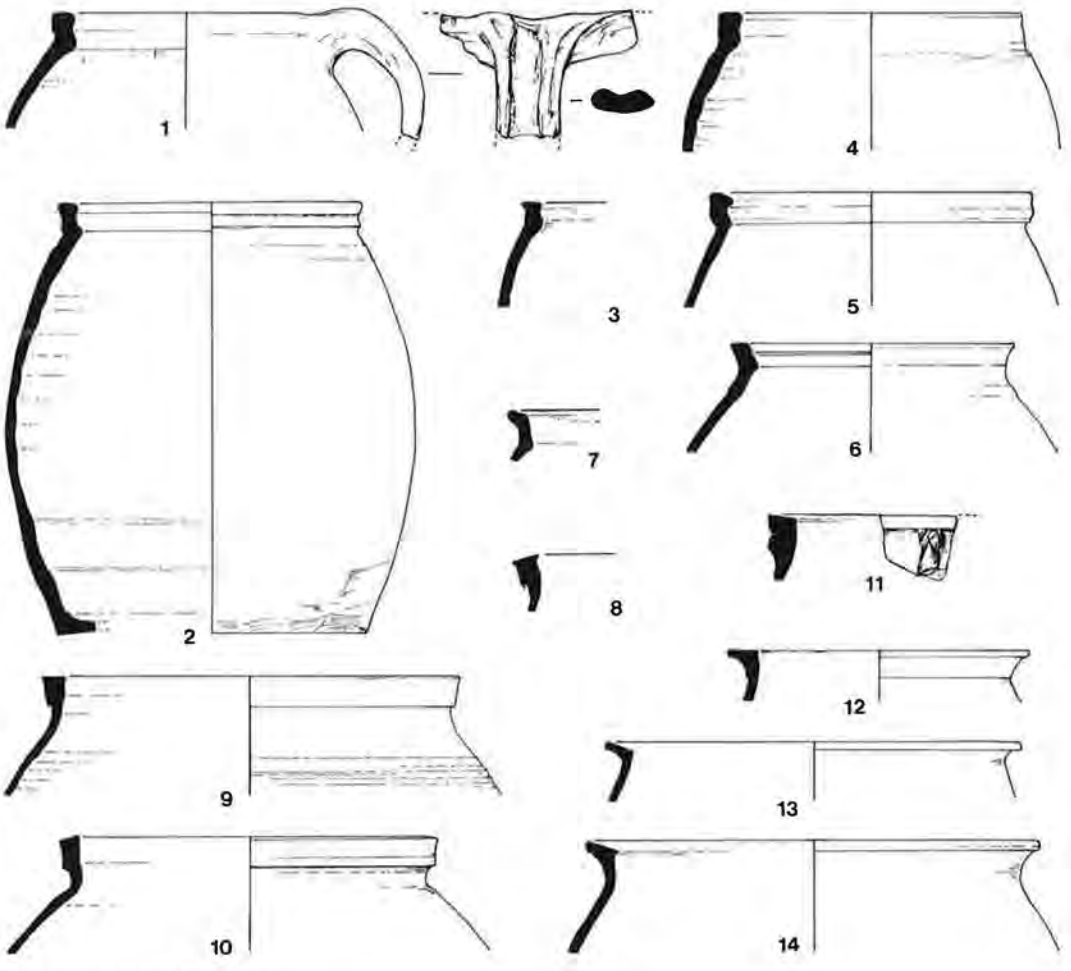

Fig. 9. Pots/jars. (¼ scale)

of blistered glaze int., lower outer edge knife-trimmed. (31)

19. Dripping dish stubby foot, thumbing at top, orange fab., khaki glaze int. (17)

(Fig. 9)

1. Handled, orange-buff fab., ext. bright orange. (59)
2. Complete profile, orange-buff fab., small glazed patch int. rim edge, kiln scarring, ?lid seating. (59)
3. Orange-red fab. rim, top extended outwards slight shallow int. rim edge. Diam. uncertain. (48)
4. Orange fab., upright flat topped, well-rilled int. (59)
5. Orange-red fab., upright with ?lid-seating. (35)
6. Orange-buff fab., upright slightly everted, flat topped. (58) joins with (59)
7. Buff-orange fab., thick trickle bright olive green glaze over part int/ext. rim. (68)
8. Orange-red fab., variation on traditional Brill undercut rim. Diam. 22 cms. (66)
9. Buff fab., flat topped traditional Brill undercut rim, ext. scored starting on shoulder. Int. well rilled. (66)
10. Orange fab., sloping, squared. (67)
11. Buff surfaces, orange-pink core. Flat topped, applied thumb strip tucked under squared rim. Diam. uncertain. (66)
12. Buff fab., orange core. (39)
13. Orange-buff fab., narrow square sharp edged, everted. (66)
14. Buff-orange; sloping int. (66)

(Fig. 10)

1. Pale buff-orange fab., hard fired. (65)
2. Orange-red fab., strong throwing lines int. Int/ext. (65)
3. Orange-red fab., strong throwing lines. Int/ext. (65)
4. Pinkish-brown fab. (67)
5. Buff-orange fab., strong throwing lines int/ext. Some clear glazing, showing fab. colour inside lower rim, but this more likely accidental and picked up in kiln rather

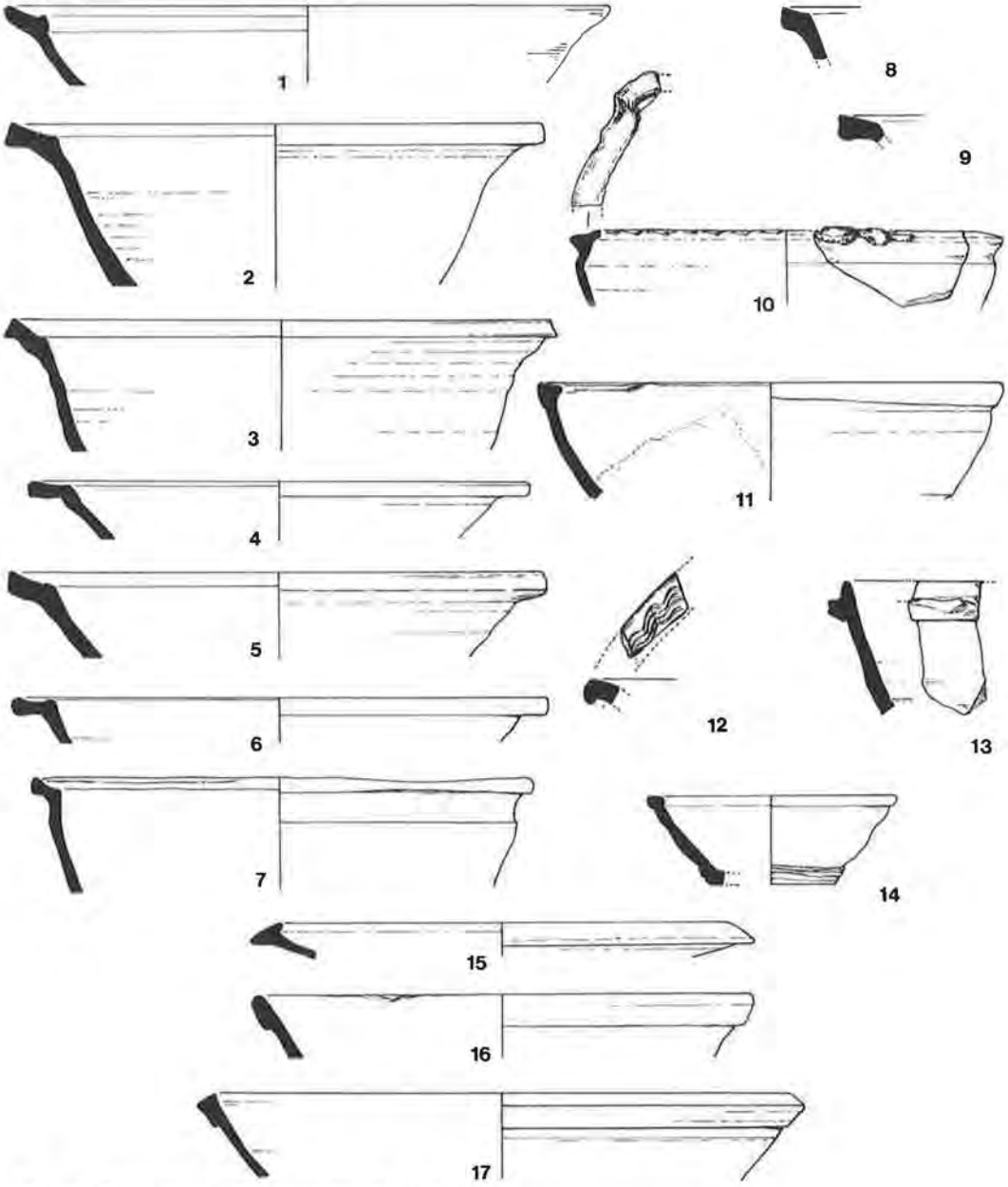

Fig. 10. Bowls (1–17), ?skillet (10). (¼ scale)

than intentional. (67)

6. Orange-red fab., pinkish brown tinged surfaces. (10)
7. Waster, orange-red fab., distinct shoulder line, brown discoloured surfaces. (69)
8. Pinkish-brown fab., diam. uncertain could be large ?40 cm. (66)
9. Orange-grey core, some pale patchy clear glaze showing green and orange occasional copper spots. Diam. 32 cm. (65)
10. Buff-orange fab. Yellow green glaze just reaching over top int. fingered rim edge. Fingering also occurs near shaping of lip. (This could be called a skillet. Single find.) (69)
11. Pinkish-buff fab., some int. pitted green-yellow glaze

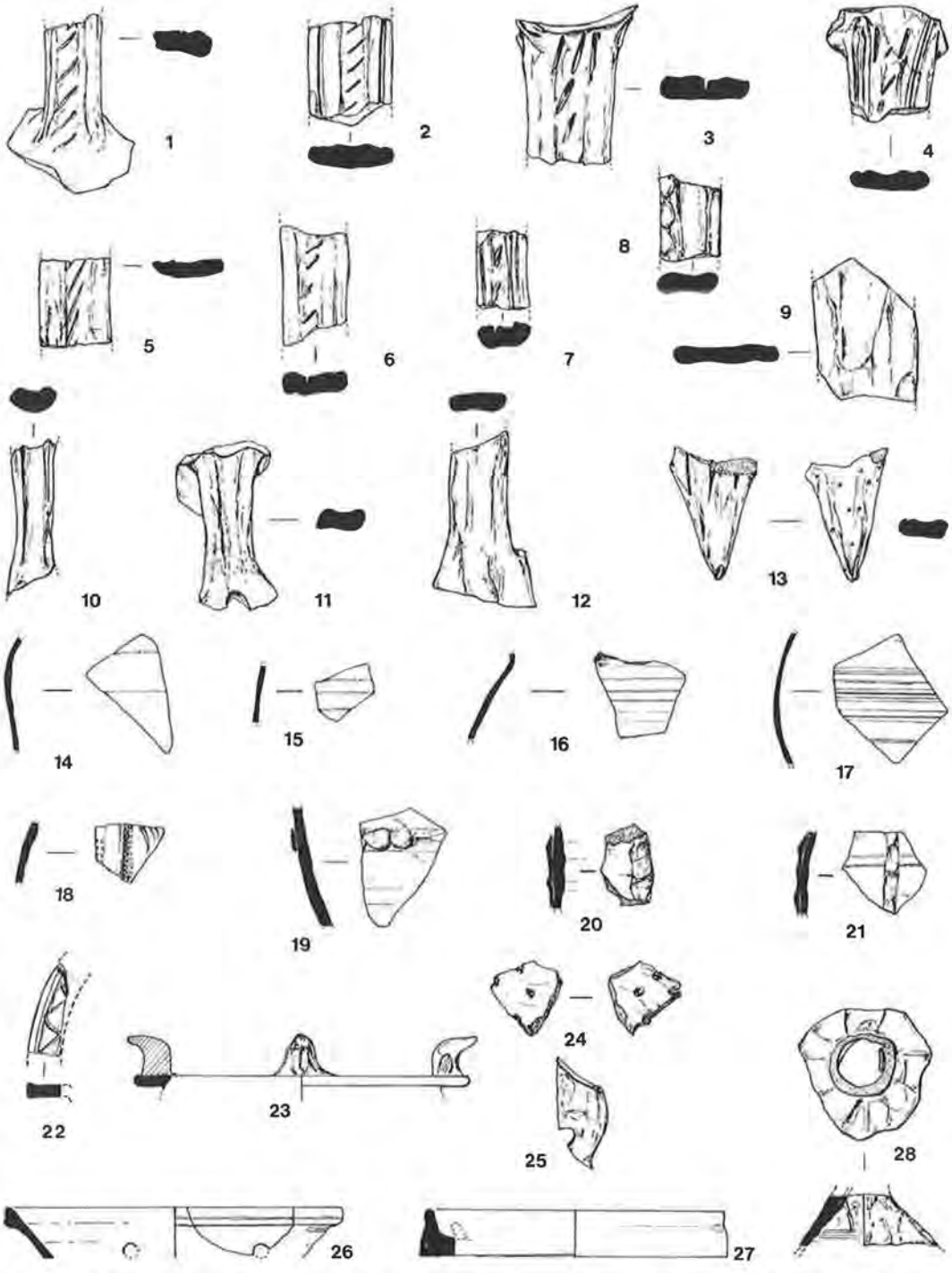

Fig. 11. Other handles (1–12), skillet handle (13), decorated sherds (14–21), chafing dishes (22–3), ?colander (24), lug (25), perforated bowl (26), ?chicken feeder (27), roof finial (28). (¼ scale)

lower art. (67)
12. Rim frag. diam. uncertain, orange-red fab., wavy combed dec. (10) (perhaps from chafing dish).
13. Strong orange-red fab., unusual form, rim folded out, lower edge pushed up and fingered. Thumb print on the int. rim edge. Diam. uncertain. (35)
14. Orange-red fab. waster, thick clear int. glaze showing green-yellow with iron spotting. Unusual small bowl fitting into latter part of this sequence. Single find. (59)
15. Unusual form, possible lid, buff-orange fab. with splashes of yellow ?accidental glaze int. Single find. (14)
16. Plain folded out rim, orange-buff fab. (66)
17. Traditional Brill undercut type, orange-red fab. (66)

(Fig. 11)
1. Slashed strap, orange-red fab., buff surfaces. Some blistered bottled green glaze ext. Handle application int. is crudely finished, thumbed clay. (66)
2. Strap, orange fab., ext. brown, shallow central groove with slashing which leave small raised protrusion underneath. (17)
3. Wide slashed strap, good orange-red fab., side thumbing top of handle. (67)
4. Wide strap, orange fab., grey core, purple-red ext. some yellow green glaze top part, vertical grooving near edges central stabbing, and three stabs horizontal at top. (65)
5. Strap, overfired grey-orange fab., dirty brown surfaces, occasional glaze spots underneath. (66)
6. Slashed strap overfired, grey brown surfaces blue green core, slight central channel. (67)
7. Strap, channelled vertical edges, central shallowing with stabbing olive green glaze, iron spots ext., buff-orange fab., surface when visible underneath is brown. (65)
8. As below No. 12 variation, but thicker strap coarse buff fab., central shallowing and thumbing on one outer edge, ext. pale green glaze. (70)
9. Very wide strap, orange fab., wide trickle bright green glaze down centre front. (35)
10. Narrow strap, orange-buff fab., orange grey surfaces, central shallowing. (65)
11. Strap, orange-red fab., red-brown surfaces, spots of clear glaze. (10)
12. Plain strap, slight central shallowing, thumbing lower edge, int. buff-orange fab. some yellow-green splashes glaze. (65)
13. Waster? Skillet handle, grey overfired, small irregular stabs and slashing on underside near junction of pot. (70)
14. Buff-orange fab. with fine lines. (66)
15. Bright orange fab., fine lines. (66)
16. Fine lines, fab. as No. 14. (66)
17. Irregular shallow grooving, fab. as No. 14. (66)
18. Jug sherd buff-orange fab., mottled green glaze applied routletted iron glazed strip. (65)
19. ?Bowl. Finger dec. sherd, orange fab. Good glossy yellow-green glaze int. & ext. (69)
20. Orange fab., int. yellow glaze, applied strip. (66)
21. Orange core, brown-grey ext., dirty yellow glaze int. applied strip. (66)
22. Rim. Zig-zag dec. waster, grey surfaces worn blistered green glaze on surfaces. (59)
23. Chafing dish, waster; small piece of rim, grey overfired, small mark on base very similar to decoration on previous No. 22. (58)
24. Waster, perforated sherd overfired ?colander/sieve. (59)
25. Costrel lug, orange fab. fired hard, some orange glaze. Pushed rough perforation, not finished off. (39)
26. Perforated bowl, waster, orange-red core, good glossy overall orange-green glaze. (52)
27. ?Chicken feeder profile, grey-buff tinge, hard fired, base rough underneath. (10)
28. Roof furniture. Part of finial, orange fabric, main body visible with the outer part applied, dark green-yellow glaze, a little glaze int. quite crudely fashioned. (66)

Saggars (Fig. 12)
1. Buff fab., orange-red core. Two circular perforations. Pushed through. Kiln debris on base. Wiping on body and lower part vessel where it joins base, which is folded up to meet wall. Collared rim. (59)
2. Fab. finish purple-brown. Result of several firings, kiln scarring on base including remains cup base. (59)
3. Profile with part rectangular perforation, showing cutting marks. Kiln scar at base junction where strong brown-green glaze runs down indicating the saggar was used upside down. (59)
4. Diam. uncertain, fab. finish as No. 2 above. Side perforation crudely cut. Plain necked. (59)
5. Thick, purple-brown glaze. Part perforation on the rim. Diam. uncertain. (59)
6. Part of large vent on rim, brown surfaces, grey core. (70)
7. Red/purple-grey surfaces. (59)
8. Grey overfired surfaces, orange core. Small vent on rim, part perforation on body side below rim. (65)

The Tile
by Jane Lilley

A fully report on the tile is presented in microfiche (B1 to E3). The 74 kg of tile was divided between peg-hole and crested ridge types in an approximate ratio of 3:2. Using a binocular microscope and selective thin-sectioning this material was subdivided into five fabric types, characterized by inclusions and states of vitrification described in the microfiche report. Two of the five, (D and E) were overfired versions of the others (A–C).

The Peg Tiles

375 sherds were analysed. It was not possible to reconstruct a full tile; the most complete example found (Fig. 13A) is typical of all the tiles in its shape and the position of the peg holes. The tiles were made by placing a suitably

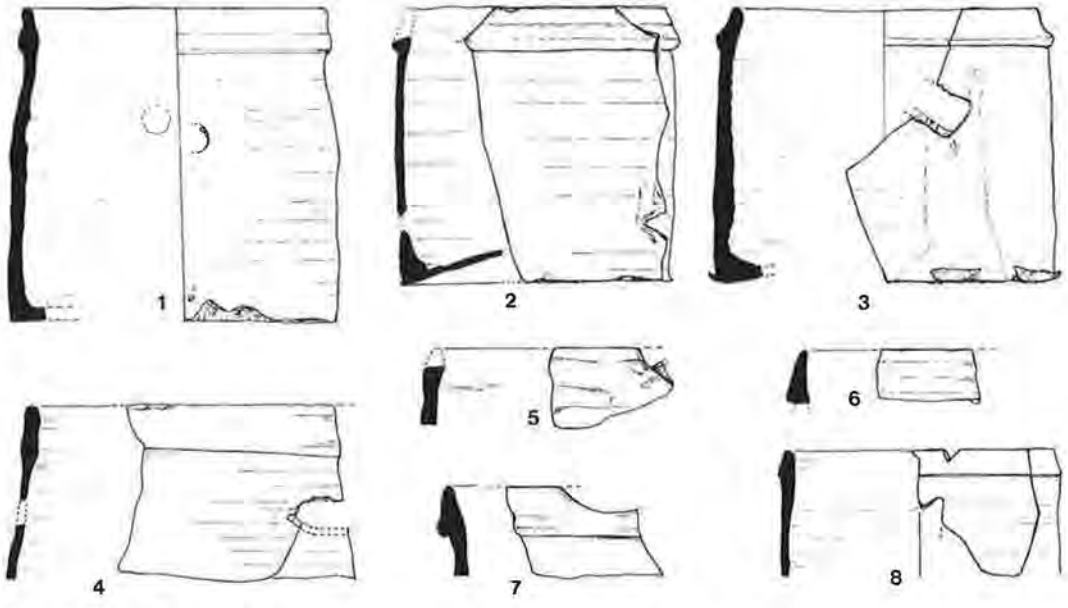

Fig. 12. Saggars. (¼ scale)

sized wedge of clay into a rectangular mould, which was sanded to prevent the clay sticking. The reverses and edges of the tiles were therefore sanded, whereas the upper surfaces (from here on referred to as the obverse) were smoothed. The tiles were smoothed lengthways with touching-up at the edges, notably widthways at the end of the tile. Four sherds had an unusual edge profile, with a groove between two flanges made by running a tool along the centre of the moulded tile edge. The function of the groove is unknown, though it is possibly to act as a key for mortar, related to the practice of rendering and pointing roofs (Salzman 1952, 233).

Since the Brill tiles are late fifteenth century to sixteenth century in date, they are roughly contemporary with a 1477 statute (Salzman 1952, 230), which stipulated that tiles should measure 10½ × 6¼ × ⅝ in. (266 × 158 × 16 mm). The reconstructed tile widths at 160 mm, 162 mm and 169 mm more than comply with the statute. However, the same was not true for the tile thicknesses: only 17 sherds were equal to or thicker than the law required. In this the tiles may resemble those of Danbury (Drury and Pratt 1975, 111), which fulfilled the statute's requirements on length and thickness but not in width. It must however be remembered that the Brill tiles were all wasters, and could have been rejected because they were too thin.

The peg holes, usually two per tile, were drilled through from the obverse to the reverse while the tile was still wet, with a wooden or metal tool. The holes were on average 14–24 mm from the end of the tile, and 15–55 mm from the side. It is possible that there were two single-peg-hole tiles. Two hole shapes were noted, the dominant type being circular, (Fig. 13A, B). These ranged from 10.5 to 18 mm, the different diameters probably reflecting different piercing tools used. The second shape (Fig. 13C) which occurred on only three sherds, has a circular hole with a wider circular indentation around it on the obverse. Since these all have similar diameters they were possibly all pierced with the same tool. In addition to the pierced holes, there were thirteen examples of failed holes. In one case (Fig. 14A), the tile seems to have been allowed to dry out too much prior to piercing: Difficulty was therefore experienced trying to pierce two holes.

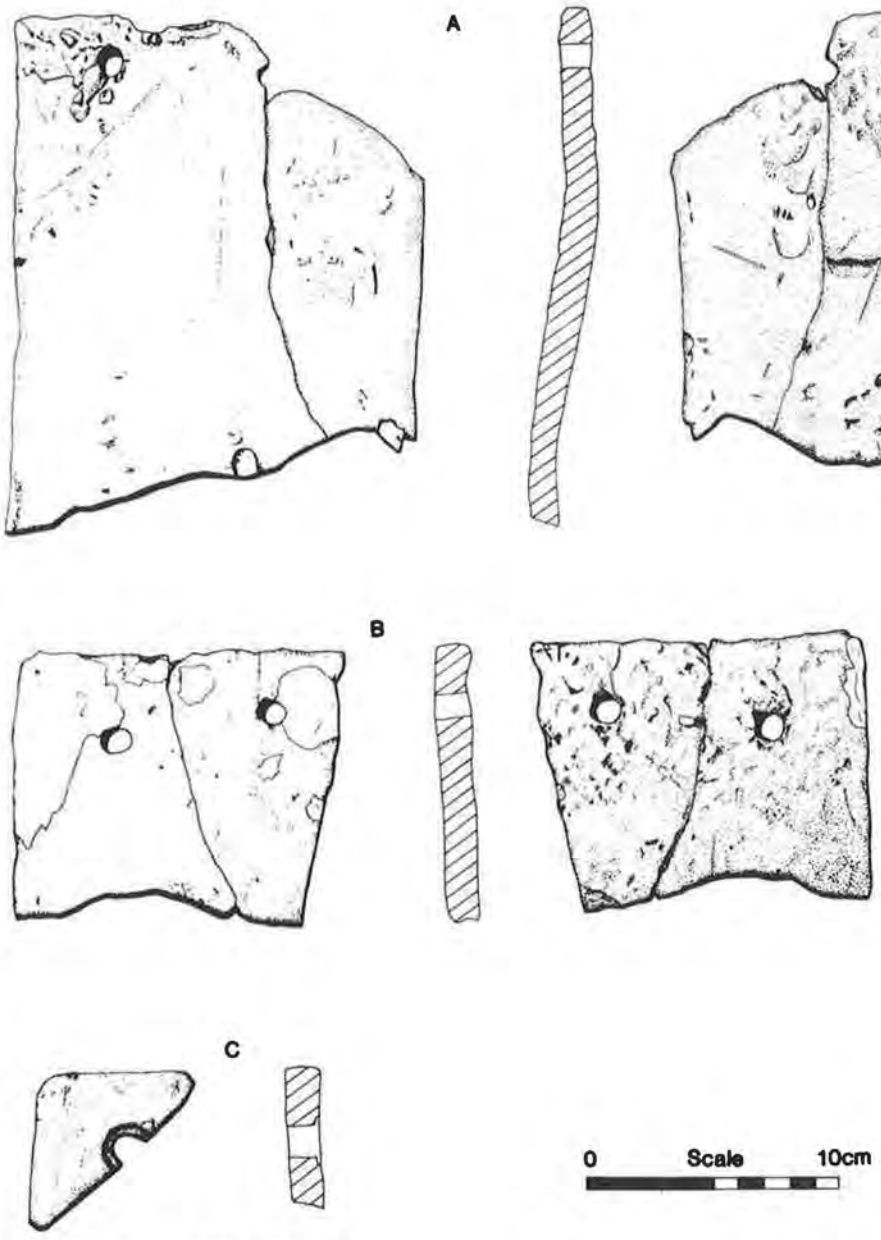

Fig. 13. Peghole Tiles. (⅓ scale)

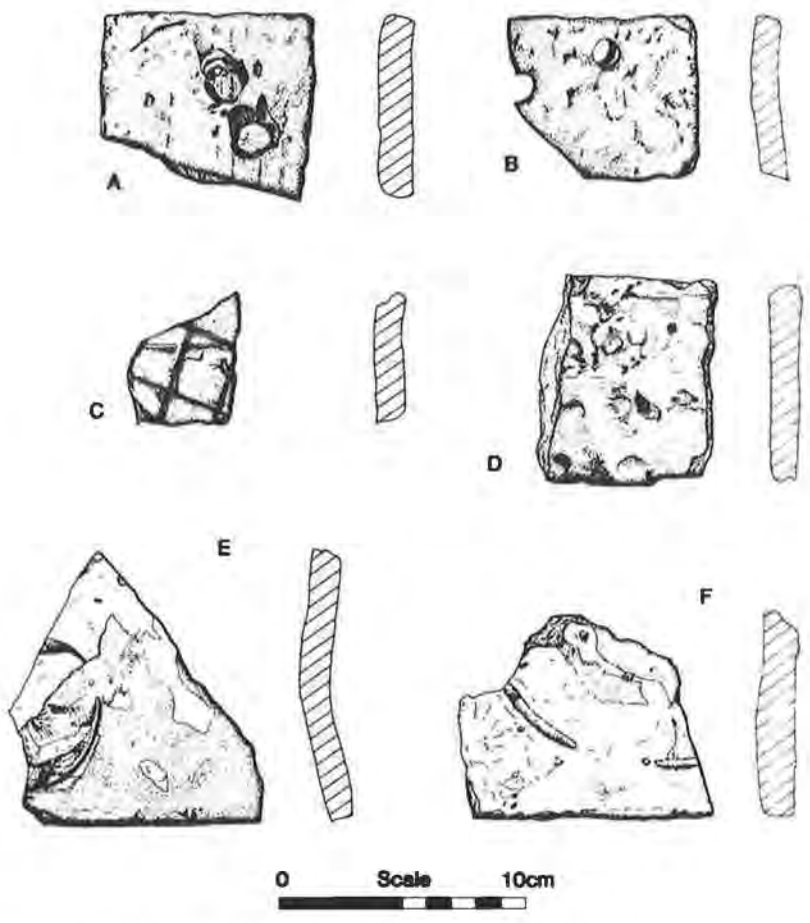

Fig. 14. Peghole Tiles. (⅓ scale)

Similar failed holes were found at Pleshey Castle (Williams 1977, 89). The other failed holes seem to have been begun too near to a tile edge so that prior to full piercing the tiler moved the hole to a new position, leaving a circular indentation near the tile edge (Fig. 14B).

Two surface treatments were seen on the tiles. Firstly, three sherds had knife cut grooves on the reverse (Fig. 14C), probably for keying mortar associated with rendering and pointing a roof. A single tile had a stabbed surface (Fig. 14D), which would have helped to spread heat evenly through the tile during firing.

After preparation the tiles would be laid out to dry either on the ground or in hacksteads (open-sided sheds containing shelving). Without excavation of the area surrounding the Brill kilns, it is not possible to say if hacksteads were present. On three sherds a cat has walked across the tile during drying, leaving paw prints on the surface (Fig. 14D).

The majority of the peg tiles, 52.8%, were unglazed; the remainder were apparently glazed accidentally. Although some medieval tiles were glazed, the top half of a tile never was since it was hidden beneath other tiles when hung on a roof, nor were tiles deliberately glazed on the reverse. However, 136 of the peg tiles were glazed either on the reverse or at the top of the tile (Fig. 13B). Others had glaze which had dripped from pot bases onto the tile

surface, leaving a circular impression of the pot base (Fig. 14E, F). Only 41 tiles had glaze on the obverse of the tile; and this was so uneven and patchy it seems to be accidental.

The Ridge Tiles

438 sherds were analysed. It was not possible to reconstruct a full tile; the most complete example found is illustrated at Figure 16A. All the crests were knife-cut, which confirms Jope's conclusions that hand-moulded crests had been replaced by knife-cut ones by the late thirteenth century (Jope 1951, 86).

It seems that the tiles were made in two ways. The majority were made in sanded moulds, similar to the method of manufacture for the peg tiles noted above. Again, there were two examples of the groove and flange edge, possibly associated with rendering roofs. There were also 21 tiles with a rounded unsanded edge. The do not therefore seem to be moulded, but made by a wedge of clay being laid over a frame or former, then the edges smoothed with a tool or the fingers to give the rounded profile. Obverse smoothing on both types of tile was parallel to the crest with touching-up in other directions at the edges.

Crests were added to the tiles while still plastic, as a strip of clay which was smoothed onto the tile surface. The design was then cut out from this strip. The crests were added before the tile was smoothed, since in all examples the smoothing striations continue up the sides of the crests. Five crest designs were seen.

Squared. 18 examples (Fig. 15A–D). Knife-cut from two directions to give the appearance of square-topped waves.

Rounded. 4 examples (Fig. 16B, C). Cutting in a continuous section to form waved crests. If these had been cut from two directions, they would be triangular.

Pointed. 2 examples (Fig. 15E). Knife-cut from two directions to form a pyramid shape. Crests which occur at the end of a tile are often slightly different to those on the rest of the crest (Fig. 15B) as if infilling a space left beside other crests. Since both examples are at the end of a tile, they may be sub-groups occurring alongside any of the other crest designs.

Triangular. 6 examples (Fig. 16D, E). Cutting from two directions to form triangular peaks.

Transverse. 1 example (Fig. 16A). Knife-cut waves alternately square and with a thin ridge running transverse across the tile ridge.

Half the crests were stabbed at their bases, four examples had multiple stabbing which yielded a decorative effect (Fig. 16B, E). All the stabs were from the same direction, top left to bottom right, and done with a knife tip. The stabbing would spread heat through the thickest part of the tile during firing.

31.7% of the tiles were glazed. Of these the majority had glaze randomly and unevenly distributed on the surface of the tile, which seems accidental. There were, however, twelve ridge tiles where the glaze did seem to be in a strip along the crest, and it is possible that this was deliberate. One piece of roof finial was present. (See Contents of Microfiche, p. 153).

Other Kiln Furniture

Kiln Props

Three complete and two partial kiln props were found (Fig. 17A–C). All were made by taking a circular piece of clay, flattening it on one side, and then pulling up the uneven side and twisting it to form a peak. Their function was to separate ceramics during firing to prevent them from fusing.

Kiln Plate

The partially-fired remains of a kiln plate were found.

Glazes

47.2% of the peg tile sherds and 31.7% of the ridge tiles were glazed in colours ranging from yellow, yellow/green, orange, brown, brown/green, green/white, white/grey, green/purple, purple to green. It seems the peg tiles were not

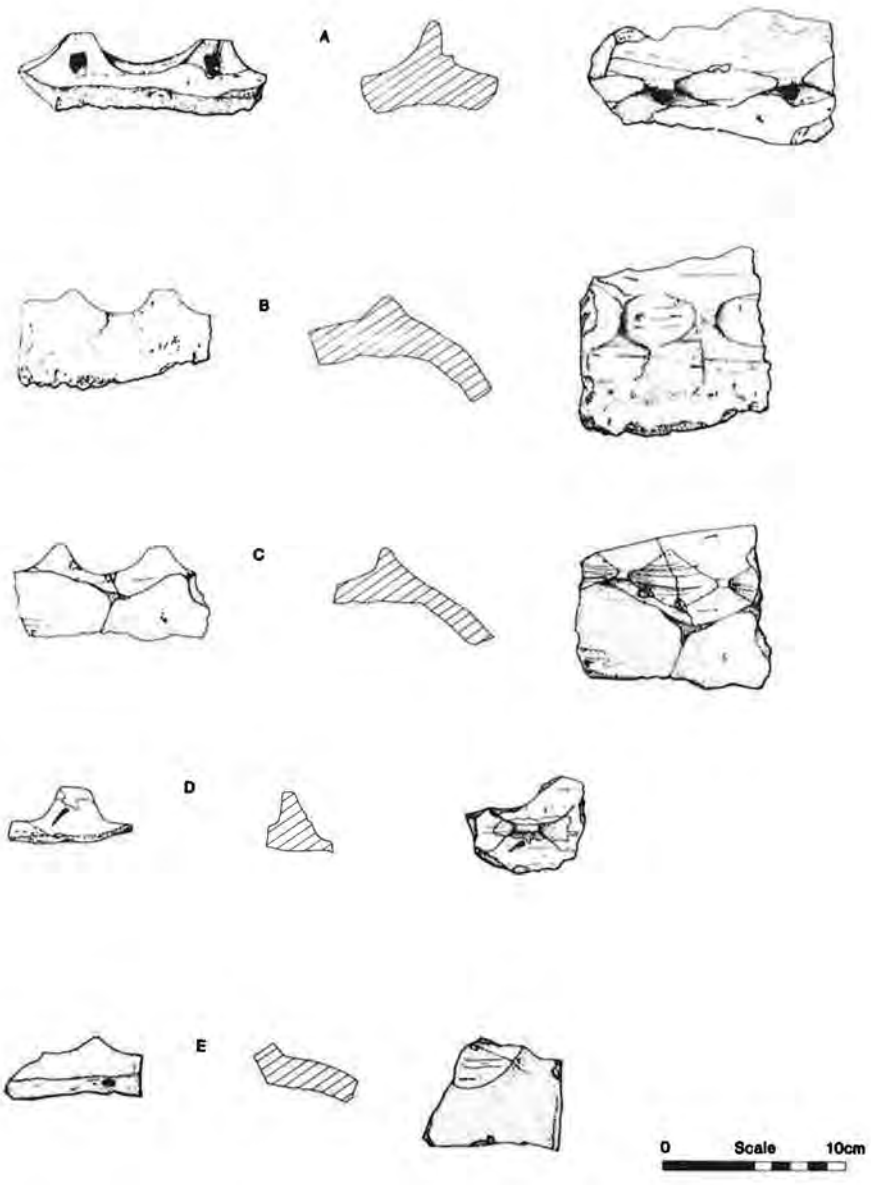

Fig. 15. Ridge Tiles with squared and pointed crests. (¼ scale)

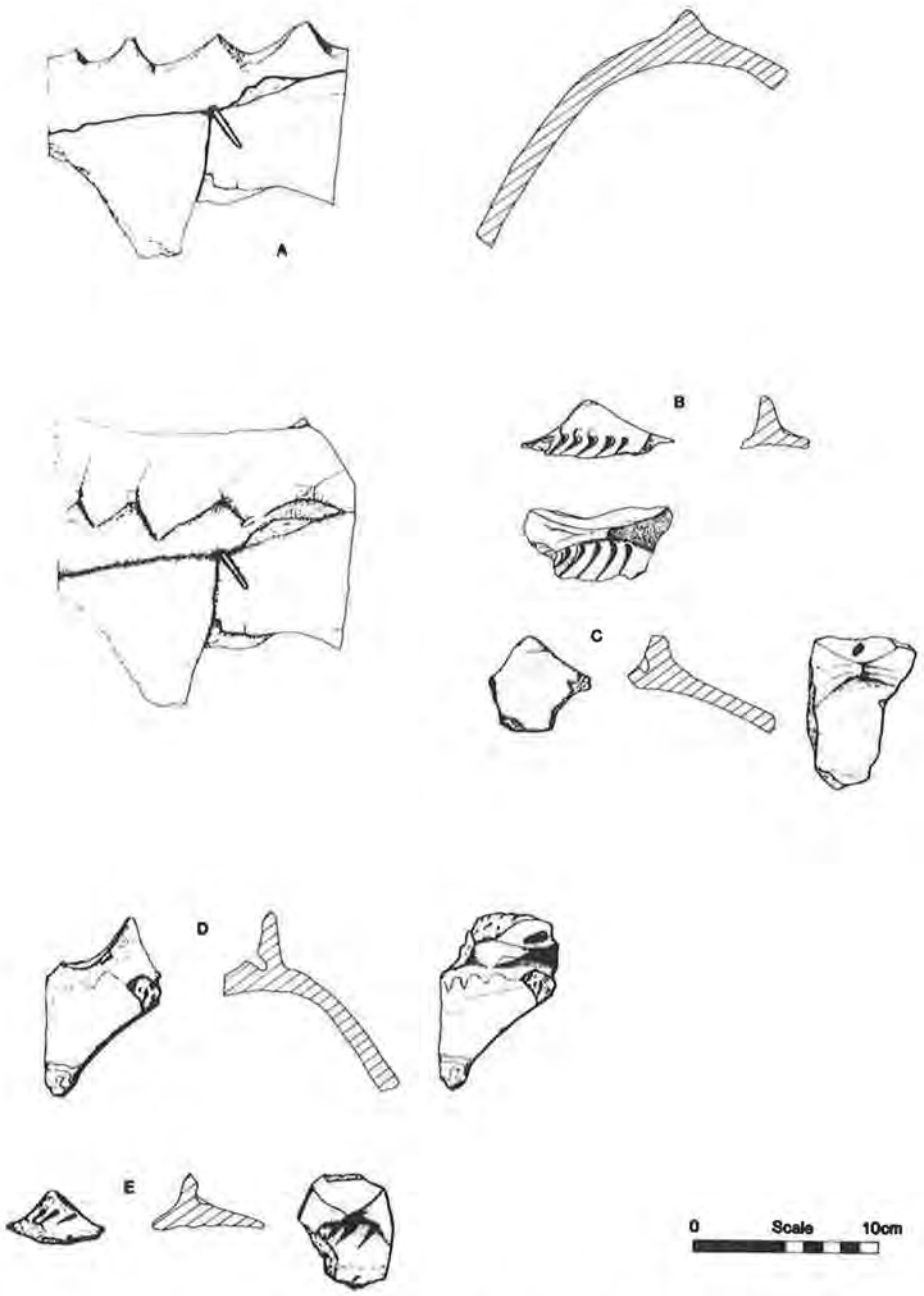

Fig. 16. Ridge Tiles with transverse, rounded and triangular crests. (¼ scale)

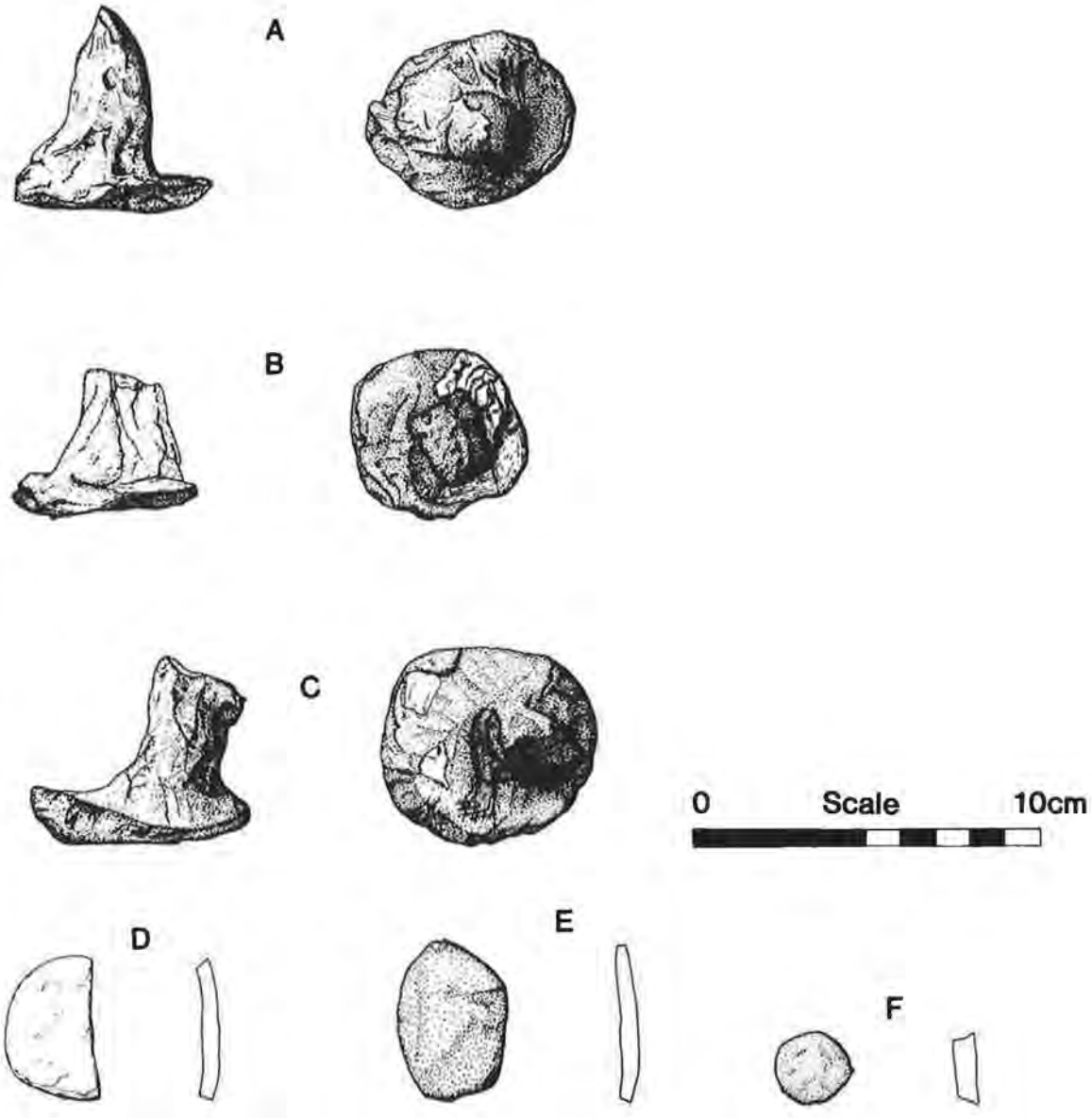

Fig. 17. Kiln Furniture. (½ scale)

deliberately glazed, but that some of the ridge tiles may have been (see above). Scanning electron microscope work showed the glazes were lead, and perhaps surprisingly that copper was absent from the green colours. Glaze colour could not be correlated to chemical composition. However, it could be the result of a combination of the tile surface colour, glaze thickness and firing conditions. It seems the glazes were similar in composition to those on the pottery.

The Charcoal
by Ann Miles

In the list below, pieces with pronounced ring curvature are listed as branches, the remainder are either from the outside of a large branch or from the main trunk.

Sample No.	*Identification*	*Pieces*	*Branches*
10	*Quercus* so. (oak)	38	5
21	*Ulmus* sp. (elm)	7	0
	?*Alnus* sp. (alder)	1	1
30	*Quercus* sq. (oak)	6	0
	Quercus sq. (oak)	9	0
	?Shrub—unidentified	1	1
34/			
Context 22	*Acer* sp. (maple)	1	1
Context 33	*Quercus* sp. (oak)	1	0
Context 35	*Quercus* sp. (oak)	1	1
	Ulmus sp. (elm)	1	1
48	*Quercus* sp. (oak)	1	0
52	*Ulmus* sp. (elm)	7	0
	Quercus sp. (oak)	29	4
	Alnus sp. (alder)	2	2
58	*Quercus* sp. (oak)	37	7
59	*Quercus* sp. (oak)	17	7

Although a relatively small sample, the predominance of oak is notable. The fuel needs of the potters would have been served by Bernwood forest.

Archaeomagnetic Dating
by A. J. Clark, PhD, FSA

Introduction

The sampling was carried out 19 October 1983 by A. David, of the Ancient Monuments Laboratory, and by P. Simmonds, then at the Laboratory, who also made initial laboratory measurements. Final tests, measurements and evaluation were undertaken by the writer of this report.

Samples were taken by the disc method and consisted of the following. Samples 1–6. Area 2, layer 1. Compacted material, possibly kiln floor. Clamp B. Samples 15–26. Area 2, layer 4. Burnt natural sand at base of structure. Clamp B. Samples 7–14. Area 4, layer 11. Burnt natural sand around perimeter of structure. Kiln 2 orientation was by gyro theodolite.

Results

Although the samples were quite strongly magnetized, their thermoremanent directions proved to be very scattered, giving results far too imprecise to provide any kind of dating sequence for the site. Partial AF demagnetization of the burnt sand showed that it was magnetically stable, but no improvement in the grouping of results was possible by this means, and it was concluded that the scatter is probably due to disturbance and the heterogeneity of some of the samples. Samples 2–6 were quite well grouped, but shallow inclination suggested a date as early as the fourteenth century, which is not in keeping with the known facts about the site; and it is probable that they were affected by human treading action. However, sample group 15–26, which had been taken from material better protected than the rest, gave the following result after discarding one outlying reading:

Measurement reference No. AJC-14
Dec=2.3°E; Inc=64.6′; alpha-95=4.4°

This result lies just off the archaeomagnetic calibration curve, suggesting that, in addition to the disturbance, the deposit may have been affected by a slight downward tilt in an easterly direction. In spite of these problems, the measurement indicates a date span of cal AD 1470–1550 at the 68% confidence level.

Other Finds

Iron (Fig. 18)

The remains of two knife blades were found in the backfill of kiln 2, along with a small number of nail fragments. One knife survived only as a short blade fragment, while the other was

Fig. 18. Iron Knife from fill of Kiln 2. (⅓ scale)

almost complete. This had a tapered, riveted scale tang, broken off at hole number two. (SF No. 210)

Pottery Discs by Jane Lilley

Three complete and one partial pottery disc were found (Fig. 7D–F).

These were cut from pottery vessels. It is unlikely they were spacers, since their curved profile would have provided an uneven surface. In addition, one was cut from a glazed pot, so would have fused to ceramics during firing. It is possible since they are two sizes and shapes (two small and round, two larger and oval), that they are the counters for a game.

Animal bone

A small quantity of bone (611 g) was found. This was mainly sheep/goat and pig, although a few horses' and cows' teeth were present. At least one bone had a butchery mark. Fragments of a single six-point red deer antler, totalling 198 g, were found in the backfill of the south flue.

The Flint by Hal Dalwood

Only three pieces of flint were recovered from the excavated area, and these consisted of two small flakes and one broken piece, possibly a flake from a small mesolithic blade core. All three flakes have a light grey patina, and the broken piece shows that the unpatinated flint is dark grey. The colour and patina are similar to flint from the Chilterns. Three pieces of flint cannot be said to constitute an occupation site, but it may be noted that mesolithic material has been discovered elsewhere in the village of Brill. Five mesolithic blades have been found in the back garden of a house south of the church by Mr Ian Rodger, the occupier (CAS 2053). However, no other mesolithic or neolithic material is known from the parish, and little from the surrounding area.

Contents of Microfiche

Bibliographic references refer to works cited in the printed text.

The Pottery: a late medieval/early post-medieval transitional group from Temple Street, Brill by Barbara Hurman.

The Tiles from a late medieval/early post-medieval kiln site at Brill, Buckinghamshire by Jane Lilley. Descriptions of each tile by context are filed with the archive, along with copies of SEM graphs.

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