

EXCAVATION AT THE ROMANO-BRITISH QUERN SITE ON LONGWALLS LANE, BLACKBROOK, DERBYSHIRE

By ALAN PALFREYMAN

and

SUSAN EBBINS

with contributions from

ALAN MORRIS

RUTH. S. LEARY

KAY HARTLEY

RODERICK MACKENZIE

INTRODUCTION

The possibility of a quern-making site was first suspected by the writers in 2006, after examination of a collection of quern stones in the grounds of Mr and Mrs P Clarke of Starbuck House, Longwalls Lane (SK 33174829) (Fig.1). A background history and topography with descriptions and comparisons of the querns was subsequently published (Palfreyman and Ebbins 2007). Conclusions were that the querns were late 1st to at least late 2nd century AD, but the exact quarry site could not be pinpointed due to later landscaping. The evidence suggested that it was very close to Starbuck House and also that a small settlement may have existed there in the Roman period.

In 2007 Mr Clarke uncovered a north-south line of gritstone 'kerb stones' whilst cleaning out a ditch adjacent to his outbuildings on the east side of Longwalls Lane. The writers were recalled to inspect the site and ascertain their age. As this was an opportunity to gain dating information on the lane and to seek further evidence of the Roman site, it was agreed to carry out a small excavation and help was enlisted from several members of the Derbyshire Archaeological Society.

The lane is an unadopted road and the siting of test pits was determined by the need to maintain safe passage at all times for pedestrians, cyclists, equestrians and unauthorised motorcyclists. Derbyshire Police were kept informed on the excavation by Mr and Mrs Clarke.

An extension of the excavation into the field to the west of the lane was kindly agreed by Mr and Mrs Bowler of Hollyseats Farm. Finally in 2009, when Roman pottery was found during preparation of a rosebed, a further excavation was undertaken in the rear garden of Starbuck House. All the test pits were centred around SK 33164 48324.

EXCAVATION IN LONGWALLS LANE

Here the excavation was limited to 1m test pits (TP 1, 2, 3 and 6) across the two verges of the lane, and later a narrow 0.5m trench between the two, in order to record the full section (Figs 2 and 3; Plate 1).

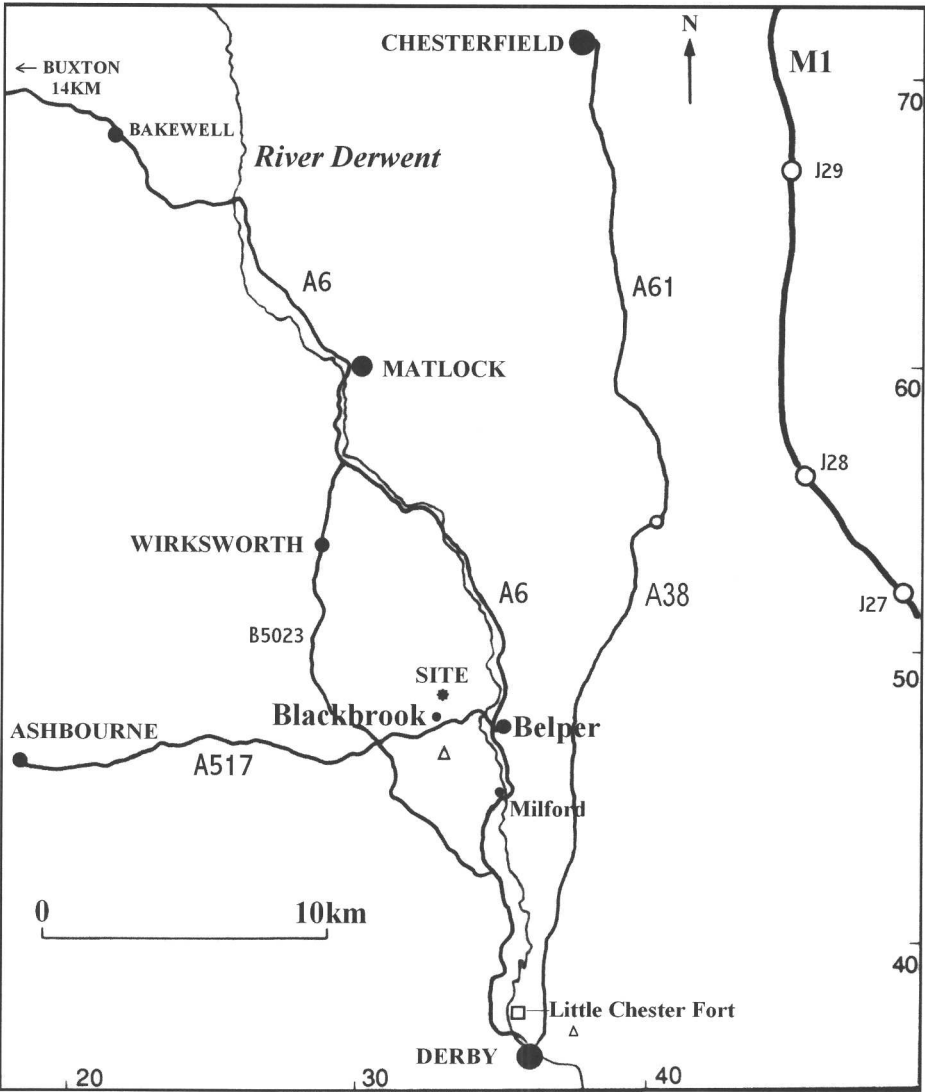


Fig. 1a: Site location map; triangles mark Hazelwood and Derby Racecourse pottery kilns.

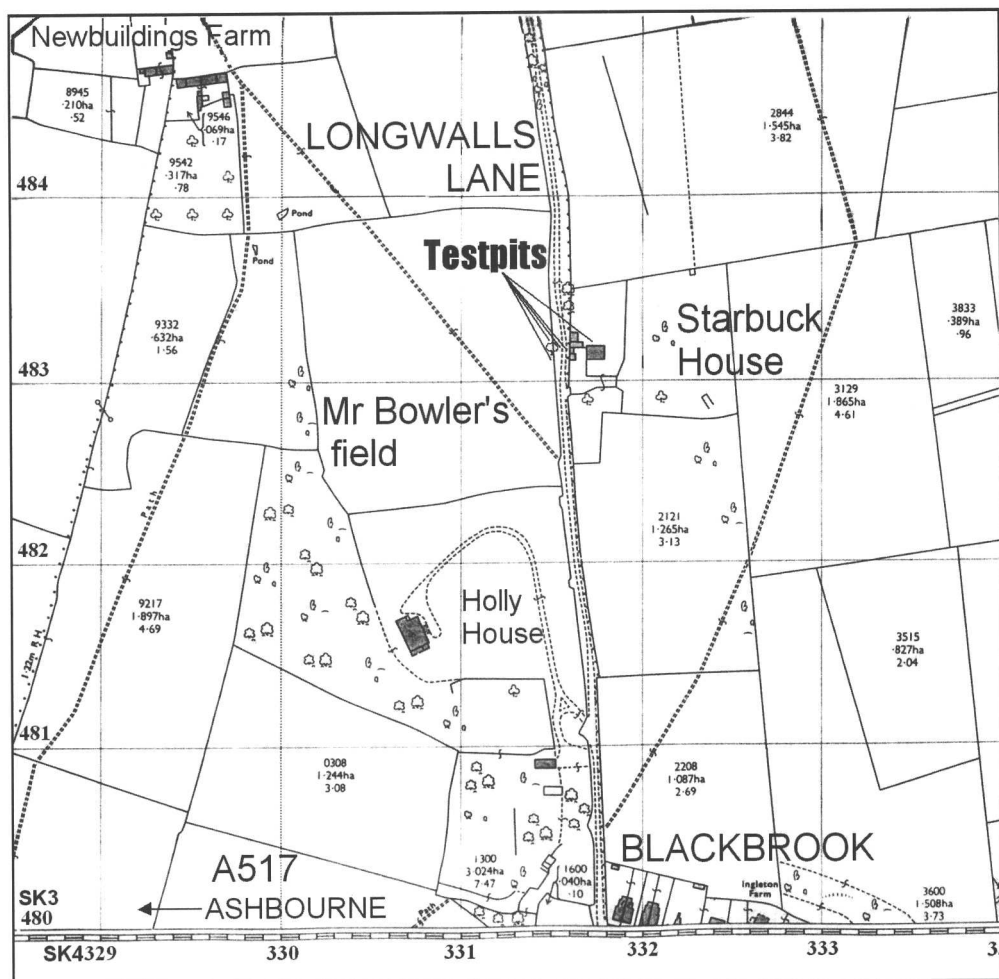


Fig. 1b: Longwalls Lane, Blackbrook, showing Starbuck House and location of test pits.

Test Pit 1

The exposed gritstone 'kerb stones' were cleaned off and TP1 was cut alongside them. Beneath 20cm of modern topsoil, (C1) was a 5cm deposit (C2) of compacted slack/ash containing 19-20th century domestic refuse. This was spread over a convex-profiled road with an eroded and rutted surface (C4). No finds were present except for intrusive debris from C2. The road was constructed from fragments of Millstone Grit and local slabby, yellowish micaceous siltstone mixed with yellow clay, averaging 10cm in depth. Along the eastern boundary of the exposed road, a 50cm wide gutter (C3) had been constructed from flat slabs of this siltstone and Millstone Grit. These averaged 25cm long and 12cm thick (Plate 1) and C4 deepened to 15cm beneath them. Along its eastern edge, the stones revealed by Mr Clarke formed a kerb abutting this gutter. C4 was noted to be bedded onto a red-brown sand. For safety reasons TP1 was then temporarily backfilled and the excavation transferred to the western verge.

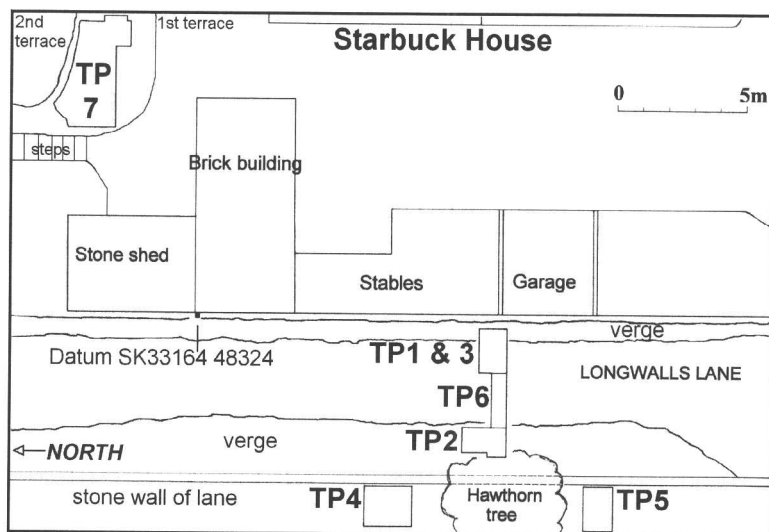


Fig. 2: Test Pits 1-7 layout.

Test Pit 2

Beneath 25-50cm of topsoil (C1) the 19th-20th century deposit (C2) was encountered as in TP1, but it petered out towards the western end of the pit in an area of ground disturbance (C7). Again C2 overlay the road surface (C4). Below this was a 25-30cm deposit of red sand (C10) which had built up in *c.*5mm layers. This hillwash derives from the hollow-way up the ridge slope of the lane north of the excavation, and had built up prior to the laying of the post-medieval road (C4). Root runs, rodent and worm holes had left dark stains in this otherwise sterile deposit.

Along the eastern edge of TP2, a N-S wheel rut 1m wide by 30cm deep was worn into the hillwash below C4 and infilled with tightly packed gritstone cobbles (C5). The top layer of this had a well worn surface and an earlier repair (C8) was exposed below (Plate 2). No finds were present. The rut infill dipped in section to the west, where it was covered by a lens of reddish sand (C6). Underlying C8 was the red hillwash sand C10 as in the rest of TP2. At the base of this was a 1-3cm layer of homogenous grey silt with iron staining (C11) and 2 sherds of a Romano-British Derbyshire ware jar. C11 sealed a *c.*50cm deep Roman layer of the red sand mixed with brown loam (C12) with more Roman pot, including rustic ware (Fig. 00. 4). It became less sandy with depth and merged with a large amount of concentrated Millstone Grit rubble (C12A). Some pieces were *c.*20-30cm long, and the smallest 5cm. Two had score marks at right angles to each other on one surface (Plate 3). Occasional small gritstone 'chippings' were also noted in C12A. Roman pottery was mostly Derbyshire ware with some finer decorated wares (Fig. 7.2, 3, 7, 8, 11-14), and mortaria; one a stamped rim (Fig. 7. 44-46). Some were burnt, particularly at the west end of the trench. Other finds included a piece of burnt clay with slag accretions and a rectangular sectioned Roman nail.

At the north-eastern end of TP2, a flat spread of 5 smooth, worn gritstone slabs up to 50cm wide protruded from the surface of C12, covering an area of 70 x 90cm (F1) (Plate 4). Fragments of Roman pot were recovered from C15 which lay between and underneath the slabs (Fig. 7. 9). Later this paving was found to continue to the north of TP2. It was sealed by the silty material C11.



Plate 1: Test Pit 1, modern gutter against Starbuck House outbuildings and C3 gutter integral to the 18th-19th century coach road, underneath Longwalls Lane.

In the south-west corner, the gritstone rubble was even more concentrated, with several burnt pieces. At the base of C12A was part of an unfinished disc quern (Plate 5; Table 1), associated with 2nd century AD pottery. Below the C12A rubble, patches of a compacted surface of yellowish brown clay loam (C13) were discernible. It contained sherds of early 2nd century black-burnished pot (Fig. 7.10), some burnt, together with smaller, sparser gritstone cobbling, c.5cm in size. A shallow linear hollow (F2), aligned NW/SE, was cut into this and its infill (C14) was a dark brown loam, with surviving patches of 5cm gritstone cobbling at its base. C14 produced a few Roman sherds (Fig. 7.1) and below C14 was natural reddish-buff decomposed gritstone.

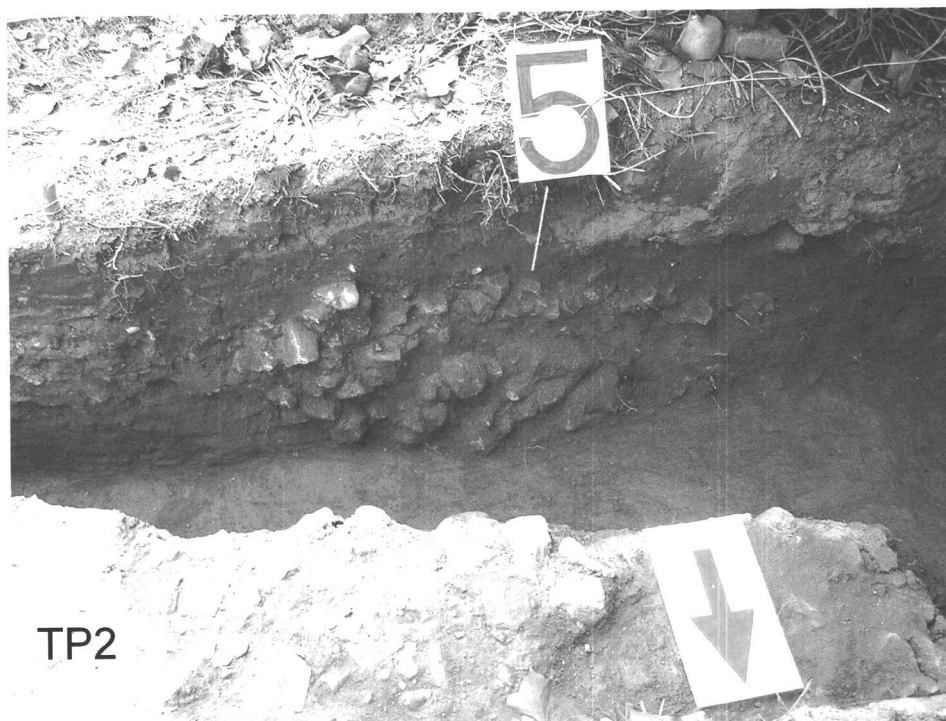


Plate 2: Test Pit 2, slot through coach road on western verge, showing C5 wheel rut with infilled cobble repairs.



Plate 3: Test Pit 2, scored gritstones from C12A rubble layer, both around 27cm in length.

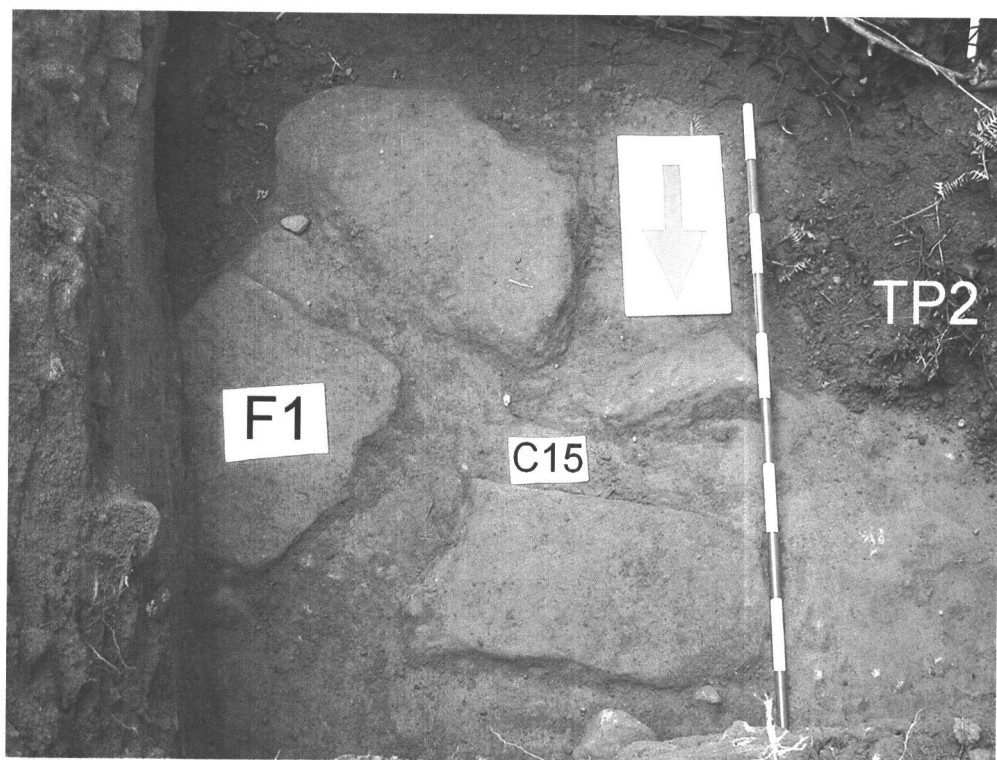


Plate 4: Test Pit 2, north-east corner, remains of Roman flagstone paving F1, continuing into north and east sides of test pit. Note that the slabs are worn smooth.

Test Pit 3

When it became possible to re-open TP1 to excavate beneath the post-medieval road(s), the stratification matched that of TP2. The grey silt band (C11) was again found to extend across TP3 below the 40cm of C10 sandy hillwash. At the base of C10 and just above C11, an early Neolithic blade with a retouched edge was recovered (Plate 6). It had probably been dislodged from up the ridge slope north of the testpit, and carried down with hillwash in the post-Roman period.

Below C11 was the layer of sandy loam and gritstone rubble corresponding to C12/12A in TP2, though the rubble was less concentrated. A larger, smooth-faced block, similar to those of the F1 paving in TP2, lay at a dislodged angle. Within the rubble were various coarse and black-burnished Roman potsherds and a neatly-turned spindle whorl (Plate 7; Table 1). This was made from the same siltstone used to construct the later post-medieval road surface (C4). Traces of C13, as in TP2, were recognised below this, which overlay the natural decomposed gritstone and sand.

Test Pit 6

Only after backfilling TP3 could TP6 be excavated between TP2 and 3 to obtain a complete profile of the road construction and establish continuity of the contexts (Fig.3). A similar stratigraphy was encountered. Underlying the road surface (C4) was the red hillwash sand (C10) with another wheel rut in the western half of the test pit. This was similar in size to that

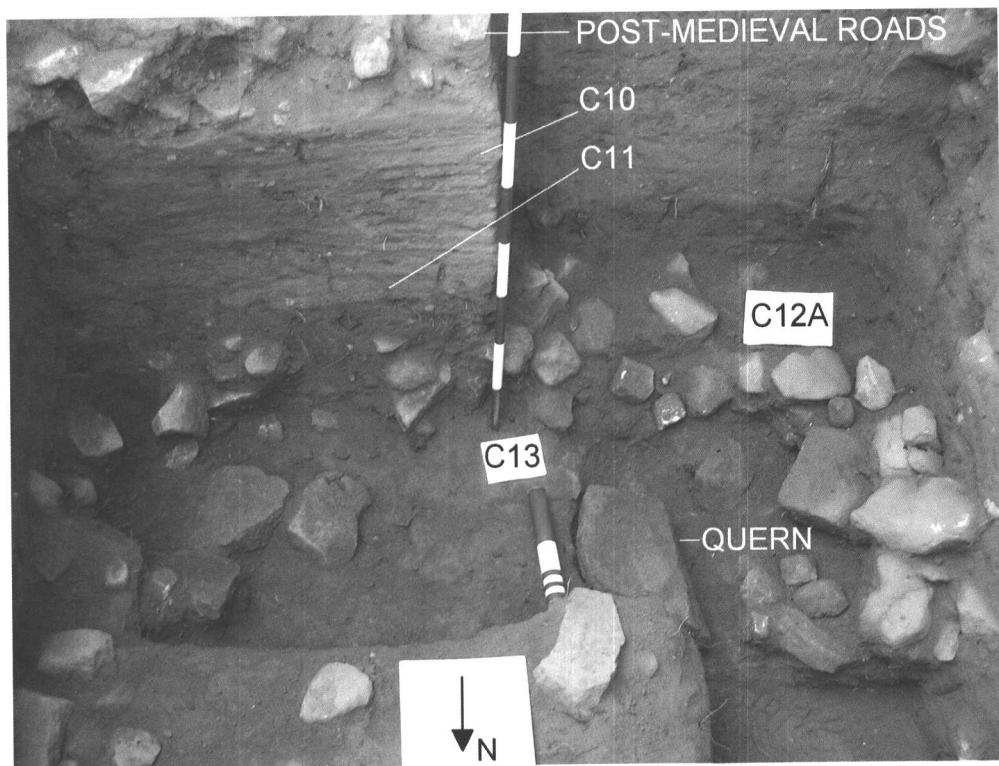


Plate 5: Test Pit 2, broken part-worked quern at the interface of rubble layer C12A and the earliest Roman layer C13 [Table 1].

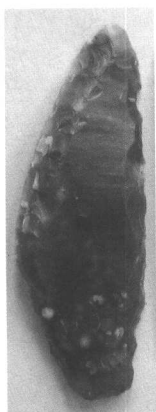


Plate 6: Test Pit 3 (below TP1), Early Neolithic blade, 5cm long, found lying on C11 turf layer above Roman levels.

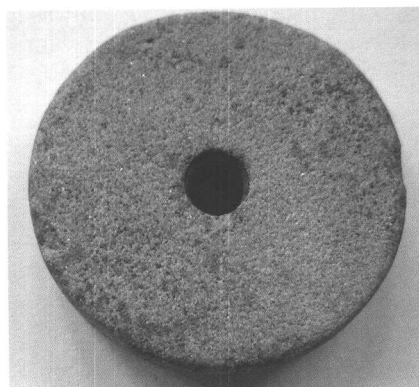


Plate 7: Test Pit 3, spindle whorl, 4.5cm diameter, from Roman rubble layer C12A (Table 1).

in TP2, with cobbles on top (C5), but a different fill consisting of 3-8cm alternate bands of loam and dirty sand containing random gritstone cobbles (C9). A loam-filled cavity containing decayed roots cut through the interfaces of C10, 11 and 12. C12A was only excavated to c.10cm depth, exposing again the tops of several gritstone boulders. Several small Roman potsherds were recovered.

EXCAVATION IN FIELD WEST OF LONGWALLS LANE

Hillwash deposits within the lane have built up the ground level to c.1m higher than in Mr Bowler's field on the west side of the lane wall. This field is now sloping pasture, but faint traces of ridge and furrow can be seen in frosty conditions and oblique sunlight. To ascertain whether the Roman archaeology in the lane extended into the field, and the degree of any plough damage, permission was sought to excavate 2 test pits (TP4, 5) against the boundary wall adjacent to the excavations in the lane (Figs. 2 and 4).

Test Pit 5

A 20-30cm layer of topsoil contained a few small abraded fragments of coarse pottery, probably medieval, amongst more modern sherds. A rusted iron knife, and a clay pipe stem were also found. The post-medieval road was absent and immediately under the topsoil was a 30cm deep layer of red sandy loam (C16) corresponding to C12/12A in TP2 and 3. It contained gritstone rubble up to 20cms long which increased in size and quantity with depth. C16 produced a few small abraded medieval wares, Roman Derbyshire and grey rouletted wares, and also part of a gritstone mortar (Table 1). Three samples of igneous rock found were unusual being of a type which occurs in the lower Matlock lava flow 5miles to the north-west in the Wirksworth/Hopton area. However, glacial action has transported some to beds of till 1 mile away, hence their rounded shape.

Sealed below the rubble scatter of C16 a cobbled surface (C17) of tightly packed gritstones 2-10cm in size, was visible across almost the entire area of TP5, only becoming indistinct in the north-west corner and the western edge. A cluster of slightly larger cobbles formed a circular feature (F5) which covered a shallow pit c.35cm diameter, dug into the orange-buff decomposed gritstone subsoil. The infill (C20) was a mix of brown and yellowish loam with some iron staining and contained two Roman sherds, one a small rim of fine orange ware. It is probably a post hole cut through the Roman cobbling C17 (Fig. 4a). C17 produced Roman sherds, mostly Derbyshire ware.

At the eastern end, many degraded fragments of carboniferous limestone 2-6cm long were scattered across a slight depression in the top of C17 (Plate 8). Some were coated in a lime-like deposit and possibly burnt. Crinoid and brachiopod fossils were present in some, which also occur in limestones surrounding igneous intrusions in the Wirksworth/Hopton area. A few coal fragments were found in association. An occasional piece of limestone in the overlying layer C16, can be attributed to medieval ploughing having disturbed the Roman level. Below C17 was an orange sandy loam (C17A) merging to yellow with depth. It produced unabraded, larger Derbyshire ware and other Roman sherds and flakes of charcoal. Under this was the natural pink-buff gritstone subsoil.

Along the western edge, a N/S trench F3, had been cut into the subsoil. This comprised a wall foundation (C21) of roughly coursed gritstone blocks, 35-45cm long, embedded in a darker sandy loam containing small gritstone pieces (C18). A quarter of a Roman disc quern

Type/Material	Descriptions	Context
<p>Quern</p> <p>A pinky-buff Ashover gritstone, medium-grained with quartz inclusions up to 5mm long. On the top surface are 2 reddish-purple blotches, 10-20mm wide. Also many black speckles showing on all surfaces.</p>	<p>Approximately 40% of an upper stone and it is unfinished. The upper surface and outer rim have been rough-pecked, but there is a fairly sharp fracture at one edge. The lower surface has been partly levelled off, but not finished. There are no characteristic features. There are several thin 'fault lines' inherent in the stone, and it is deduced that this weakness caused it to break during manufacture.</p> <p>Diameter: c. 370mm</p> <p>Depth: between 110 and 80mm, the thicker part being on the unworked area.</p>	<p>Test Pit 2 C.12A, Roman 'rubble' layer</p>
<p>Quern</p> <p>Pinky-buff gritstone, finer-grained than quern 1, and with small pebbles up to 8mm.</p>	<p>This is approximately 25% of a finished Upper stone. The top surface and outer rim are plain-pecked. It has a hopper hole surrounded by a pecked concave area c. 45mm wide. The grinding surface is slightly dished and shows signs of wear, having concentric marks.</p> <p>Diameter: c. 365mm</p> <p>Depth: 90 to 100mm, uneven</p> <p>Diameter of Hopper hole: 45-50mm</p>	<p>Test Pit 5 C.21, built into Roman wall foundation</p>
<p>Mortar</p> <p>Gritstone very similar to that in Quern 2</p>	<p>Approximately 30% of the whole. The flat rim, sides and base are all plain-pecked. It is cup-shaped. The surface of the inner cavity is notably smooth with wear.</p> <p>Height, exterior: 75-80mm. Depth, interior: c. 50mm</p> <p>Diameter at top: 250mm. Thickness of rim: 30mm</p>	<p>Test Pit 5 C.16, corresponding with 12A, Roman rubble layer</p>
<p>Spindle whorl</p> <p>Yellowish buff micaceous siltstone</p>	<p>Complete. Ground smooth.</p> <p>Diameter: 45mm</p>	<p>Test Pit 3 C.12A, Roman rubble layer</p>

Table 1: The stone finds.

was incorporated into the top course (Fig. 4b; Table 1). Small cobbles were scattered over the top, more numerous to the south, which were probably small packers to fill voids and level up between courses, and would have been left behind when the wall was subsequently dismantled and robbed of its larger stones. West of this wall base was a dark brown loam (C19). The pottery associated with the wall (C21) was more varied in form than from other contexts, and included a grey flanged bowl, a white flagon bodysherd and a grey flagon or small dish rim (Fig. 7.15). A Roman hobnail and coal fragments were also found in C21.

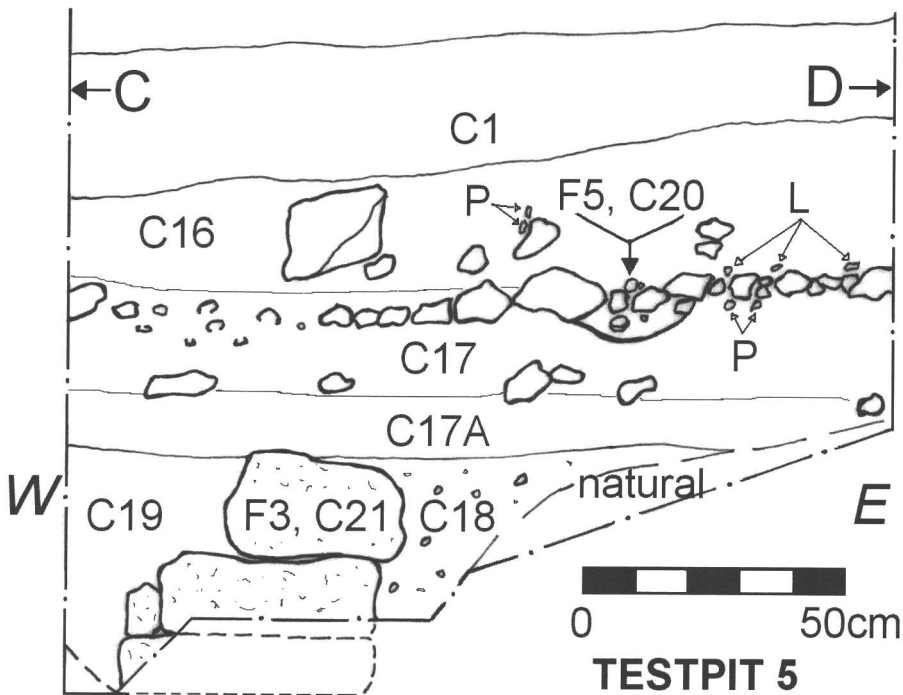


Fig. 4a: Test Pit 5, section C - D showing all contexts. P = RB pottery L = Limestone

Test Pit 4

TP4 was begun concurrently with TP5 and 7m to the north. Again, below the topsoil containing 19th-20th century refuse was a layer of gritstone rubble pieces 2-30cm long within a matrix of red hillwash sand, merging into a dark brown loam (C19) along the western edge. C19 produced only one neck sherd of Roman coarseware. The rubble layer, corresponding with C16 in TP5, became more concentrated with depth and produced one piece of 17th/18th century glazed pot and medieval sherds at the top and several small abraded Roman sherds below, but not in the quantity of TP5. Pieces of coal again occurred. With due regard to time constraints, it was decided to curtail the search for further features in favour of TP5 and TP4 was not excavated below C16.

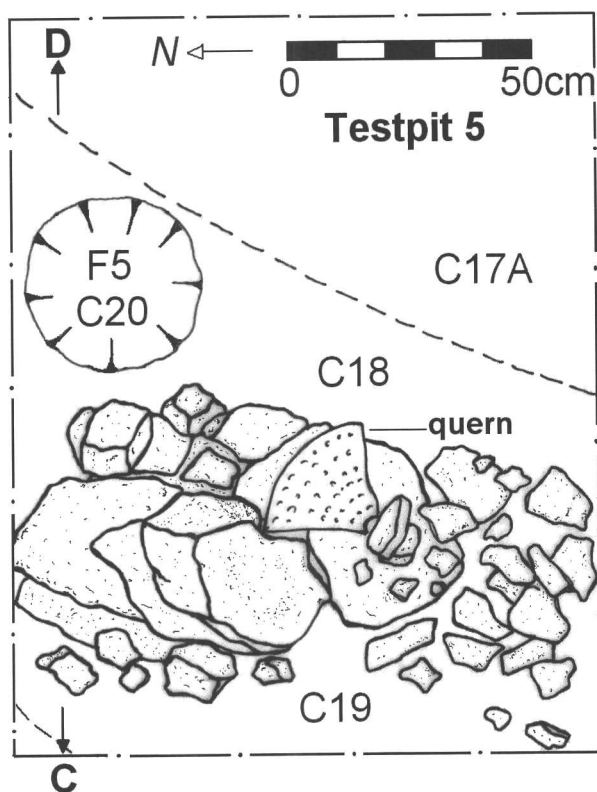


Fig. 4b: Test Pit 5, plan of the north-west end, showing the wall base with quern in situ and post-hole.

INTERPRETATION OF TEST PITS 1-6

Medieval to modern

In the lane, a 3.75m wide coach road survives beneath modern debris and Victorian reinstatement. It was probably built c. 1756 as part of the route from Duffield to Wirksworth via Hazelwood, and intended to improve an existing narrow single carriageway, which superseded an earlier packhorse way. It may never have been completed north of Starbuck House as, shortly after its commencement, alternative roads on better routes were being developed by rival Turnpike companies (Radley and Penny 1972). For instance a road was made up the now Dalley Lane using a much easier route. These old lanes were allowed to continue until 1793, but were finally ordered to close in 1808 when the new road by Windley and Idridgehay was turnpiked. Only one small 17th/18th century pot fragment was found below the 19th century road, but it is reasonable to assume that the carriageway was in use from the 17th century, when lead production in the Wirksworth area was at its height and the wool trade increased. The underlying unmetalled packhorse way would have been used during the medieval period and possibly earlier. Below that the turf line, marked by C11 in TP2-6, was formed after abandonment of the Roman site and subsequently was buried by hillwash.

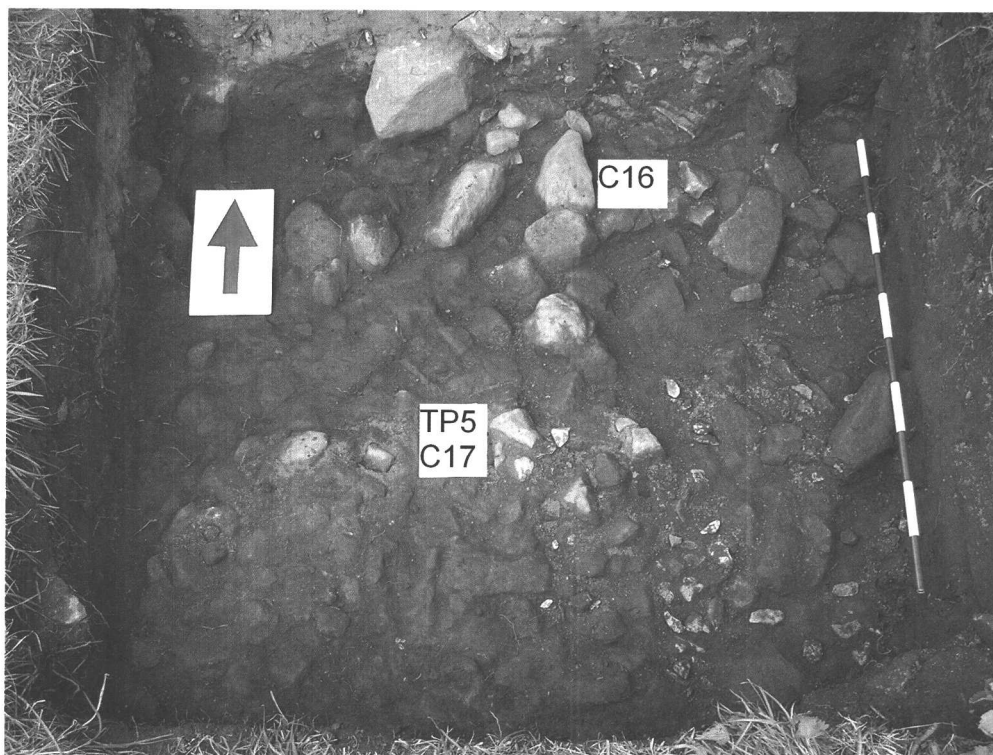


Plate 8: Test Pit 5, limestone scatter emerging to right of picture on the C17 cobbled floor.

During the post-medieval period increased traffic eroded the hollow-way up the lane north of Starbuck House, the loosened sand forming a thick deposit over the medieval ground level at the base of the slope. The deep wheel-ruts seen in this sand in TP2 and 6 required continually filling with cobbles. The distance between the bases of the ruts was noted to be around 1.4m, which closely matches the axle widths on heavy 18th/19th century coaches, such as those on display at Calke Abbey, Ticknall.

Romano-British

Evidence from the lane and field revealed 2nd century cobbled surfaces, a wall foundation, a post hole and linear feature, some intercutting. A rubble layer of varying concentration was spread throughout the test pits and an area of paving survived on top. The unfinished disc quern, piece of completed quern and broken stone mortar were all reused. The spindle whorl, Roman nail, hobnail and piece of burnt daub were insufficient to ascertain the nature of the settlement or structure(s). Some abraded pottery may have been redistributed from nearby, but much was fresh with clean breaks, and must have been found *in situ*. The pottery types date from the late 1st into the early 3rd century AD, as do the querns (Table 1) (Palfreyman and Ebbins 2007). The smooth paving (F1) in the NW corner of TP2, sealing the C12 rubble, and itself sealed by the C11 turf line, was too small an area to assess its function, but appears to be the latest phase.

The igneous pebbles were probably used for thermal purposes in the later Prehistoric or Roman periods, and may have been collected from the Black Brook, which carried them down from the glacial till 1 mile to the west where the brook rises.

The limestone in TP5 is intriguing. No sign of galena or lead smelting was noted, but the presence of coal and the white coating on the limestone samples suggests burning to produce lime. Other uses, e.g. making lime plaster or mortar, the agricultural improvement of the local acid soils, or use as a flux in metal-smelting, are all possible.

The patchy, cobbled layer C13 in TP2, and the cobbled layer C17 in TP5, both below the Roman rubble layer, suggest at least 2 phases in the site's occupation. The short exposed wall foundation in TP5 was too limited to be certain of its phasing or association with other levels, but appeared to cut through the rubble and cobbled layers, and therefore may be a later third phase, like the F1 paving in TP2.

EXCAVATION IN STARBUCK HOUSE GARDEN

Test Pit 7

This was sited on shale at the base of a low ridge of Ashover Grit formed by the E/W faultline. Top layers have decomposed to a grey clay, with yellowish and mauve patches where exposed and thin seams of micaceous siltstone within. Erosion of grit on upper slopes of the ridge has created a tumble of reddish hillwash sand and gritstone rocks downslope onto the clay. Where the slope was less steep a level area was created when the house was built in the late 1890s. This and later terracing disturbed some of the archaeology. The excavation trench, c.4x3m, was on the lower terrace (Figs 2 and 5a).

Upper Layers

The turf (C1) was stripped to reveal a further layer of topsoil which was divided roughly into C2 at the east end of the trench and C2A to the west. C2A contained 19th/20th century pot, a little Midlands purple and occasional medieval. C2 contained similar pottery, but mixed in its upper level with Roman sherds representing various bowls and jars (Fig. 9. 31-35, 38). This brown loam had been more disturbed by recent digging than C2A, which incorporated the reddish hillwash sand. Below topsoil at the east end the trodden Roman surface (C3) was marked by a thin hard gritty layer, with charcoal smears and many trampled Roman sherds incorporated. Larger sherds were buried deeper, mainly jars and bowls (Fig. 8. 19-21; Fig. 9.28). Although disturbed, much was still intact with patches of flattened brown and blueish clay and occasional pieces of siltstone and gritstone embedded in this floor. In the centre and west, a tumble of loose stone and hillwash sand on top of the corresponding layer (C3A) made it less clear, and the beaten surface of C3 gave way to more substantial cobbled flooring in much of this area (C4, 4A). In C4 only Derbyshire ware and greyware were found, with a few undiagnostic very thin-walled sherds.

Features and associated contexts

At the north-west end a 140cm line of single stones (F3) was exposed below C3A, of which two were discarded roughouts of disc querns, possibly reused in the base of a sill wall 30-40cm wide. A second slightly curved stone feature (F1A) met the former from the south-west at an approximate angle of 70°. F1A included dislodged stones from a second course bedded onto sandy loam. A few loosely aligned stones beyond this could indicate a robbing of this

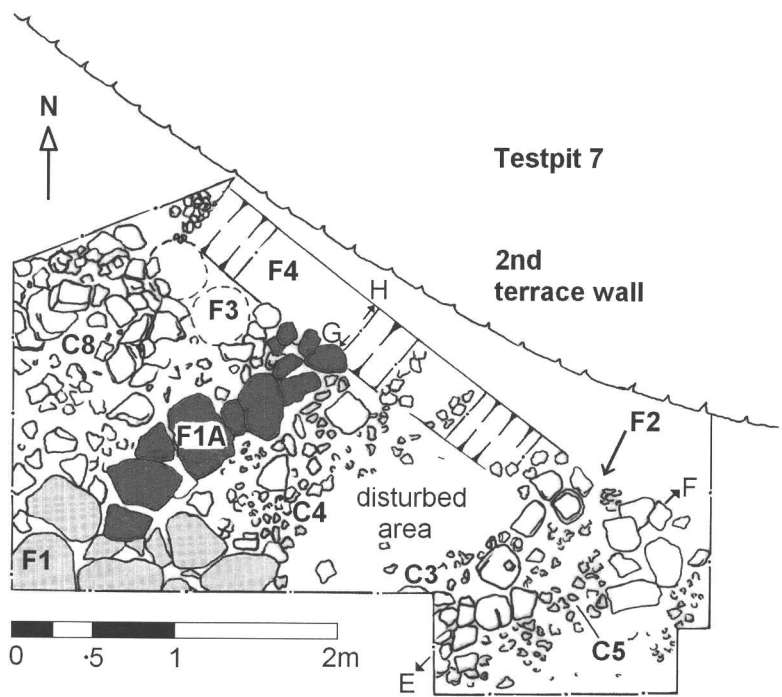


Fig. 5a: Test Pit 7, plan; positions of unexcavated quern roughouts are shown as dotted lines.

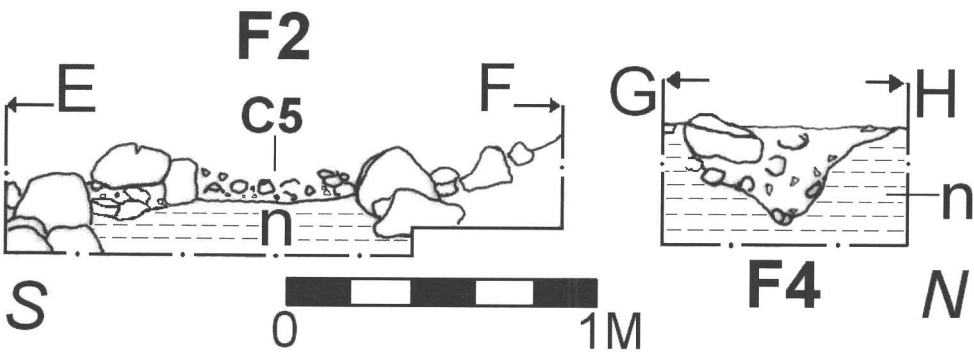


Fig. 5b: Test Pit 7, section E - F of the F2 hearth base, and Section G - H of the F4 ditch. n = natural blue-grey clay

wall. These wallstones were c.25-35cm in size. Adjacent to and below F1A was a tightly cobbled area (C6) which merged into disturbed areas of C4/4A. A carinated bowl was found on top of the F1A wall (Fig. 8.23) and 3 other jars within its stones (Fig. 9.27,29,30). More jar and bowl sherds were in C6 under the wall (Fig. 8.17,26) and an oval piece of sandstone 20cm long with baryte dogtooth crystalline formation covering one surface was found nearby.

To the west of the F3/F1A junction was a tumble of stone (C8) mixed with the hillwash soil C2A, which had fallen onto the *in situ* Roman level C3A/C4. In this tumble was a scorched quarter-circle of stone with a 7cm groove in its upper surface and a firecracked quartzite boulder. Pottery included a grey wide-mouthed jar, an unusual flat-rim bowl, large Derbyshire ware rims and several large mortaria sherds (Fig. 8.16,18,22,24; Fig. 9.39-42; Fig. 10.47,48). Underneath the tumble at the north-west edge of the trench was a section of what appeared to be an *in situ* tumbled wall, 40cm in depth.

In the south-west corner and underlying F1A in parts, was a paved area (F1) of gritstone slabs up to 45cm long with worn surfaces (Plate 9). This paving had been laid onto a surface of loose cobbles (C7) and probably had extended further east and south but had been robbed. All these features have been cut into on the west by the insertion of modern steps.

All the above contexts contained Roman pot, some distorted, and in the hillwash deposit in the north-west corner and around the F1A wall were larger unabraded sherds (Plate 10). Over 60% were Derbyshire ware jars. In addition, iron slag, clay kiln lining, burnt stone and fragments of coal were scattered throughout the layers. Small 2-5cm chunks of baryte were found in all the contexts, deriving from the larger deposits noted in the natural bedrock.

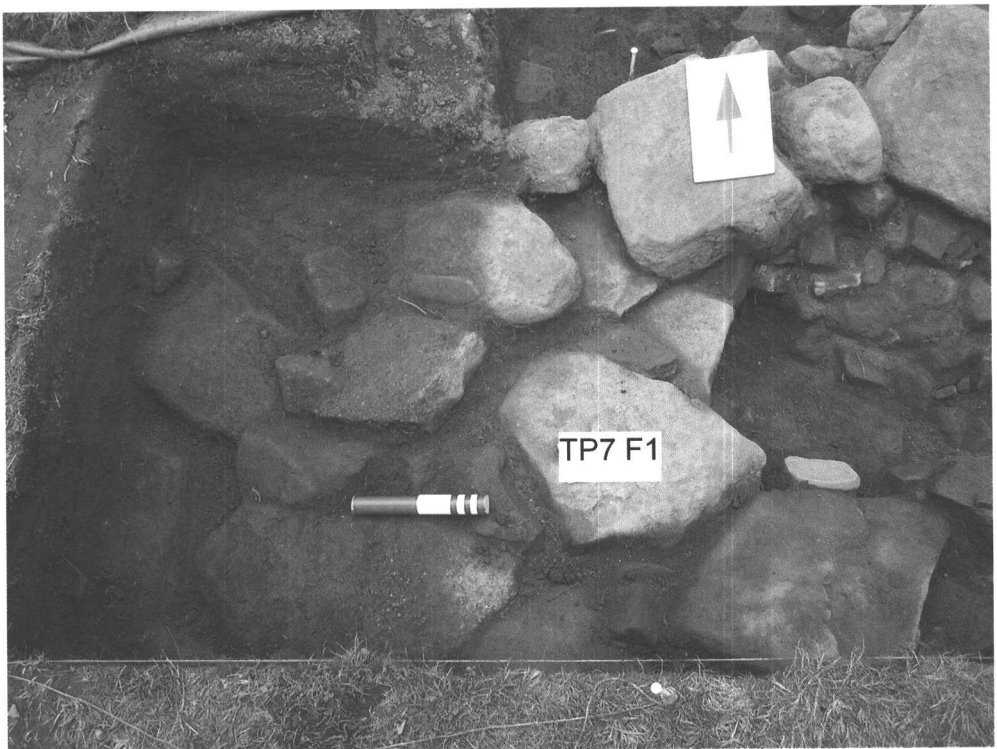


Plate 9: Test Pit 7, exposed remnant of robbed out Roman paving F1.



Plate 10: Test Pit 7, distorted greyware jar (no. 43), probably a kiln waster, found scattered over and around F1A wall.

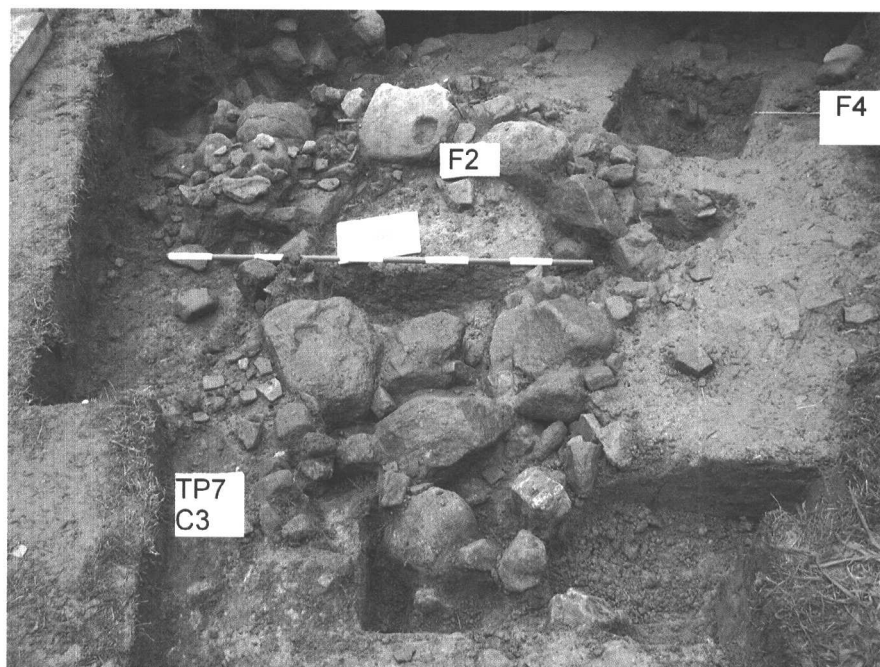


Plate 11: Test Pit 7, the fully excavated hearth base F2, with sectioned ditch F4, undercutting on north-west side, and pottery and debris are strewn around. The rounded stone with a deep groove and squarish one with a cut-out socket are on the south-western edge.

Abutting the north edge of the linear stone feature F3, and running parallel with it eastwards, was a narrow v-shaped ditch (F4), 20-30cm in width and depth, which had been truncated horizontally and to the south by the later features. It was filled with sandy soil (C2A) and pockets of small gritstone cobbles (Figs 5a and 5b). Only two Roman sherds were recovered from the top fill.

In the south-east corner a circular area of dark gritty soil was cleaned down to reveal a sub-circular ring of gritstones (F2) set into the C3 floor (Fig. 5b; Plate 11) and with a 20cm gap on the south side. One of the stones, an oblong shape 27x21cm, had a mortice-like hole 8x6x2cm and another rounded stone, c.20cm diameter, had a deep narrow groove, 18cm long. In the fill (C5) was a concentrated layer, 10-15cm deep, of burnt clay, slags, a ferrous object with accretions, c.50 potsherds, burnt stone, small pieces of baryte, calcite and one of limestone. The pottery comprised greyware plus other jars, black-burnished bowls and imitations in a sandy ware, a whiteware flanged bowl and much Derbyshire ware in both the standard and the much softer, paler fabric (Fig. 8.25; Fig. 9.36,37). Below was the hard floor level (C3) with the blueish natural clay underneath. This fill material extended outside the area of the stones of F2 for a radius of c.25cm. Part of a rectangular sharpening stone was found outside the eastern edge.

This corner of the excavation was extended to examine what surrounded F2 under the C5 'overspill' and C3 floor. On the eastern and western edges more stones (10-30cm) were found packed close to F2 (C9) which were larger than the C4A floor cobbling in the central area of the trench. Smaller random stone was found at the south edge and the F4 ditch appeared to continue eastwards under the F2 structure.

INTERPRETATION OF TEST PIT 7

The archaeology is complex and interpretation is hampered by the confined area available, but at least three phases of activity can be seen in TP7. The ditch (F4) is probably one of the earliest features and may have been truncated by later levelling, with the clusters of stones either packing in a former post-in-trench type foundation, or loose infill of a drainage gully.

The paved area (F1) had clearly been smoothed with wear and was possibly a loading area for stone being brought down for transportation, or the interior floor of an industrial building where heavy work was carried out. It is similar to F1 in the north-east corner of TP2 in the lane and may be part of the same feature and is probably 3rd century. The cobbled and beaten earth floors (C4/4A and C3/3A) and the other cobbled area (C6) were probably roughly contemporary and within the 2nd /mid 3rd century. However, C7 under the paving was perhaps slightly later. Of possible wall remnants F3 and F1A, the latter is roughly laid on top of earlier cobbling, with no clear relationship and the pottery suggests a mostly 3rd century date.

The circular feature (F2) was possibly the base of a domestic oven cut into the floor (C3) because it does not have the burnt ground, charcoal or hammerscale of a metalworking area. Packed stone to the east and west (C9) could have been part of the structure, possibly the remains of hardstanding. The mix of pot, burnt stone, slag and hearth/kiln lining debris inside F2 and the 'spill' around may have been dumped when the structure went out of use and have been part of a later Roman levelling operation. The sharpening stone suggests the making/repair of tools. F2 appears to have been a little later than the floors.

Only the stripping of a large area could fully interpret the archaeology in TP7. The pottery is mostly of the 2nd and 3rd centuries AD and extends a century later than the withdrawal of troops from Little Chester (Appendix 2).

DISCUSSION

Excavations 2007-2009

Having discovered evidence for Roman quern-making in 2006, we have now confirmed that there was some kind of industrial settlement on the site. The idea of a rural settlement making querns as a cottage industry is now challenged by the possibility of a larger industrial concern, producing both building stone and other stone products, perhaps in commercial quantities. The presence of further quern roughouts, a half-finished quern, and a used quern and mortar, in sealed Roman contexts, indicate people both working and living here. The area of known archaeology, within a 20x20m square, is clearly only part of a larger site extending further in all directions (Appendix 1). The ubiquitous Roman rubble layer in TP2-6 covers an area of c.8m E/W by 4m N/S, and continues east across the lane. No edge to it was found. Probably it is part of a larger area adjoining a quarry where roughly-built industrial structures and workers' shelters were sited for stone-working and other activities. Initially such areas would have been cleared and flattened for use and the rest later covered by a spread of waste and tumble from the quarry face.

Preserved Roman quarry settlements in Britain are rare and evidence is sparse due to subsequent activities (Parsons 1990, 2-3, 40-47). Better evidence survives in quarry sites abroad such as at Mons Porphyrites in Egypt (Maxfield and Peacock 2001) where Roman quarries with inbuilt 'slipways', loading bays and workers' villages are in a remarkable state of preservation, due to their isolation and the dry climate. Albeit on a larger scale, this quarry provides comparable evidence of associated infrastructure, buildings and finds and, interestingly, a Blacksmith's hut was found there in the north-west quarry.

Ashover Grit in the site locality was examined and Alan Palfreyman produced several roughed out querns from samples. This revealed that only about 20% was sufficiently hard for milling. Thus in the Roman period it is likely that much of the scattered rock scree would have been unusable, and suitable seams would have had to be located and quarried from exposed rock. Manpower requirements, possibly slaves, would have depended on the demand.

Examination of slags showed evidence for smithing the hearths for which must have been close to TP7. The two tooled stones built into the F2 oven and the two grooved samples recovered from surrounding contexts are were probably associated with the making/repair of tools. The cut-out could have held an upright stake. Also the large quantity of pottery and distorted wasters suggest possible pottery production and a kiln may have been situated very close to TP7. Examples of burnt clay lining amongst the F2 oven debris, were shown by Rod Mackenzie (Appendix 3) to be non-metalliferous, could have been from a pot kiln.

Another local material found in almost all the Roman contexts, but particularly in TP7, is coal. Coal is well-attested on Roman sites (Webster 1955; Dearne and Branigan 1995) and has been seen by the writers in Roman contexts at Great Wilne and Ockbrook, Derbyshire, and Redhill, Ratcliffe on Soar, Nottinghamshire. At Blackbrook coal found embedded in a piece of slag supports its use in metalworking. Other possible uses would have been in a domestic hearth or bread oven, a pottery kiln or below a pottery-drying floor. In iron smelting it would have been detrimental due to its sulphur content but was not unknown and may

have supplemented charcoal. A large coal pile in the industrial area of the NW sector of Little Chester was close to successive hearths and kilns thought to have been used for metal smithing (Dool, Wheeler *et al.* 1985, 61-63). Other recorded uses are hypocausts, corn-drying, lime-burning, lead and copper roasting hearths and salt evaporation.

TP7 has provided more evidence of buildings, again not of high status. There is little domestic material and no personal objects; coins also are absent. The only hint of anything other than a working environment are a few whiteware sherds of bowls and small thin cups. Overall the date of pottery from the lane and field seems to be slightly earlier although overlapping with that in TP7. Potsherds in TP7 are larger and fresher than the former and so would seem to be closer to the main area of human activity. Furthermore pottery amongst material fallen downhill suggests that more structures existed upslope. An important aspect noted in TP7 was that the northern edge of the trench overlay natural subsoil, but the southern edge overlay existing Roman topsoil, proving a terrace here of Roman origin. Geophysics could clarify whether this applies further upslope and locate any kilns/hearths.

The local Romano-British industrial landscape and questions raised

This and other quarries exploiting the local Ashover Grit may have produced architectural features like the balusters found at the Hazelwood Lumb pottery kilns (Brassington and Webster 1988, 31). A mortar from a 2nd century kiln at that site (donated for comparison by A. Webster) is similar to that from TP5 at Blackbrook (Table 1) and could have been made at Blackbrook alongside the querns. Also the local micaceous siltstone was used to make spindle whorls, like the one in TP3 (Plate 7). Another of the same stone was found recently during field walking at Ockbrook, 16km south-west, showing trading to the Trent Valley.

Derbyshire ware kiln sites are distributed between Duffield and Hazelwood with outliers at Shottle and Holbrook (Brassington 1980, Appendix; Kay 1962; Kay and Hughes 1963). There are two sites at Hazelwood, and recent field-walking by David Hancock and the writers, has produced evidence of a possible third, near to and with a similar range of fine and coarse wares to those at Lumb Brook. Now there may also have been another at Blackbrook.

This exploitation of local clays and stone suggests a more organised commercial system than could be accessed via local markets and the concept of a villa-estate, controlling this area and making products from local resources needs to be explored. The Lumb Brook balusters and a roof tile were attributed to a possible substantial building nearby (Brassington and Webster 1988, 31) for which Leary suggested a date of late 2nd/early 3rd century AD. Brassington (1980, 42) claimed that the Racecourse potters migrated to Hazelwood to establish the mass production of Derbyshire ware and Leary refined the dating of his Lumb Brook kilns to "the mid or late 2nd century to the mid 3rd" (2003, 72). Leary also noted that Derbyshire ware evolved from early forms at Derby Racecourse and that some of the Hazelwood kilns seemed to be transitional types between the two (2003, 101). What inducement or coercion resulted in the potters transferring their centre of operations to this particular area at that time? Why were querns made here when equally suitable stone was available nearer to *Derventio* civil settlement, the market/distribution centre? It implies a planned economic strategy, and it is perhaps no coincidence that the *Derventio* fort was demilitarized in the later 2nd century.

No recognisable metalled Roman road was detected within the excavated areas. The reputed Roman road along Longwalls Lane was not proven and on this part of the slope. The working area and structures spread across the area. However, a track somewhere nearby would have served this site in the Roman period for importing raw materials and exporting products.

Possibly an existing prehistoric route and the forerunner of the Saxon/Medieval Portway was used. The link south to *Derwentio* along high ground past the pottery kilns through Hazelwood would eventually have encountered boggy areas between Duffield and Allestree which could have been unsuitable in winter. Then they may have favoured the Chevin ridge on the west side of the river, crossing at Milford and then following the excavated metalled Roman road on the east bank (Smithard 1909, 132-4).

Evidence for possible Iron Age antecedents comes from the beehive quern tradition (Plate 12; Appendix 4; Palfreyman and Ebbins 2007, Plate 1b), notably similar to examples from northern Derbyshire forts e.g. Melandra (Conway 1906, fig.1). Did the Roman army intervene in the early period, taking control of existing British cottage industries, and did this lead to an integrated business venture at Blackbrook, managed by a local landowner, or retired veteran, and employing skilled tradesmen or slaves? Little is known of the '*Sociorum Lutudarenses*' inscribed on lead pigs from Derbyshire. Maybe the stone and pottery industries in this area of the Derwent Valley were organised under the same umbrella as the various lead producers.

APPENDIX 1

GEOPHYSICAL SURVEYS

Resistivity survey carried out by Keith and Barbara Foster in 2008

In order to define the extent of the proven archaeology in TP5 in Mr Bowler's field west of Longwalls Lane a resistivity survey was carried out of a 40x20m plot against the wall of the lane. A TR-CIA meter was used. Conditions were very wet and this affected the results. However a NE-SW curvilinear, high resistance, buried feature, more regular in shape towards the south, and with a more amorphous spread to the north, was revealed. Alongside the lane wall and parallel with it for c.15m was another solid strip which included the site of TP5. In between were areas of very low resistance which were also borne out on the 25m long x 3.5m deep 'pseudosections' projecting westwards into the field beyond TP5.

In 2010, after excavation in TP7 had shown metalworking and pottery-making evidence, a magnetometer survey was requested of the same area to see if any kiln or hearth/furnace evidence continued across the lane in Mr Bowler's field. Alan and Celia Morris carried out both magnetometer and resistivity surveys corresponding with the previous survey area.

Geophysical Surveys in 2010 by Alan Morris

An area of 40m x 20m was surveyed, centred on SK323493. The survey methodology was based on the guidelines set out in the English Heritage document '*Geophysical Survey in Archaeological Field Evaluation*' (Second Edition 2008).

Magnetometry

A detailed geophysical survey was carried out using a Geoscan FM256 fluxgate gradiometer. This instrument detects variations in the earth's magnetic field caused by the presence of iron in the soil. This is usually in the form of weakly magnetised iron oxides which tend to be concentrated in the topsoil. Features cut into the subsoil and backfilled or silted with topsoil therefore contain greater amounts of iron and can be detected with the gradiometer. Archaeological features such as hearths or kilns, which acquire permanent thermoremanent magnetism, also produce strong readings.

Not all surveys produce good results as anomalies can be masked by magnetic variations in the bedrock/soil or high levels of background “noise” (interference consisting of random signals produced by material within the soil). In some cases, there may be little variation between the topsoil and subsoil resulting in undetectable features. It must therefore be stressed that a lack of detectable anomalies cannot be taken to mean that there is no extant archaeology.

Instrument	Geoscan Research FM256
Grid Size	20m x 20m
Sample Interval	0.25
Traverse Interval	1.0m
Traverse Method	Zigzag
Processing software	Geoplot version 3.00t
Area surveyed	40 x 20m
Date of survey	3/04/2010
Grid reference	SK323493

Table 2: Survey parameters

Results

The results of the magnetic survey failed to reveal any clear anomalies of archaeological potential.

Resistance

Resistivity surveys are particularly suited to the detection of sub-surface building foundations and other buried masonry features. Because the electrical resistance of the ground varies according to soil moisture content, the presence of relatively impermeable masonry will cause an increase in resistance at that location. Conversely buried ditches and other silted-up features cut into the natural bedrock, generally retain more water than the surrounding deposits, giving rise to low resistance anomalies.

The survey was carried out using a Geoscan RM15 resistance meter, connected in the twin probe configuration and with a mobile separation of 0.5m using the same parameters as for the magnetic survey (Table 2), except for the 1.0m sample interval employed.

Results

Unlike the magnetic survey, the resistivity indicated the presence of several anomalies which may be of archaeological interest and are likely to be worth further investigation. The resistance data is presented as a greyscale plot in Fig. 6a and as a 3D surface view in Fig. 6b.

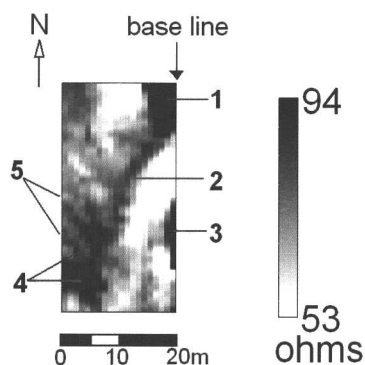


Fig. 6a: Greyscale plot of earth resistance survey in Mr Bowler's field 3/4/2010. Base line is to the immediate west of Longwalls Lane wall.

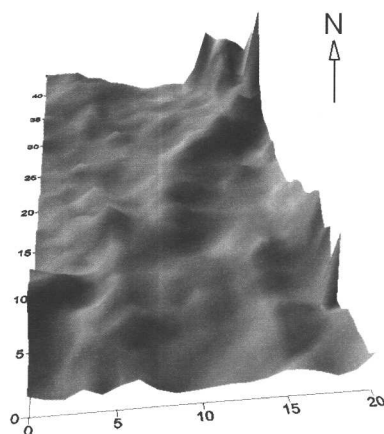


Fig. 6b: 3D surface view of the same resistance data.

Anomalies shown in Fig. 6a

- 1 A high resistance rectangular shaped feature located at the edge of the dry-stone wall of the lane in the north-east corner of the plot.
- 2 A curvilinear band of high resistance leading from anomalies 1 to 4, running roughly NE-SW.
- 3 A high resistance N-S feature running for c.15m.
- 4 A block of high readings over a roughly rectangular area, 12 x 5m.
- 5 Appears to be ridge and furrow, but the alignment (*i.e.* NW/SE) needs to be confirmed.

Conclusion

The surveys show that in this particular instance, resistivity had the most potential for revealing the presence of archaeological features. Alan Morris would like to thank members of the Derbyshire Archaeological Society who assisted with the survey.

Comments on the anomalies highlighted by the resistivity survey (Fig. 6) (AP and SE)

- 1 This solid area is c.10 x 4m, and probably continues beyond the survey area on the north and east sides. A scatter of rock on the ground, suggests it may incorporate some wall tumble, or show the edge of a natural grit outcrop, being situated at the top of the slope. However, this anomaly is around 15m west of the paving in the SW corner of TP7 in Starbuck House garden and the paving in the NE corner of TP2, in the lane, lies 10-12m to the south. The possibility that this anomaly is part of the same feature cannot be ruled out. Note also that the western edge is quite sharp.

- 2 This could link up with 1 and 4 as integral features or be entirely separate. AM suggested this could be a wall or earthen bank and certainly a robbed or relict enclosure wall could give this result. If stone was quarried in commercial quantities, a raised 'slipway' for loading, anything from 3 to 10m wide, would be possible. Another possibility is that it is geological, but the fairly sharp change in direction down to 4 looks unnatural.
- 3 Where readings were close to the lane wall, they will be affected by the wall itself and any tumble. But TP5 is 5-6.5m north of the SE corner of the plot and c.1.5m wide, so will be incorporated into this black area. The stratigraphy, a stone rubble layer underlain by a compact cobbled floor and a wall base at the western edge, would produce high resistance. Also the writers have probed a line 1.5m from and parallel to the wall for 15m south of TP5 and found stone obstruction on almost every insertion at a consistent depth. This is unlikely to be wall tumble and may well include a continuation of the archaeology in TP5.
- 4 A speculative anomaly with 3 seemingly straight sides, possibly man-made. Obscured by anomaly 5 on top of it to the west, there also appears to be an adjoining feature 6-7m wide towards the southern corner, going off to the west of the plot and discernible on both surveys. AM suggested 4 may be the base of a building and we concur with that possibility.
- 5 The NW/SE alignment of the ridge and furrow is confirmed. There appear to be 3 ridges over the NW corner of anomaly 4.

There is ample scope from anomalies 1-4 for further knowledge to be sought. 1, 2 and 4 could be quite complex and could only be investigated by judicious excavation; 3 would possibly be more straightforward.

APPENDIX 2

The Romano-British pottery from Test Pits 2 to 7 by R. S. Leary
with contributions from K. Hartley and S. Ebbins and drawings by A. Palfreyman

Approximately 1000 sherds of pottery from the excavations were submitted to the author for spot dating and general comments on the overall dating and make up of the groups. The stratified groups were listed by ware and sherd counts recorded. Sherds selected for illustration by A. Palfreyman (Figs 7-10) were catalogued for publication (see below).

The pottery was divided into broad ware groups to facilitate recording (Table 3):

Test Pit 2

135 sherds came from this trench (Table 4), seven of which may post date the Roman period. Some 70% of the group were Derbyshire ware or an under fired Derbyshire ware. Derbyshire ware was in production from the Antonine period until the mid-fourth century and the common forms did not seem to change significantly during that time. At Derby the relative proportion was low before the late second/early third century phases but proximity of the kilns to the site would lead one to expect large quantities as soon as production began. At least one of the

Ware	Common name	Source
BB1	Black burnished ware	Dorset or possibly some Rossington Bridge
BB1 Type	Black burnished ware type	Local
DBY	Derbyshire ware	Local
DER OX	Oxidised Derbyshire coarse ware made in Derbyshire ware kilns	Local
DER RE	Reduced Derbyshire coarse ware made in Derbyshire ware kilns	Local
fine oxidised ware	Derby Racecourse oxidised ware	Derby Racecourse
fine reduced ware	Derby Racecourse reduced ware	Derby Racecourse
fine white ware	Fine white ware	Derby or? Mancetter Hartshill, near Coventry
grey ware	Miscellaneous grey ware	Local
MH	Mancetter-Hartshill white mortarium	Mancetter Hartshill, near Coventry
MH2	Mancetter-Hartshill white mortarium, later type with re-fired ceramic trituration grits, after AD130/40	Mancetter Hartshill, near Coventry
MWH	Cream ware mortarium	Derby or? Mancetter Hartshill, near Coventry
NV1	Nene Valley colour-coated ware	Nene Valley
OAC	Soft fired Derbyshire ware	Local
soft medium oxidized ware	soft medium oxidised ware	Unknown
TS	Samian	Gaul

Table 3: Pottery groupings and likely origins.

Derbyshire ware rims was distorted.

This assemblage also included fine grey and oxidised wares of the type made at the kilns on Derby Racecourse from the late first to mid-second century, before the potters moved to the Belper area. Vessel types present include grey rusticated ware and a grey ware everted rim from a late first to early second century jar type and sherds from an oxidised vessel with a bead rim of similar date. A cream ware stamped mortarium may be from the same kilns. A BB1 jar with burnished wavy line on the neck pre-dates the mid-second century when use of this motif declined. The coarse wares in fabric associated with the Derbyshire ware kilns, DER RE and DER OX (reduced and oxidised wares respectively) were also present and forms include an everted rim tip and a bodysherd with combed wavy line decoration. These are difficult to date but at Derby the wide-mouthed and narrow-necked jars in these fabrics gradually replaced earlier finer and thinner walled versions by the late third to fourth century (Birss 1985, 93 no. 12 and 18) but these are present in DER OX fabrics in a late second to early third century layer at Derby (Leary 2003, 105), so an overall late second/third to fourth century span is suggested.

Test Pit 3

15 bodysherds of Roman pottery came from context 12 in this trench. These comprised three scraps of BB1, 6 Derbyshire ware sherds; a very abraded fine grey ware sherd; and a rouletted sherd in DER RE. A date in the second century would fit these wares.

Test Pit 4

Six Derbyshire ware sherds came from context 16 and one under fired DBY sherd from context 19.

Ware (Test Pit 2)	Total Sherd count
BB1	19
DBY	71
OAC	18
DER OX	1
DER RE	3
Derby Racecourse fine grey ware	2
Derby Racecourse fine oxidised ware	2
Oxidised ware	3
Mancetter Hartshill mortarium	3
Cream ware mortarium	6
Total	128

Table 4: Pottery sherds from Test Pit 2.

Test Pit 5

73 sherds of Roman pottery came from this trench (Table 5) and again over 70% were Derbyshire ware jars. Distorted Derbyshire ware sherds were present. Three sherds of coarse ware of the type made at the Derbyshire wares kilns were also present as well as five sherds of the finer type made at the Racecourse kilns. A bodysherd of white ware from a closed vessel probably came from a flagon. This ware was possibly from the Mancetter-Hartshill kilns near Coventry which were also making some of the mortaria from the site. Mortaria and flagon manufacture was often carried out on the same site and their trade distribution patterns can be similar. There was some evidence for the production of non-mortaria vessels in white ware at Derby however, and certainly flagons were made in other fabrics there (Birss 1985, 91). Unsourced bodysherds of grey and oxidised wares were found and one samian sherd.

As in TP2 several sherds present were closer in fabric and form to the products of the Derby Racecourse kilns and so date to the late first to mid-second century. These include a small rim tip of a fine oxidised ware from C20, a rather battered flanged bowl in a fine grey ware from C21, the neck of a narrow-necked jar from C21 and a small rouletted scrap from C18. Most of these are not closely datable although the flanged bowl is of Hadrianic-Antonine date (Birss 1985, 95 no. 36). As well as the Derbyshire ware the coarse wares DER RE and DER OX made at the Derbyshire ware kilns were present and included a jar with lines of rouletting, probably a narrow-mouthed jar. The wares and vessel types suggest activity from the second to third century. No sherd has to be earlier than the mid-second century or later than the third century.

Ware (Test Pit 5)	Total Sherd count
DBY	53
OAC	1
DER OX	1
DER RE	3
fine white ware	1
Derby Racecourse fine grey ware	4
Derby Racecourse fine oxidised ware	1
grey ware	3
Oxidised ware	5
TS	1
Total	73

Table 5: Pottery sherds from Test Pit 5.

Test Pit 7

698 sherds were examined from the stratified groups (Table 6) and a further assemblage was scanned from topsoil and subsoil levels. A small number of reduced and oxidised sherds of Derby Racecourse type were present. These included much of a reduced carinated bowl made in the late first to mid-second century kilns there (Birss 1985, 97 no. 65) from the hillwash near the F1A wall. The form here, with its upper straight wall, compares well with Antonine vessels (Dool *et al.* 1985, fig. 81 nos 165-7). Other sherds with cordons and carinations in these wares came from contexts 4, 4A and 5 and are of similar date.

Again the majority were Derbyshire ware jars with a high proportion of wasters, including extremely wasted and unusable jars, indicating manufacture must have been taking place in the vicinity. As well as these jars, the wide-mouthed and narrow-necked jars made at the Derbyshire ware kilns were also present and compare well with the types from the Lumb Brook and Hazelwood kilns (mid or late second to mid-third century, Leary 2003 and mid-third century, Kay 1962 respectively). These included a narrow-necked jar which was extremely distorted and unlikely to have been used indicating the manufacture of these coarse wares in close proximity to the site.

Other ware groups include BB1 and BB1 types in grey ware. The BB1 vessels comprised a flat-rim bowl with intersecting burnished arcs dating to the late second century (Gillam 1976, no. 41); a grooved flat rim bowl of the late second to early third century; plain rim dishes probably of the third century (Gillam 1976, nos 79-81); and sherds from cooking jars with obtuse lattice dating after AD 225. A grey ware jar with cavetto rim and acute lattice burnish is likely to date to the late second century. Sherds from Mancetter-Hartshill mortaria with re-fired ceramics as trituration grits included a flanged type with downbent flange of the mid-second to early third century (Hartley 2002, M78-81). Three sherds of Nene Valley colour coated ware came from a rouletted beaker and a funnel necked, scale indented beaker of late second to early third century and mid to late third century date respectively. Two samian sherds were present of which one was decorated.

The range of types indicates activity from the early to mid-second century to as late as the mid-third century. Given the longevity of Derbyshire ware forms and the small number of non-local products it is difficult to place too much weight on the absence of late types such as the developed flanged bowl form of the late third century but the date range suggested by non-local types is consistently of this range.

List of illustrated potsherds (Figs 7-10)

Nos 1-14 are from Test Pit 2; no. 15 from Test Pit 5; nos 16-43 from Test Pit 7. The mortaria are nos 44-46 from Test Pit 2 and nos 47-48 from Test Pit 7.

- 1 Fine grey ware everted rim. This ware is of Derby Racecourse type and the rim is from a late first to mid second century jar type (Birss 1985, 91 no. 3). TP2 C14.
- 2 BB1 everted rim from cooking pot. TP2 C12A.
- 3 DER RE bodysherd from narrow-necked jar with combed wavy line decoration. As Leary 2003 no.13, third to fourth century. TP2 C12A.
- 4 Grey ware rusticated sherd. Late first to early second century of Derby Racecourse type. TP2 C12.
- 5 Two bead-rim sherds of a small bowl of Derby Racecourse oxidised fineware in a yellow-orange fabric. Late first to mid second century. TP2 C12A, bag 2.

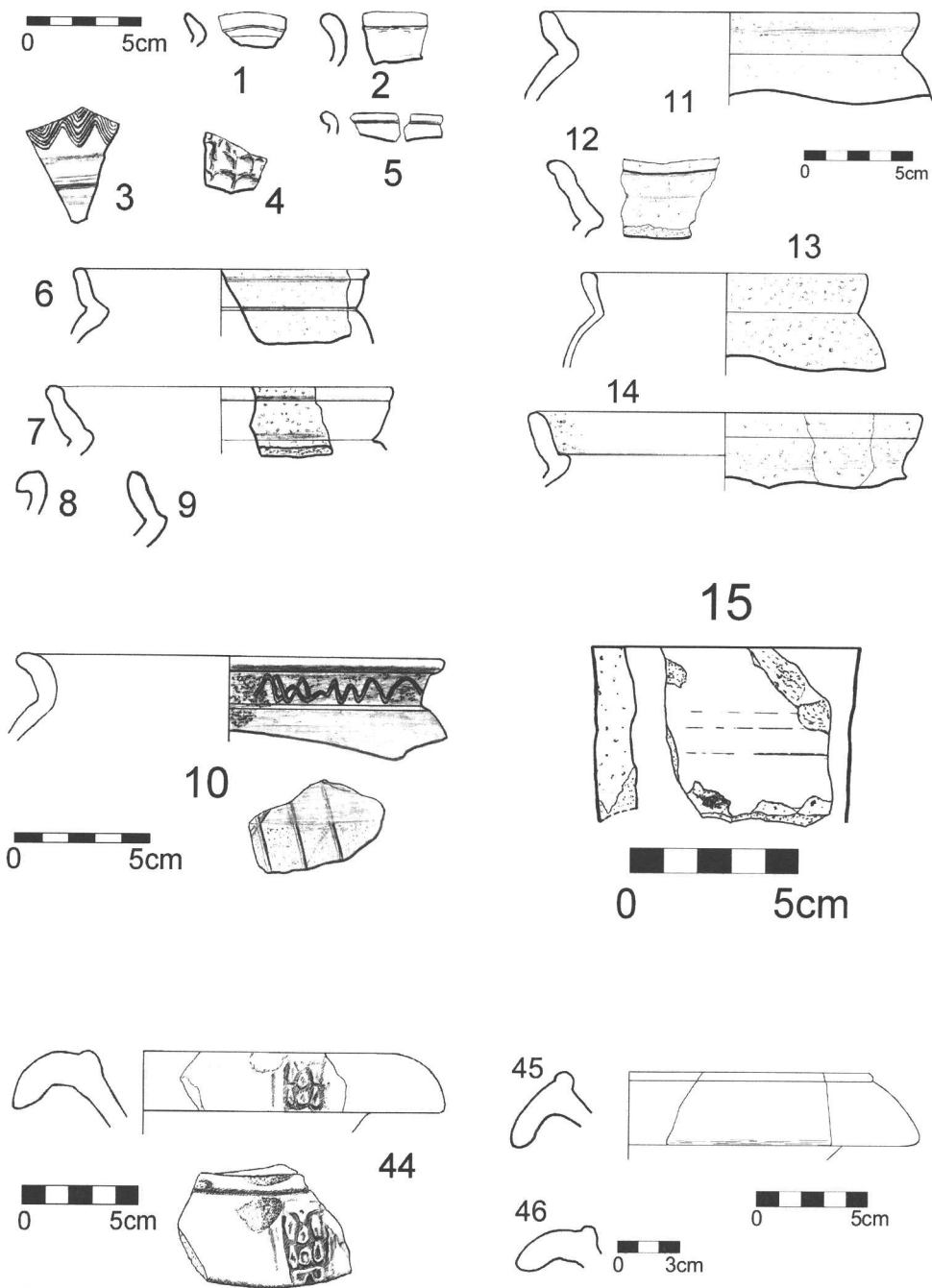


Fig. 7: Roman pottery from Test Pits 2 and 5.

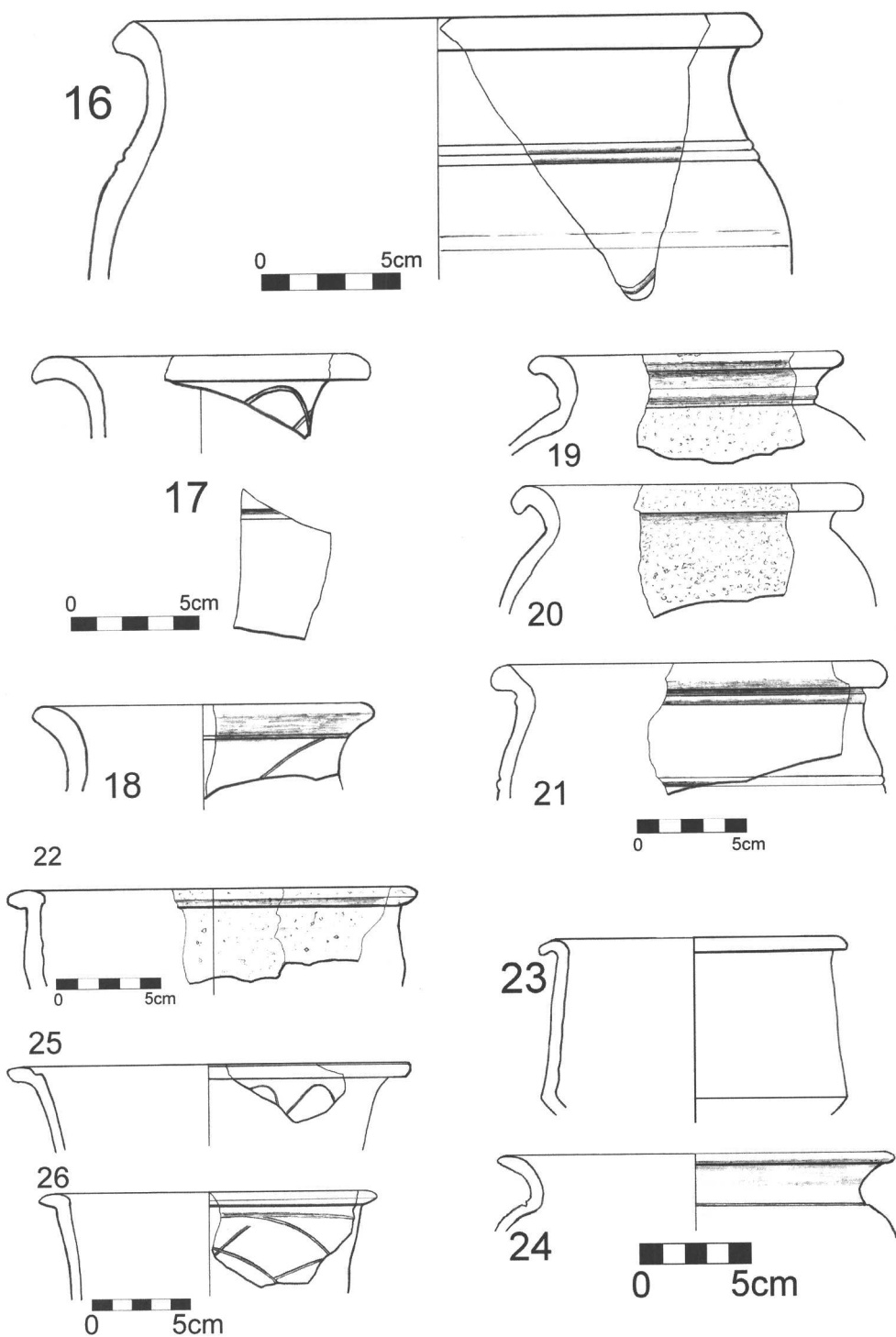


Fig. 8: Roman pottery from Test Pit 7.

Ware (Test Pit 7)	Total Sherd count
BB1	17
BB1 Type	7
DBY	460
OAC	57
DER OX	11
DER RE	94
Derby Racecourse fine grey ware	16
Derby Racecourse fine oxidised ware	5
grey ware	7
oxidised ware	1
Mancetter-Hartshill mortarium	17
Nene Valley colour coated ware	3
?amphora/mortarium	1
TS	2
Total	698

Table 6: Pottery sherds from Test Pit 7.

- 6 Two rimsherds of Derbyshire ware cupped-rim jar in orange fabric. TP2 C11.
- 7 Derbyshire ware cupped-rim jar in dark grey fabric with brown slip. TP2 C12.
- 8 Derbyshire ware rolled-rim jar in orange fabric. TP2 C12A.
- 9 Derbyshire ware cupped-rim jar in dark grey fabric with brown surface. TP2 F1 C15.
- 10 BB1 necked-rim jar with wavy line neck burnish. Non-adjoining sherd with acute lattice burnish. Early to mid-second century. TP2 C13.
- 11 Derbyshire ware cupped-rim jar in orange fabric with burnt exterior. TP2 C12A.
- 12 Derbyshire ware distorted cupped-rim with orange core and grey surfaces. TP2 C12A.
- 13 Derbyshire ware cupped-rim jar in an overfired grey fabric. TP2 C12A.
- 14 Derbyshire ware cupped-rim jar in grey fabric with orange slip. TP2 C12A bag 1.
- 15 Flat-top rim only 8cm diameter, in a pale grey coarse ware with lightly burnished exterior. Possibly a small dish as from Little Chester (Birss 1985, 97 no. 51), dated to the first half of the second century, or a flask neck. Flasks in fabrics other than white ware were made at Derby (Birss 1985, 101 no. 130). TP5 top of C21.
- 16 DER RE wide-mouthed jar with curvilinear burnish on the lower body sherd (Leary 2003, fig. 11 no. 18). TP7 C8 tumble, bag 11.
- 17 DER RE outcurving rim from narrow-necked jar with wavy line burnish on neck and shoulder groove on non-adjoining sherd (Leary 2003, fig. 12 no. 29). TP7 C6 under F1A.

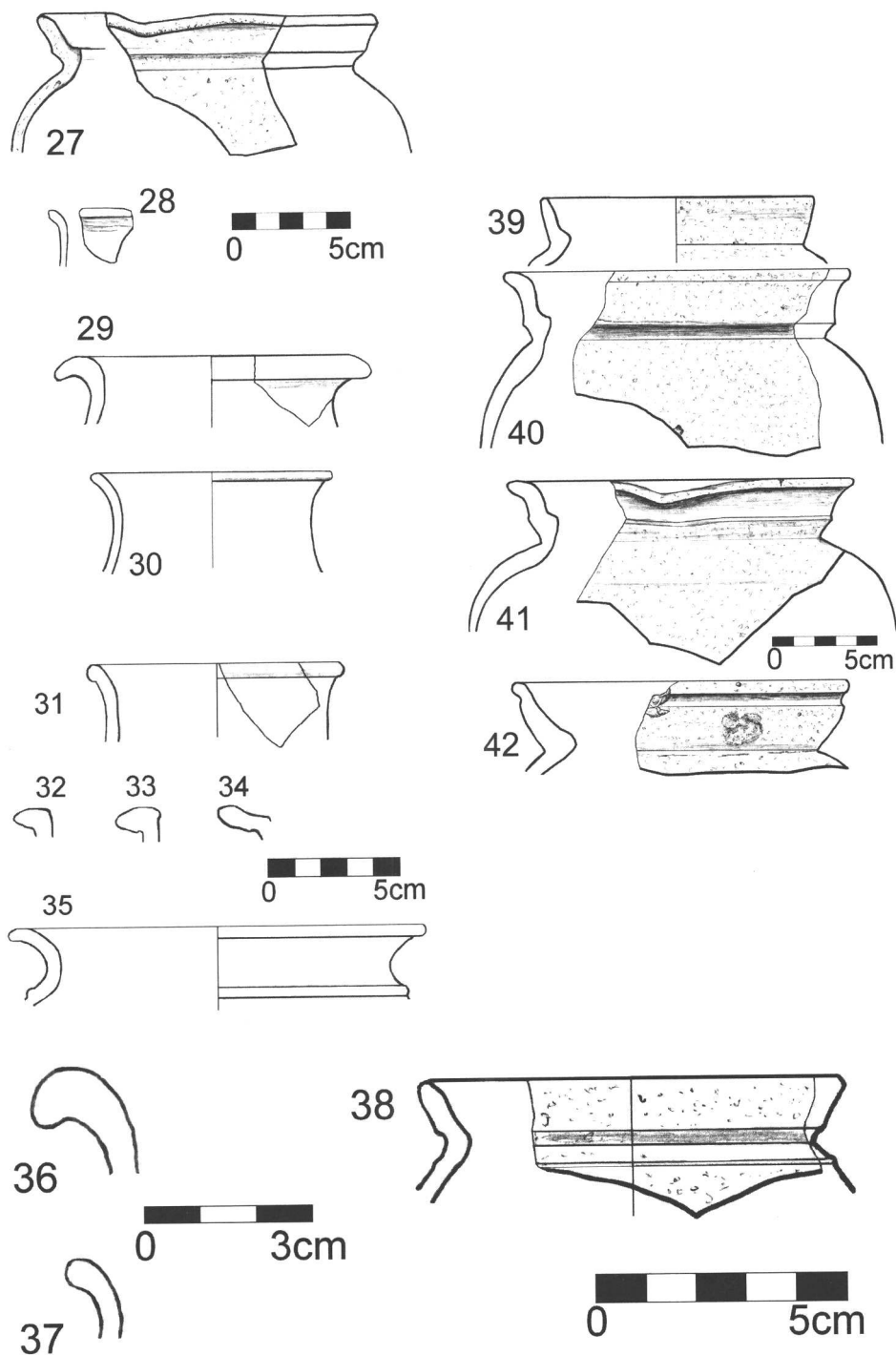


Fig. 9: Roman pottery from Test Pit 7.

- 18 DER RE everted rim from narrow-necked jar with wavy line burnish on neck (Leary 2003, fig. 10 no. 7). TP7 C8 tumble, bag 10.
- 19 Derbyshire ware rolled-rim jar with narrow cord on neck. Brown fabric with dark grey surfaces. TP7 C3, bag 17.
- 20 Derbyshire ware rolled-rim jar in maroon fabric with black patches on exterior. TP7 C3, bag 17.
- 21 DER OX bead rim wide-mouthed jar with neck groove and shoulder cord (Leary 2003, fig. 11 no. 18). TP7 C3, bag 17.
- 22 DBY flat-rim bowl. Unusual type for Derbyshire ware but known from Lumb Brook and thought to be an early type, probably copying second century flat rim bowls from the BB1 and related industries (Jones and Webster 1969 fig. 2 no. 9). TP7 C3A, P11.
- 23 Fine grey ware carinated bowl. This is from the Racecourse kilns and compares well with Antonine vessels (Dool *et al.* 1985, fig. 81 nos 165-7). F1A, under top stones above TP7 C4, P13.
- 24 Grey ware cavetto rim jar and 2 non-adjoining bodysherds with acute lattice burnish (not shown). Late second or third century. TP7 C3A, N end adjacent top stones, P10.
- 25 BB1 flat grooved rim bowl with intersecting arc burnish (Gillam 1976, 42-3) late second to early third century. TP7 F2, C5.
- 26 BB1 flat grooved rim bowl with intersecting arc burnish (Gillam 1976, no.41) late second century. TP7 C6.
- 27 Derbyshire ware distorted cupped-rim jar. Maroon fabric with pale to dark brown surfaces. Some burning on exterior. TP7 F1A wall stones, bag 29.
- 28 Grey ware thin fabric everted rim of jar. Not closely datable but probably a second century bowl/cooking pot. TP7 C3, S end centre, bag 13.
- 29 DER RE outcurving rim from grey narrow-necked jar (Leary 2003, fig. 12 no. 29). TP7 F1A wall stones, bag 29.
- 30 Grey ware, probably DER RE, everted rim from narrow-necked jar (Leary 2003, fig. 10 no. 7). TP7 F1A wall stones, bag 29.
- 31 Fine oxidised ware rim from small carinated bowl of Derby Racecourse type as no. 23 above. TP7 C2, bag 34.
- 32 BB1 flat-rim bowl or dish. Second century. TP7 C2, bag 34.
- 33 Derbyshire ware flat-rim bowl, similar to no. 22 above. Buff-brown fabric. TP7 C2, bag 34.
- 34 BB1 grooved flat-rim of bowl as no. 25 above. TP7 C2, bag 34.
- 35 Grey ware everted-rim jar similar to no. 28 above. TP7 C2, bag 34.
- 36 DER RE hooked rim probably from a wide-mouthed jar. TP7 F2 C5.
- 37 DER OX thin, everted rim with buff-orange slip, from wide-mouthed jar. TP7 F2 C5.
- 38 Derbyshire ware cupped-rim of small-sized jar. Maroon fabric with brown-grey surfaces. TP7 C2, bag 35.
- 39 Derbyshire ware cupped-rim of jar in brick red fabric with grey core and yellowish buff slip on exterior. TP7 C3A NW corner, P12.
- 40 Derbyshire ware cupped-rim of jar in brick red fabric with grey core and buff-grey surfaces. TP7 C3A NW corner, P12.
- 41 Derbyshire ware cupped-rim of jar in same fabric as no. 40. Cracked and distorted, with a blackened area on the underside. TP7 C3A NW corner, P12.

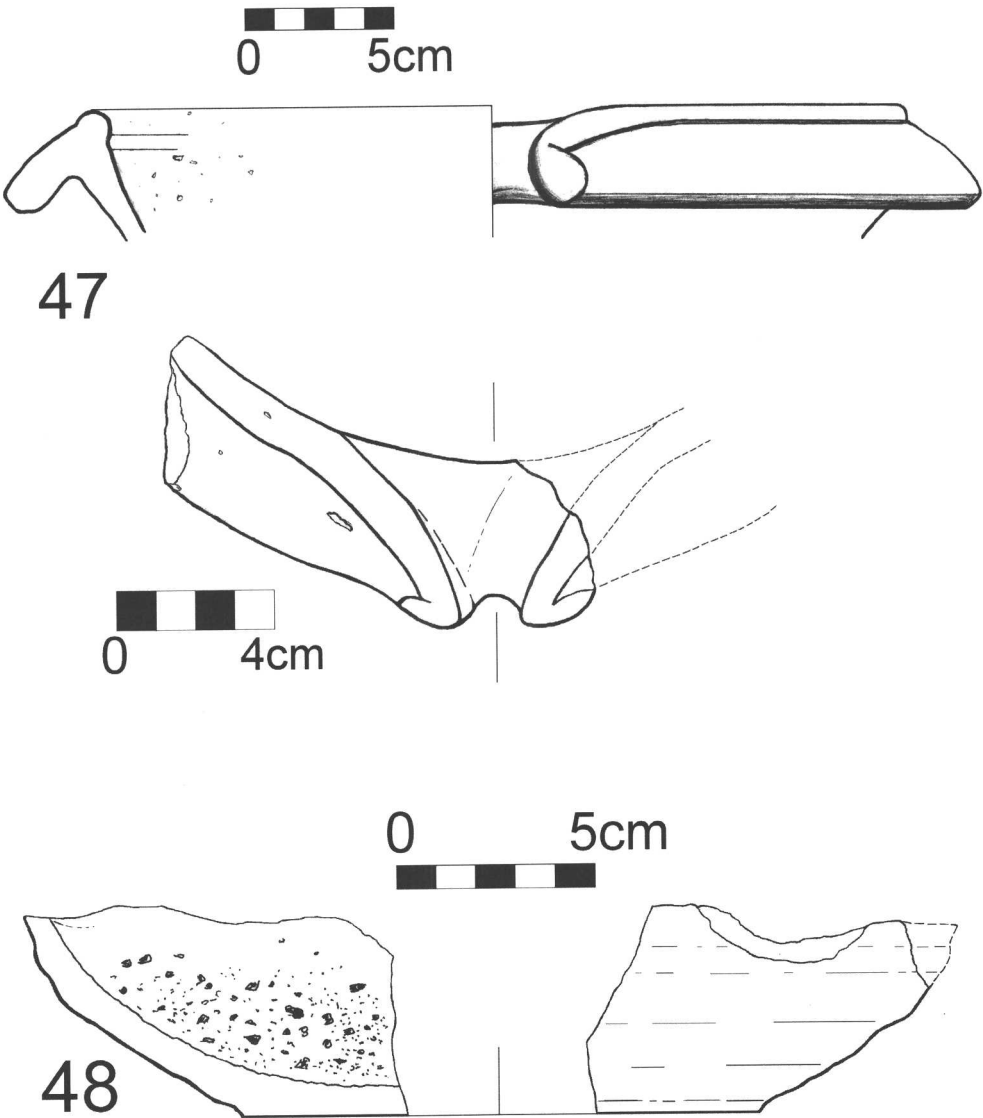


Fig. 10: Mortaria from Test Pit 7.

- 42 Derbyshire ware cupped-rim of jar in grey fabric with an orange slip. It is overfired and there are small patches of damage where pieces have splashed off in the heat. TP7 C3A NW corner, P12.
- 43 DER RE very distorted sherds from narrow-necked jar with neck cordon and everted blunt-ended rim, with slight hollow on rim tip giving bifurcated effect (Leary 2003 fig. 10 no. 2). Sherds of same pot in TP7 C2 between top stones, P3, and in F1A N side, top of C4 floor, bag 37. No drawing, see plate 10.

The Mortaria by Kay Hartley with input from S. Ebbins and drawings by A. Palfreyman

- 44 Mortarium rim with stamp. Two more joining rim sherds and one bead and body sherd from this vessel (see No. 46). TP2 C12A, bag 4. Also two more joining bodysherds (not drawn) adjoining the stamped rim sherd, TP2 C12A east end, bag 3 and C12A, bag 2. All six sherds are from the same vessel, but the abrasion makes it difficult to know if there are any further joins. The three rim sherds show some burning before fracture, underneath the flange on the outer flat section. All the sherds together comprise 15% of the vessel. The diameter is 310mm.

The fabric is cream with traces of a darker cream slip and the texture is very powdery due to soil conditions. Inclusions are moderate, very ill-sorted, quartz with red-brown and rare black material. The trituration grit is mostly, if not entirely quartz with a hackly fracture. There is a plain band below the bottom of the bead, 22mm wide, before the gritting begins and what survives suggests that the grit may have been fairly closely packed. The left-facing potter's stamp survives; a trademark stamp used at the Little Chester pottery workshop (Brassington 1980, fig. 21 no.566 and p.42). Other stamps from the same die have been recorded from Little Chester (2 others, from either one or two vessels: Dool, Wheeler *et al* 1985, fig. 50 no.12, p.129-130); Templeborough; and Carlisle (unpublished). The rim profiles would best fit a date in the first half of the second century AD.

- 45 Mancetter-Hartshill mortarium rim. The sherd is in an excellent state of preservation. Cream with yellowish cream surface slip and brown-grey and rare red inclusions. Optimum date first half of the third century. TP2 C12A west end, bag 4A.
- 46 Two joining rimsherds and one bead and body sherd from the above stamped vessel. Description as no. 44. One rim drawn. TP2 C12A, bag 4.
- 47 Nine sherds from the same mortarium, many joining and representing 33% of the vessel. Very pale cream with traces of darker slip and rare brown and grey inclusions. The fabric is very powdery due to chemical weathering in the ground. This is very much in the Mancetter-Hartshill style, but there are features about it which are, at least abnormal. Mancetter-Hartshill fabric is very robust and normally survives well in all soils, like no. 45 above, though there are rare examples where it has deteriorated. The shoulder/saddle on the outside at the top, and the turning marks on the inside at the top are both very unusual for this source. The diameter is 300mm. TP7 C8/3A top of Roman level under hillwash.

The spout is in the Mancetter-Hartshill tradition; the fact that the bead is not cut away, but continues across the spout when you look from the inside, means that it is later than *c.*AD 170, which is about the latest date for stamping in these potteries. The form of the spout is in keeping with this date. The optimum date for the spout and rim profile is AD 170-250. However because of the unusual features, production at Little Chester cannot be ruled out.

Another two sherds, joining each other, may be from this or another vessel in identical fabric. They are a body and base sherd with well-worn grey trituration grits. TP7 north side of F1A wall and TP7 C6/8 interface. No drawing.

- 48 Two joining body and base sherds from a quite well-used mortarium. The fabric is slightly powdery. The body sherd has the same external shoulder as no. 47 above and turning marks inside. It is from another mortarium which has the same unusual features. The diameter is 130mm. TP7 C3A NW corner P12.

Trade and status

By far the majority of the vessels were of local origin with a small amount from the Derby Racecourse kilns demonstrating manufacturing and commercial links, particularly from the stamped mortarium. Further limited trade is evidenced by the presence of Samian, Nene Valley colour-coated ware, BB1 and mortaria from Mancetter-Hartshill. There is little to suggest affluence but the BB1 indicates a link with military supplies. Fine tableware was sparse but the presence of wasters suggests an industrial site including pottery manufacture.

APPENDIX 3

Archaeometallurgical assessment of production process residues

by Roderick Mackenzie BSc PhD MIFA

A basic identification of residues from the above site has been carried out and individual pieces have been assessed to determine their archaeological potential. The bulk of the assemblage was recovered from archaeological contexts dating from the Romano-British period. One of the main aims of this assessment has been to determine whether there is enough evidence to suggest the presence of metal working or smelting at, or close to the site. The results of the assessment are summarised in Table 7 below. It should be noted that at this stage, no microscopic or chemical analysis has been carried out and the results should, therefore, be regarded as provisional.

Summary of results

The main evidence of metal production was in the form of undiagnostic slag and possible iron smithing slags (approximately 3700g in total). Fragments of fired and partially vitrified/fuel ash slagged clay were also recovered in significant quantities (approximately 770g in total). The assemblage also contained pieces of gritstone and coal. Two pieces of stone have possible deliberate markings or traces of wear on their surface.

Trial Pit No.	Context No.	Number of pieces	Weight of pieces (g)	Description
7	2	11	305	Undiagnostic slag
7	2	3	300	Possible iron smithing slag
7	2	6	170	Possible hearth or kiln lining material
7	2	2	15	Burnt coal
7	2	2	5	Coal
7	2	1	50	Stone
7	2	1	6	Burnt clay or daub
7	3	50	1145	Undiagnostic slag
7	3	5	345	Undiagnostic/Possible iron smithing slag
7	3	5	90	Possible hearth or kiln lining material
7	3	4	30	Burnt coal
7	3	1	5	Coal
7	3	15	495	Stone (one piece with possible deliberate marking)
7	3	5	80	Broken brick/clay tile
7	3	1	<5	Small fragment of iron oxide concretion
7	3A	3	140	Undiagnostic slag
7	3A	1	165	Undiagnostic slag with small fragment of burnt coal embedded within matrix
7	3A	1	10	Possible hearth or kiln lining material
7	3A	1	355	Heat cracked river pebble
7	Not known	4	185	Undiagnostic slag
7	Not known	1	20	Possible hearth or kiln lining material
7	1	4	70	Burnt stones
7	1	1	5g	Coal
7	4 (F1a)	1	10	Undiagnostic slag
7	4 (F1a)	1	235	Undiagnostic/possible iron smithing slag with fragment of hearth lining
7	4 (F1a)	4	175	Possible hearth or kiln lining material
7	4 (F1a)	1	25	Coal
7	4 (F1a)	1	180	Stone
7	5 (F2)	38	860	Undiagnostic slag

Trial Pit No.	Context No.	Number of pieces	Weight of pieces (g)	Description
7	5 (F2)	1	120	Undiagnostic/possible iron smithing slag
7	5 (F2)	16	250	Possible hearth or kiln lining material with undiagnostic/possible fuel ash slag attached
7	5 (F2)	1	<5g	Burnt coal
7	5 (F2)	4	170	Stone
7	5 (F2)	1	15g	Small fragment of ferrous metal, possibly cast iron
7	6	2	30	Possible hearth or kiln lining material
7	6	1	15	Undiagnostic slag
7	8	2	455	Stone (one piece may have been burnt)
7	8	3	65	Undiagnostic slag
7	8	1	25	Possible hearth or kiln lining material
7	8	1	745	Piece of flat gritstone with shallow groove on one surface

Table 7: Results of assessment of production process residues recovered from excavations at Blackbrook, Derbyshire.

Interpretation and discussion

In some types of metal production, the slag and residue by-products can be easily ascribed to a specific process. However, in other cases, particularly iron smelting and smithing slags from the Iron Age to medieval period, it can be extremely difficult to identify production sources based solely on their morphology (Bachmann 1982:31; McDonnell 2001, 163). Although iron smelting and smithing both produce slags that are characteristic of each process, they also produce significant quantities of undiagnostic slag which cannot be ascribed to a process. In general, iron smelting produces a far higher volume of diagnostic slag types and residues than iron smithing. However, as iron smithing was more common and geographically widespread than smelting, undiagnostic slags tend to be the most common type found during archaeological fieldwork.

Scientific analysis can help to determine the process origin of some slag types, although this is normally only justified where there is supporting archaeological or historical evidence, or the particular slag found is of an archaeometallurgically significant type.

In addition to the undiagnostic and possible smithing slags, the assemblage also contained fragments of fired clay hearth or kiln lining. None of the fired clay fragments appear to have metalliferous slag attached and it is worth noting that the fragments do not necessarily indicate metal production and may relate to a kiln or domestic hearth or oven.

Given the type and volume of material recovered from Test Pit 7, and the absence of smelting evidence, it seems most likely that the slag found relates to iron smithing. There was not enough evidence to suggest that smithing was being carried out in the area excavated and, at the time of writing, there is no indication in the provisional reports of the presence

of hammerscale or geophysical ‘hotspots’ which could identify the location of a forge within the settlement. However, during the time period in question, it is highly unlikely that the slag would have travelled very far from its point of origin, suggesting that smithing was being carried out relatively close to Test Pit 7.

The function or identity of the small fragment of ferrous metal found in context 5 (F2) is not known and, without metallurgical analysis, it is not possible to determine whether the object was cast or forged.

APPENDIX 4

Querns from Gorses Farm

A visit to Gorses Farm at Belper Lane End, 1.2km north of Starbuck House, has provided more evidence of pre-Roman quern-making in the area, to add to the one at Holly House (Palfreyman and Ebbins 2007, 33). The two querns from Gorses Farm are 1st century BC to 1st century AD and both are made from local Ashover Grit (Plates 12a and b).

a. ‘beehive’ type top stone roughout, complete except for a piece cut off the top edge.

Height 200mm. Diameter: top 200mm; base 300mm.

b. ‘beehive’ type top stone, about half remaining. It has been cut in half vertically, probably for re- use in a wall, and was moved here recently from the top of Narrow Lane. The hopper hole and handle hole are partly-worked, but unfinished.

Height 230mm. Diameter: top 200mm; base 300mm; hopper hole top 120mm.

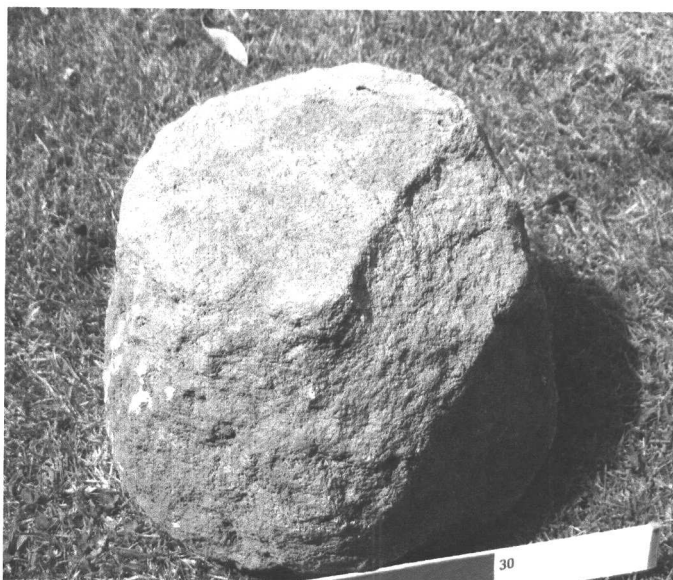
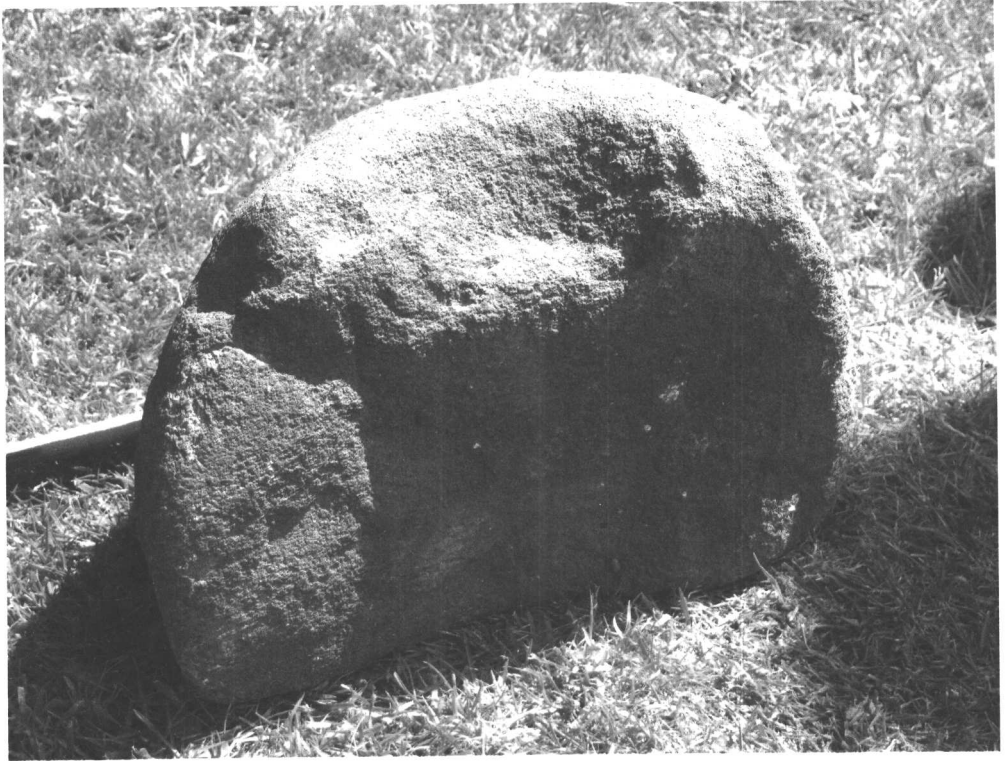


Plate 12: Beehive querns, both 30cm diameter, from Gorses Farm, Belper Lane End;
a) top stone roughout



b) half of a partially-worked topstone.

ACKNOWLEDGEMENTS

Our thanks go to the landowners Mr and Mrs Clarke and Mr and Mrs Bowler for their continuing co-operation, Mr Burdekin for access to his field, and Mr and Mrs Cowans of Gorses Farm. We are grateful for support from Dave Barrett and Steve Baker of Derbyshire County Council. The specialist reports and magnetometer survey were made possible by a grant from the Monica Pilling fund by the Council of Derbyshire Archaeological Society, and we thank Ruth Leary, Kay Hartley, Rod Mackenzie, and Alan Morris for their specialist contributions. Also thanks to DAS colleagues, who made time to help: Keith and Barbara Foster, Pam Scott-Clarke, Joe Hargreaves, Vicky Wade, Richard Leach, Adrian Farnsworth, Paula Whirritry, and to friends who responded when needed Alan Webster, and sons, David and Nicholas.

REFERENCES

- Bachmann, H. G. (1982) *The Identification of Slags from Archaeological Sites*. The Institute of Archaeology. London.
- Birss, R. S. (1985) Coarse Pottery in Dool, Wheeler *et al*: 90-124.
- Brassington, M. (1971) A Trajanic Kiln Complex near Little Chester, Derby. *Antiquaries Journal* 51: 36-69.
- Brassington, M. (1980) Derby Racecourse Kiln Excavations 1972-3. *Antiquaries Journal* 60: 8-47.
- Brassington, M. and Webster, W.A. (1988) The Lumb Brook Pottery Kilns, Hazelwood: An Interim Report. *DAJ* 108: 21-32.
- Conway, R. S. (ed.) (1906) *Melandra Castle: being the Report of the Manchester and District Branch of the Classical Association for 1905*. Manchester University Press.
- Dearne, M. and Branigan, K. (1995) The Use of Coal in Roman Britain. *Antiquaries Journal* 75: 71-105.
- Dool, J., Wheeler, H., *et al*. (1985) Roman Derby: Excavations 1968-1983. *DAJ* 105.
- Gillam, J. P. (1970) *Types of Roman Coarse Pottery Vessels in Northern Britain*. 3rd edition. Newcastle.
- Gillam, J. P. (1973) Sources of pottery found on northern military sites. In A. Detsicas (ed.) *Current Research in Romano-British Coarse Pottery*. CBA Research Report 10: 53-62.
- Hartley, K. (2002) Pottery from the CFA excavations. In P.R. Wilson (ed.) *Cataraetonium: Roman Catterick and its hinterland. Excavations and research, 1958-1997*. CBA Research Report 128, 383-94.
- Jones, G. D. B. and Webster P. V. (1970) Derbyshire ware - a reappraisal. *DAJ* 89: 18-24.
- Kay, S. O. (1962) Romano-British Pottery Kilns at Hazelwood and Holbrook, Derbyshire. *DAJ* 82: 21-42.
- Kay, S. O. and Hughes, R.G. (1963) A Romano-British Pottery Kiln at Shottle Hall, Derbyshire. *DAJ* 83: 103-106.
- Leary, R. (2003) The Romano-British pottery from the kilns at Lumb Brook, Hazelwood, Derbyshire. *DAJ* 123: 71-110.
- Maxfield, V and Peacock, D. (2001) *The Roman Imperial Quarries: survey and excavation of Mons Porphyrites 1994-1998. Volume 1 Topography and Quarries*. Egypt Exploration Society. London.
- McDonnell, J. G. (2001) *Dunadd, the site archive, Cardiff Studies in Archaeology. Specialist Report No. 19*. Cardiff University. Cardiff. [http://www.gla.ac.uk/archaeology/resources/dunadd/data/3 1.pdf](http://www.gla.ac.uk/archaeology/resources/dunadd/data/3%201.pdf)
- Parsons, David (ed.) (1990) *Stone. Quarrying and Building in England AD43-1525*. Phillimore & Co. Ltd Chichester. In association with the Royal Archaeological Institute.
- Palfreyman, A. and Ebbins, S. (2007) A Romano-British Quern-Manufacturing site at Blackbrook, Derbyshire. *DAJ* 127: 33-48.
- Radley, J. and Penny, S. R. (1972) The Turnpike Roads of the Peak District. *DAJ* 92: 93-109.
- Smithard, W. (1913) Records and Traces of Old Roads near Derby. *DAJ* 35: 111-136.
- Webster, G. (1955) A note on the use of Coal in Roman Britain. *Antiquaries Journal* 35: 199-217.