

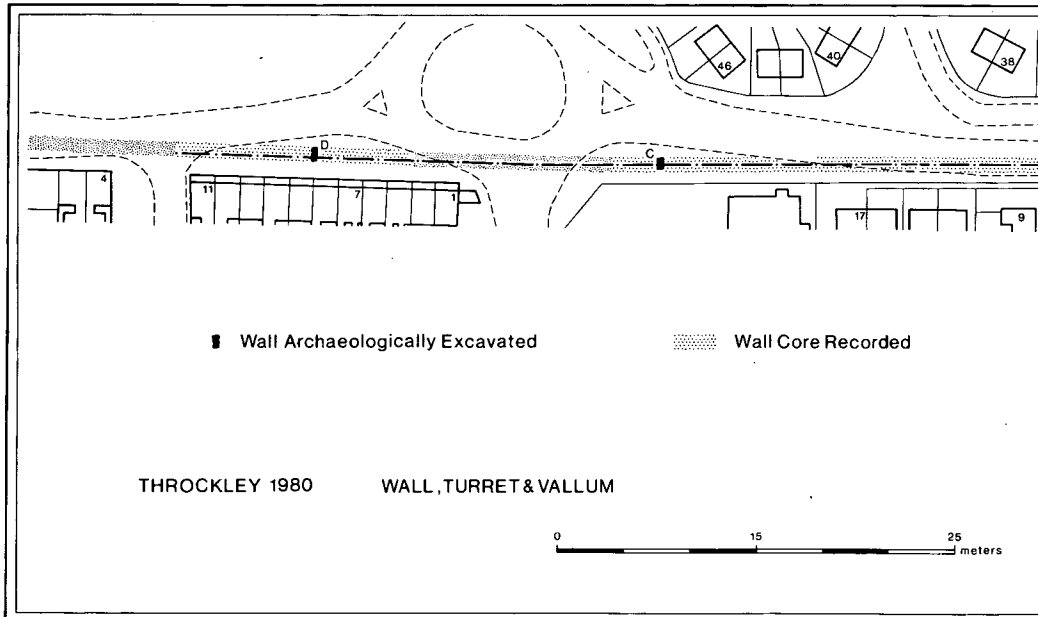
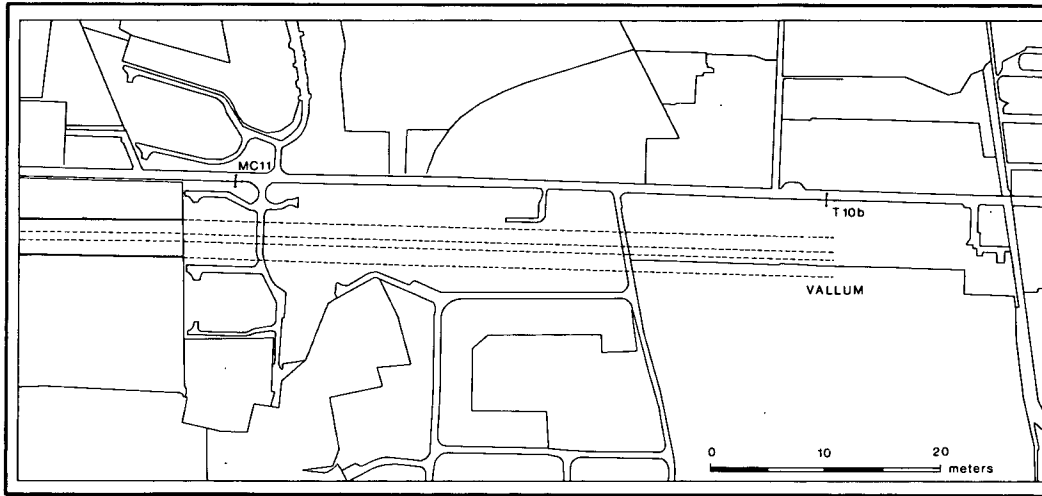
III

THE EXAMINATION OF TURRET 10A AND THE WALL AND VALLUM AT THROCKLEY, TYNE AND WEAR, 1980

*Julian Bennett*¹

Introduction

TO ELIMINATE drainage problems, the City Engineers Department of Newcastle upon Tyne proposed to install a relief sewer beneath the south carriageway of Hexham Road, Throckley, the B 6352. This stretch of road, formerly the A 69, was known to be constructed over the levelled remains of Hadrian's Wall, and the sewer would not only destroy some 415 yards (380 metres) of the wall curtain, but would also run through turret 10a, Callerton Road, or Throckley East Turret (NGR NZ 1602 6682). Initially it was not possible to have the sewer diverted, and it was agreed to excavate the turret in advance of its destruction: archaeological work began in February, 1980, and was directed by the writer on behalf of the Central Excavation Unit, Department of the Environment, with labour and machinery kindly provided by the City Engineers Department. In March, after the main area of the turret had been cleared, it proved possible to divert the sewer south of this point. Initial work had already established, however, that the remains of the turret had been extensively disturbed since it was first discovered in 1928² (fig 4): repairs to any of the services that criss-crossed the structure would undoubtedly cause further disturbance, and the decision was taken completely to excavate the turret not only to forestall this, but also to provide a measure of how much had been lost in the fifty years since the turret had been first examined. A watching-brief only was held on the remainder of the sewer works, where these directly affected the wall curtain, while in April, again with labour and machinery provided by the City Engineer, it proved possible to cut a section through the Vallum south-west of the turret, where it would be crossed by the sewer, and record this in unhurried circumstances. Only limited work would have been possible without the help and encouragement of the City Engineer, Mr. A. V. Boardman, and his colleagues Mr. A. Shepperson and Mr. P. Lancaster: grateful thanks are extended to all three for their far-sighted co-operation, and for arranging the closure of the south carriageway of the main road to allow the excavation to proceed, with traffic lights at either end to control the traffic flow. The writer also wishes to thank Dr. G. Wainwright and Mr. I. Stuart (Inspectorate of Ancient Monuments) and Charles Daniels (Newcastle University) for their help and advice during the work. The excavation team comprised A. Miller, D. Thompson, M. Tolan, R. Burns, R. Coleman and J. Summerly, the latter two also providing much help in preparing the final report. The first draft of the report was considerably shortened and improved upon by Angela Cartledge, and the writer is grateful to her for her help in this, and the drawings were produced by Jane Bevan (figs 1-15, 17-19) and



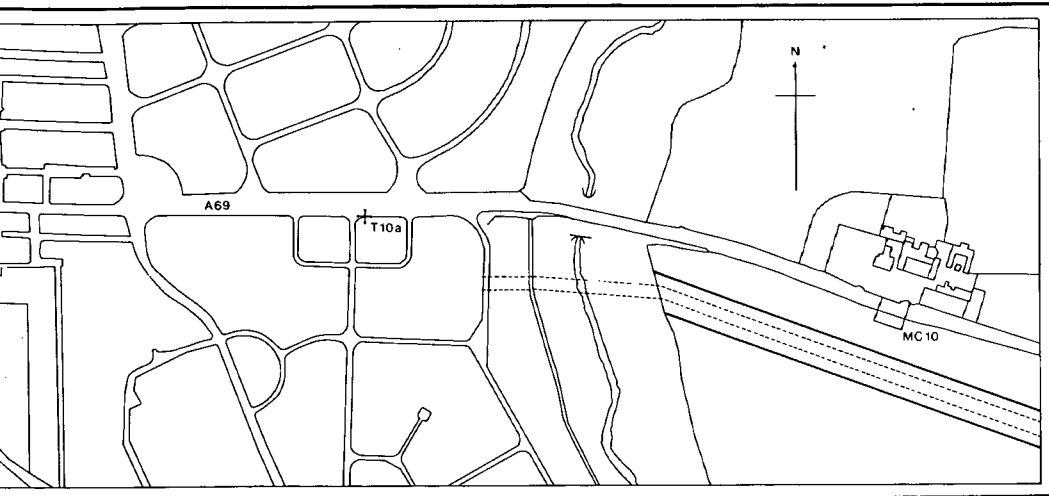


Fig. 1 Hadrian's Wall from milecastle 10 to milecastle 11 showing the known and presumed sites of the associated structures.

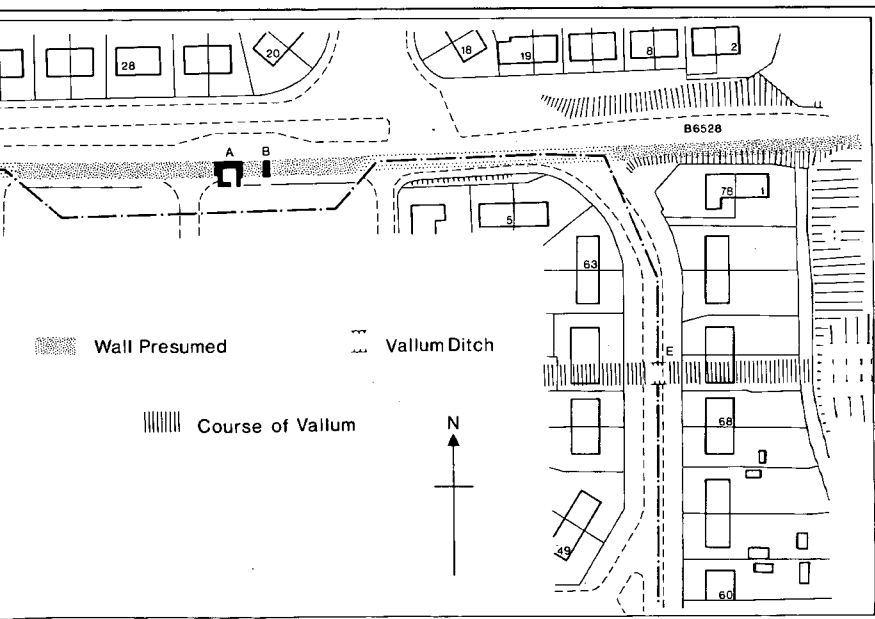


Fig. 2 The Throckley sewer scheme, showing Areas A-E, and the state of preservation of the curtain wall adjacent to turret 10a. The heavy dot-and-line indicates the eventual course of the sewer scheme.

Chris Evans (fig. 16). The writer also wishes to thank the various specialists who have contributed to and advised on the report, although he alone is responsible for the final conclusions: John Gillam (coarse pottery); Helen Keeley and Nick Balaam (soils); James Rackham (animal bones); and Peter Fowler and Alexandra Miller (ard-marks). Finally, however, the writer and his helpers wish to thank Ted and Doreen Tolan, of Hexham Road, Throckley, who threw their house open to the diggers, and sustained them in wind, rain, sun and snow with endless cups of tea and home-made cakes: like the traffic lights these will never be forgotten.

The 1980 Excavations

The report on the 1980 excavations is best delivered in terms of the three components of the Wall then examined, the *Curtain*, the *Turret* and the *Vallum*. A complete stratigraphical record is not given here, but copies of the site records are deposited with the Newcastle Joint Museum of Antiquities (Accession 1980:12) and the National Monuments Record: the finds are also held by the Joint Museum, and finds and records bear the Central Excavation Unit site code 188, with the finds having the relevant context number as used in this report. The 1980 work was divided into five main areas, with a watching brief being carried out on the length of Wall not archaeologically revealed. The five areas were (fig. 2): Area A, the turret itself; Area B, a trench across the curtain immediately east of the turret; Areas C and D, two further trenches across the curtain, both west of the turret; and Area E, the section through the vallum in Woodside Avenue.

The Curtain (fig. 2)

Only slight evidence was recorded for the curtain wall structure east of No. 5 Hexham Road, and it had almost totally been removed—probably in connection with the 1864 roadworks. From this point to a little east of Callerton Cross-roads, the curtain—where exposed—survived either as foundation material or as upstanding core: at no point did facing stones survive. The cross-roads occupy a natural rise in the ground level, now given greater emphasis by the siting of a roundabout at this point, and the absence of wall fabric in this area is to be explained by post-medieval road levelling and modern road works. West of the roundabout wall fabric survived as core and foundation material to the end of the sewer pipe trench.

The method of construction used for the Wall was identical in all four excavated sections, and was not seen to vary in the lengths destroyed by the sewer works. A shallow foundation trench had been cut to a maximum of three inches (nine cm), in Areas A and B certainly cutting through an earlier soil horizon, later shown to be pre-Wall cultivated soil (figs 3 and 8–10: Appendix 1). The foundation trench had been packed with clean clay containing some stone chippings, forming the base for a level setting of irregular sandstone slabs which comprised the foundation of the Wall proper (contexts 108/303/307). In Area B the pre-Wall soil extended the full length of the trench (fig. 3), a distance of some 20 feet (7 m), which is twice the maximum recorded width of the Broad Wall. To account for the survival of the soil here it is necessary to assume that spoil had been dumped against both faces

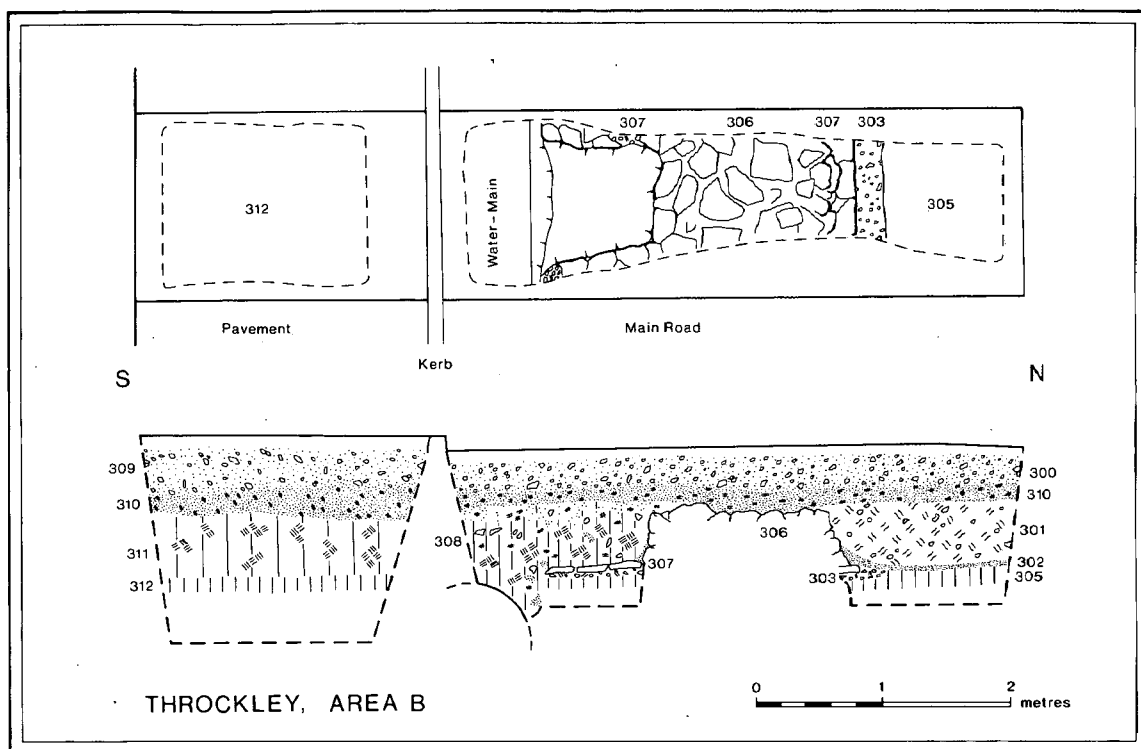


Fig. 3 Area B, plan and section across the curtain wall; see fig. 7 for key to the section.

of the Wall after this had been constructed, a possible explanation for the clay-loam deposit which existed in the southern part of Area B (fig. 3, context 311)³.

Neither face of the Wall had survived later depredations. In the case of the north face this was probably due to stone robbing, a trench containing mortary soil and stone fragments running along the northern part of the surviving core in Areas A, B, C and D (e.g. fig 3, context 301)⁴. In Areas B and D, however, a wedge of clay over the foundation slabs meant that these had survived the attentions of the stone-robbers, and enabled the alignment of the north Wall face to be satisfactorily determined. The south face had only survived where it was recessed for the turret, elsewhere having been totally destroyed by the laying of a major water-pipe which ran along the entire length of the curtain examined in 1980. The recessed face of the curtain was laid directly on clay which sealed the foundation slabs. The facing stones were of dressed sandstone, slightly tapered to the rear, and about 12 inches (30 cm) square and 14 inches (36 cm) deep for the first course. The second course was offset, and consisted of dressed blocks of slightly smaller dimensions. The interstices of the facing stones had been pointed with a hard white mortar. In Areas B and D the

survival of the facing foundation slabs enabled the minimum width of the Wall to be established as 8' 9" (2.75 m), but as the face of the foundation slabs was not uncovered in Area A a precise width for the turret north wall could not be established: it was clearly in the order of 4' 3" (1.30 m). The curtain at Throckley was evidently 'Broad', rather than 'Narrow': 'Broad' Wall is known to continue as far east as Denton, and west of Throckley it exists at Heddon-on-the-Wall, but nineteenth century records indicate the Narrow Wall was to be found in the vicinity of milecastle 11⁵. The use of a single offset in the south face indicates that this length of Wall is 'Standard A' construction, now associated with work of the Legio II and VI⁶.

The core of the curtain wall was composed of large undressed sandstone blocks, with some water-rounded boulders, set in a clean yellowish clay. The core survived for a height of 18 inches (45 cm) in Area B, and 24 inches (61 cm) in Area A, but elsewhere had been almost totally removed: other than the mortar used to point the recessed south face there was no evidence for mortar being used anywhere in the lower stages of the curtain core.

The Turret (figs 4-6, and 8-12)

The foundation trench for the turret was continuous around the four sides of a square, that is, it was continued uninterrupted across the site of the entrance. It was deeper than that of the curtain, with an average depth of 10 inches (25 cm), and was around 3' 11" (1.20 m) wide. The foundation material was identical with that used for the curtain, slabs being set in clean clay (context 109). Both the interior of the turret and some of the area outside was eventually removed to and below the pre-Wall surface, but there was no trace whatsoever of any scaffold holes or any other construction technique.

The three turret walls had all suffered some damage (fig. 4): a major water pipe bisected the site, cutting both the east and the west walls approximately at the point where they would have bonded with the south face of the curtain; a gas pipe had been laid along the west wall, destroying its outer face; a concrete fire-hydrant stand and associated water pipe obscured the south-west corner of the turret; and one concrete fence post had been sited in the turret entrance with a second cutting through the south wall. Despite this damage two courses of walling usually survived, with occasionally a third course *in situ*: when discovered in 1928 the south-east corner of the turret then remained five courses high. The first course was of dressed sandstone blocks, laid directly on the clay capping of the foundation slabs. The blocks were similar in size to those used for the curtain, but were not so deep nor were they tapered, and the width of the walls at this level varied from 3' 4" (1.02 m) to 3' 7" (1.20 m). Subsequent wall courses were offset on both sides to give a superstructure averaging three feet (92 cm) wide. Both second and third course used blocks of smaller dimensions than the first course, resulting in the turret side walls being bonded with the curtain at first course level, but subsequent courses butt-jointed against this. Although mortar had been used to point the wall faces, the core in each case was of sandstone blocks packed with clay. A spread of mortar existed on top of the surviving third course of the south and east walls, perhaps indicating

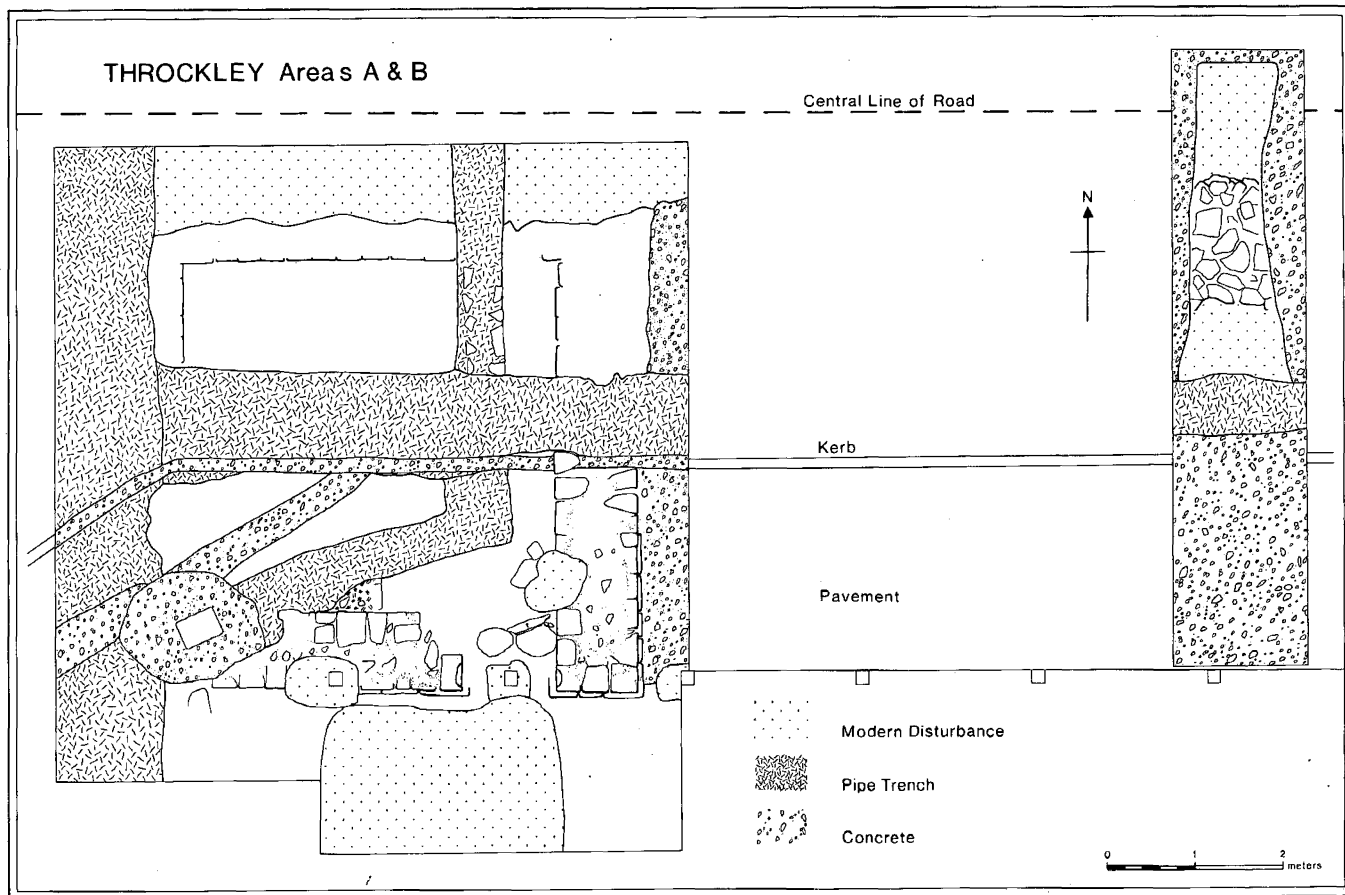


Fig. 4 Site plan, showing the relationship of Areas A and B, and the extent of disturbance by post-Roman activities: only those areas left blank in Area A revealed undisturbed Roman stratigraphy.

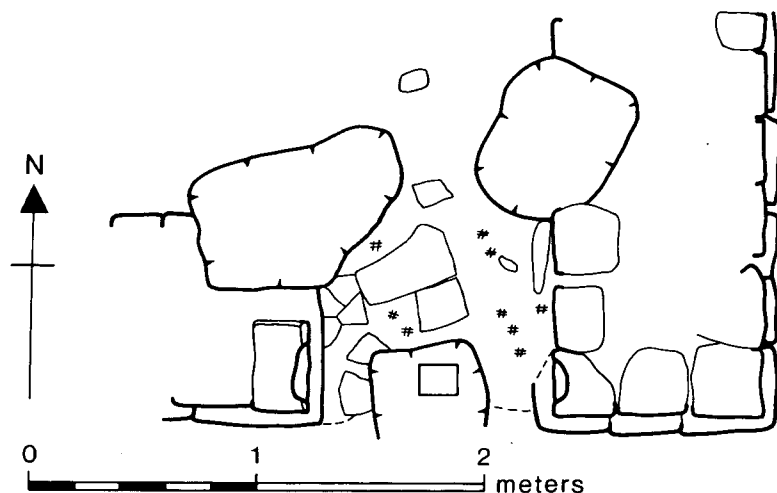


Fig. 5 The entrance area of the turret, showing "hearth" 68/69, and the indents on either side of the entrance.

that from here on the superstructure was mortar-fast, at least in places.

The interior dimensions of the turret, taken where the walls were offset, were 13' 6" (4.10 m) north-south, and 13' 9" (4.20 m) west-east. The entrance was at the south-east corner, and was 3' 6" (1.07 m) wide. There was neither a threshold stone nor threshold flagging with pivot stone at the entrance, the entire entrance area being occupied by a series of hearths contemporary with the turrets' use. If a monumental threshold had formerly existed, and had been subsequently removed, it would be expected that some evidence would survive for this action, whereas removal of a pivot stone would not necessarily leave any trace. A puzzling feature of the turret entrance was the existence of two semi-circular recesses' cut into the tops of opposing stones at second course level (figs 5 and 6): their precise function and date relative to the turrets' occupation remain uncertain, but they could have held a timber batten which served to hold a timber doorframe in place.⁷

In the south-west corner of the turret was a small area of clay-fast stones, with an original edge surviving to the east, pointed with mortar (fig. 12, context 9). This is interpreted as the remains of the platform often found inside stone wall turrets and, as will be shown below, was a secondary addition to the principal structure of the turret.

Area A had been severely disturbed by a number of intrusions, all modern in date, which left three distinct islands of stratigraphy (fig. 4). Certain of these intrusions, notably the west-east water pipe, had cut through at important points in the turret's internal stratigraphy, destroying crucial relationships, while the water pipe had impeded drainage of the site, causing the same layer to appear a darker colour north of the pipe than it was to the south. Notwithstanding these difficulties, comparison

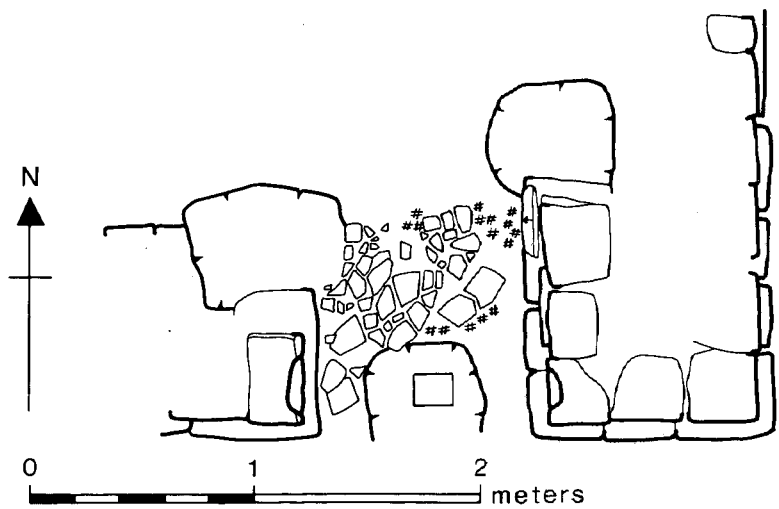


Fig. 6 The entrance area of the turret, showing "hearth 61/62/63/110.

KEY TO SECTIONS

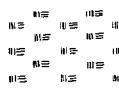
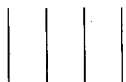



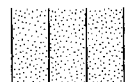

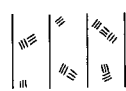

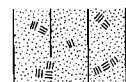
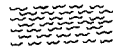
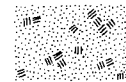
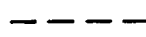
			Clay
	Loam		Mortar
	Silty Loam		Charcoal
	Sandy Loam		Ash
	Clay Loam		Stone
	Sandy Clay Loam		Shale
	Sandy Clay		Limit of Excavation

Fig. 7 Key to sections, figs 3, 8-11 and 13-14.

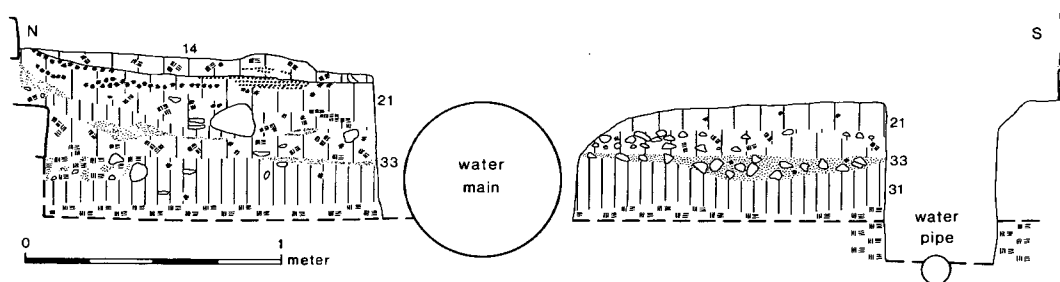


Fig. 8 Section 1, north-south across the turret interior. See fig. 12 for positions, fig. 7 for key.

of soil textures, inclusions and relative stratigraphical position enabled the main stratigraphy of the site to be determined, and it proved possible to record three cross-sections through the turrets' interior (figs 8–10).

The internal stratigraphy could not easily be divided into recognizable stratigraphical horizons, a situation common to turrets excavated in more recent years. The layers examined within the turret were often impersistent spreads, with no clear break or division from one another, frequently existing as small areas and probably representing the levelling of worn areas rather than distinct "floors". Two layers only seemed to indicate floor surfaces, in the conventional archaeological sense, as both had compacted upper surfaces and extended over the whole area of the turret: these are conveniently used in this report to divide the turrets' occupation into three principal phases, but no historical significance is to be attached to this division.

A number of "hearths", that is, areas of intense burning or charcoal, normally associated with a stone setting, were found in and outside the turret. These often had a long stratigraphical history, having continued in use while "occupation" deposits or levelling material were laid around and sometimes partially over them. In some cases this had caused the position of the "hearth" to shift slightly, in both lateral and vertical planes, and our inability to detect the contemporary "floor" surfaces

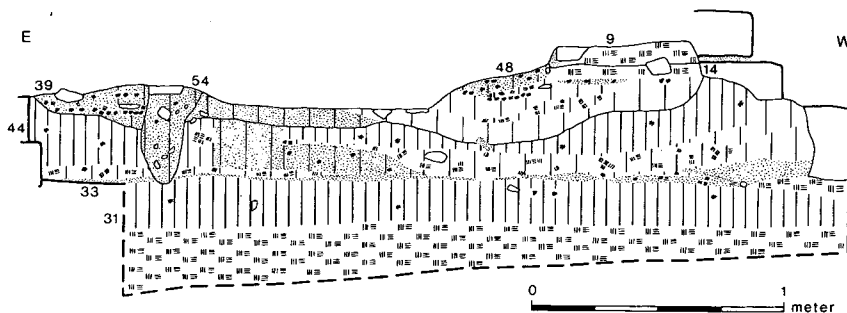


Fig. 9 Section 2, west-east across the turret interior. See fig. 12 for position, fig. 7 for key.

associated with each sub-phase of any particular "hearths" development must be explained by the continued deposition of successive layers of a similar nature and composition, which cannot now be differentiated from one apparently homogeneous mass.

It has already been observed that the turret was constructed over a buried cultivated soil which, when removed, revealed linear traces indicating the cross-ploughing of the site with an ard: this soil and the marks are discussed later in this report. The surface of the soil revealed no evidence for a buried turf line, and was immediately overlain by a discontinuous spread of mortar soil, containing many sandstone chippings (contexts 10/33/71, figs 8–11). Where this layer extended to the centre of the turret, it was comparatively thin, but it gradually thickened towards the turret walls, especially in the south-west. The composition and stratigraphical position of this layer leave no doubt that it represents construction debris from work on the curtain and the turret superstructure. Over this construction deposit lay a series of deposits of clean clay and silty loam, devoid of finds, which included some splashes of mortar (especially nearer the walls) and sandstone chippings (contexts 28, 32, 41, 45–7, 51, 70 and 79, figs 8–11). These layers had been laid down while work was still in progress on the turrets' superstructure, and seemed intended to raise the internal level of the turret to a height consistent with the top of the first course. All these spreads gradually thinned and diminished towards the east, leaving a slight hollow in the area of the turrets' entrance, and presumably indicate wear caused by pedestrian passage.

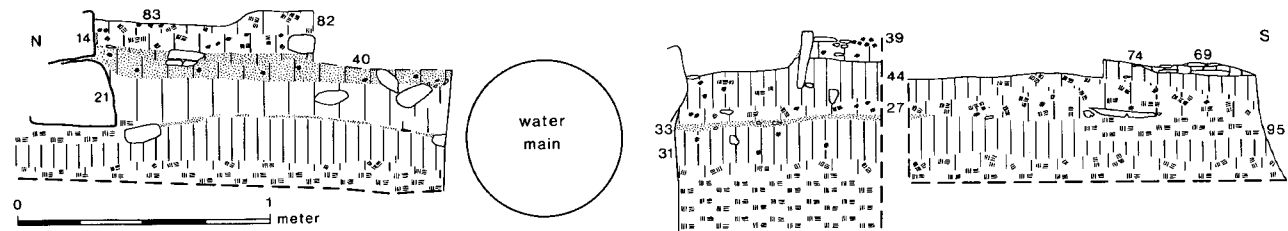


Fig. 10 Section 3/4, north-south across turret interior and through the entrance. See fig. 12 for position, fig. 7 for key.

To the south-east of the entrance a "hearth" had been laid over the construction debris. It comprised burnt sandstone slabs, some of which had cracked through intense heat, associated with a thin layer of ash and coal (context 90: see fig. 11 for stratigraphical position).

The first "occupation" level within the turret was represented by a layer of silty loam incorporating some clay and sandstone chips, with spreads of loam and charcoal and some coal flecks (contexts 20, 21/44/50, 52, figs 8–10). Against the east wall this deposit was quite thick, filling the hollow formed in the upper levels of the initial build-up. At least two "hearths" could be associated with this phase, both of which continued in use throughout the formation of the primary "occupation" deposits. The first "hearth", Context 53, was represented by a layer of coal fragments based

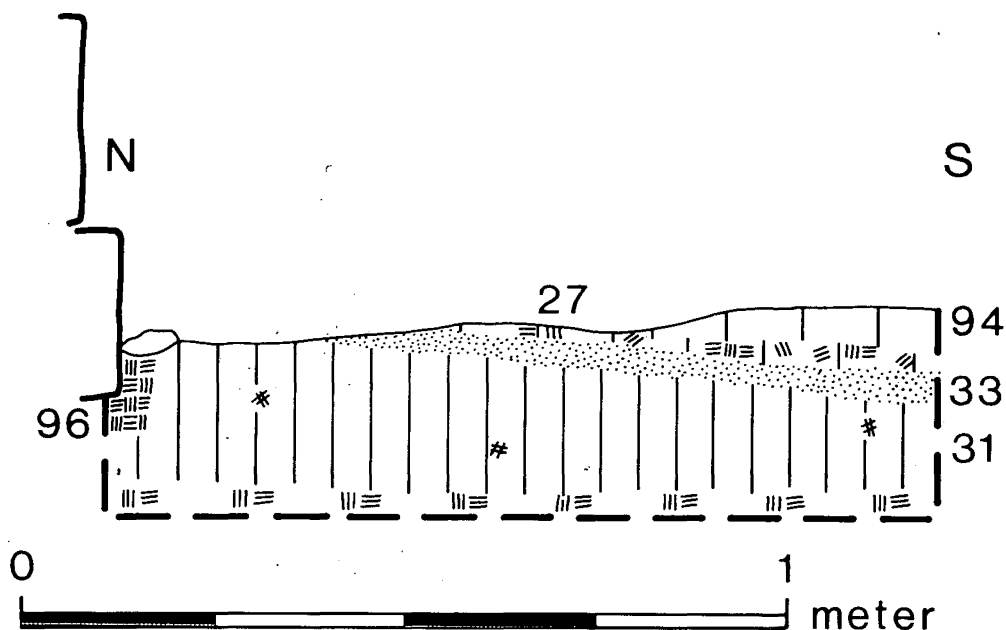


Fig. 11 Section 5, showing the stratigraphical position of "hearth" 94. See fig. 12 for position, fig. 7 for key.

on sandstone slabs: this hearth had been formed against the north wall, resulting in some scorching of the wall face. The second "hearth" (context 73) was sited in the turret entrance, at a level consistent with the top of the first course of masonry. It was based on a single slab, set asymmetrically to the actual entrance, (and therefore clearly not a threshold slab) which had cracked through excessive heat, subsequently being repaired on at least one occasion with smaller slabs, also showing signs of intense heat. The upper surface of the primary "occupation" deposits was quite hard, indicating considerable and sustained activity within the turret, causing a compacting of the earth, while no further layers were being laid down.

Above the primary "occupation" deposit were a second series of silty loams, with occasional clay spreads, all topped by an overall layer of clay loam (contexts 14, 40 and 49, figs 8–10). These secondary deposits differed little in colour or composition from the primary deposits, and like them were thickest towards the east, a hollow evidently having been formed in the upper surface of the primary "occupation" layer at this point, indicating continued wear in this area. At this level the primary "hearths" were represented by ashy spreads continuing into the general make-up of 14/40/49, and occasionally accompanied by replacement sandstone slabs. "Hearth" 53 now continued as 35 (fig. 12), a small area of sandstone slabs associated with ashy loam and coal fragments, and backed to the east by upright slabs driven into the surrounding soil. South-west of this a further possible successor to "hearth" 53 was represented

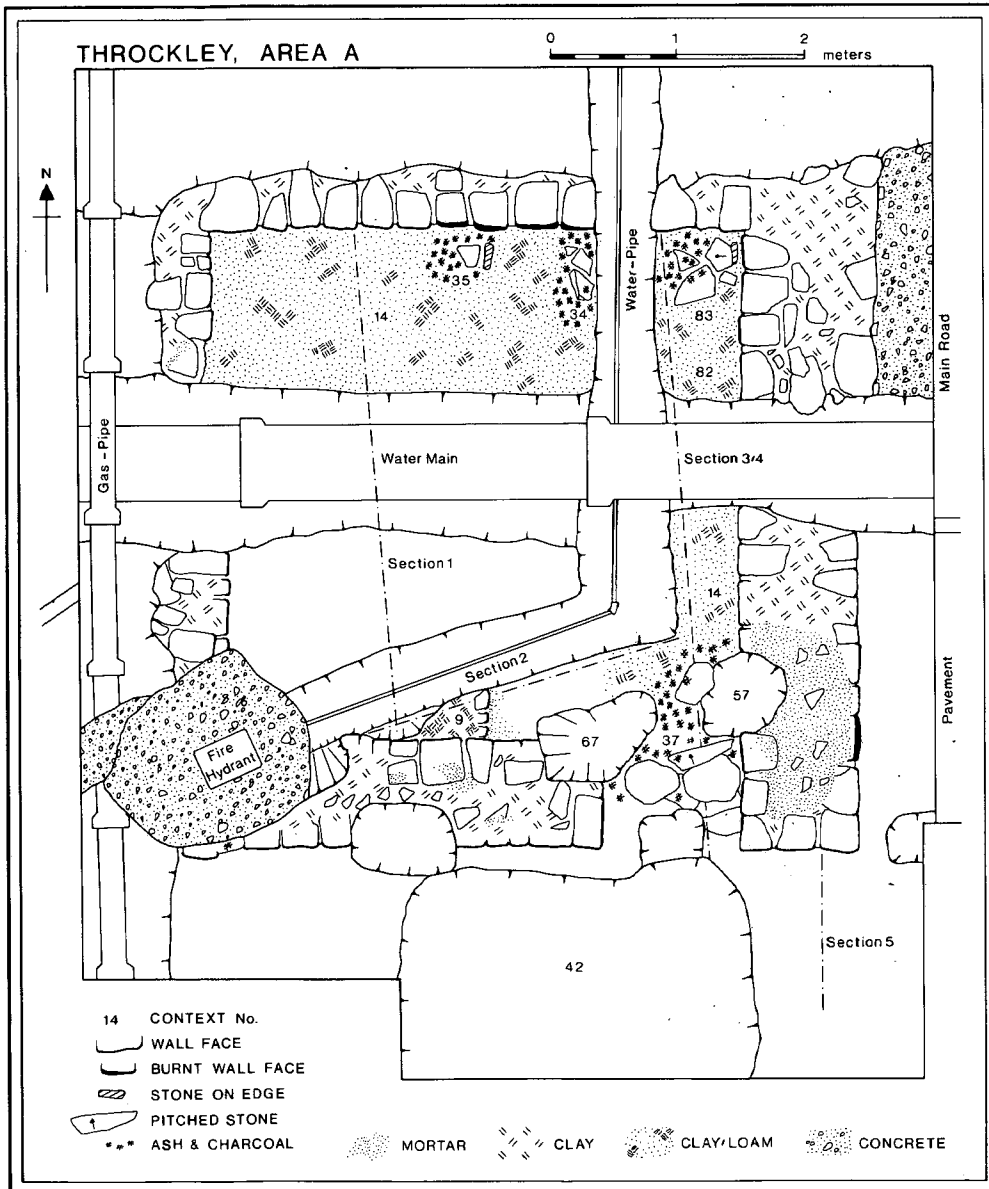


Fig. 12 General plan of turret 10a, showing the tertiary levels and “hearths”, and the platform”, Context 9.

by an area of burnt soil, over which were discontinuous spreads of ash and coal fragments, perhaps more realistically interpreted as hearth rake-back (context 105). A more compact series of "hearths" occurred in the entrance area, where Context 73 had been repaired and formed afresh on not less than three occasions, each time substantial pieces of sandstone being used to form the hearth base, with occasional pointed stones being driven into the ground to form a fire-back or edging (fig. 6, contexts 68/69; fig. 7, contexts 61/62/63/110; and 36/39/48/59/64). Two new "hearths" had been formed during the secondary "occupation". Context 34 (fig. 12) composed of two pitched sandstone slabs associated with spreads of coal and shale, and Context 89, built from level and pitched slabs associated with charcoal and clayey ash. The upper surface of the secondary "occupation" deposit was quite firm and compact, indicating a similar period of activity to that implied by the compact upper surface of the primary deposits.

Tertiary layers only survived in a few places, chiefly in the north-east corner, where a thick deposit of clayey-loam existed (context 82). The "hearths" in the entrance and in the north-east corner had continued in use into this phase. The latest stage in the entrance "hearths" was represented by Context 37/38, a level foundation of sandstone slabs with large water-rounded boulders forming a fire-back, associated with spreads of ashy soil and burnt earth: whereas previous "hearths" in the entrance would have merely hampered access and egress when in operation, this final "hearth" with its substantial fire-back 10 inches (25 centimetres) high would have formed a more permanent obstacle, even when not in operation. The final surviving stage of "hearth" 89 was less imposing, consisting of a re-furbishing with level and pitched sandstone slabs, associated with coal fragments and ash (contexts 83/91/92, fig 12).

At this period in the turrets' history a platform was constructed in the south-west corner (fig. 12, context 9). Sandstone pieces, set in clay, were laid in a shallow pit cut into the upper levels of the secondary "occupation" layers and its associated southern "hearths". Only part of the eastern face of the platform had survived, and this consisted of thick, upright slabs, set in clay with the face pointed with mortar: a mortar fillet had also been laid at the junction of the platform and the contemporary "floor" surface. At no point did the platform survive more than four inches (10 cm) high, and its original surface had been destroyed.

Only a limited area was examined outside the turret, as there was no immediate threat here. Excavation revealed the primary "hearth" referred to above (context 90), and a layer of rubble with loam, clearly debris from the collapse and/or demolition of the turrets' superstructure (context 94): amongst this material was a fragment of moulded masonry, perhaps part of the base of an altar. Since the face of the east wall was reddened in one area, a further hearth had evidently once existed here, but there was no sign of its exact structure. There was no evidence for any rubbish dumps outside the turret, or for any paving such as has been detected at other turret sites.⁸

The Vallum (figs 13 and 14)

A mechanical excavator was used to remove the eastern carriageway of Woodside

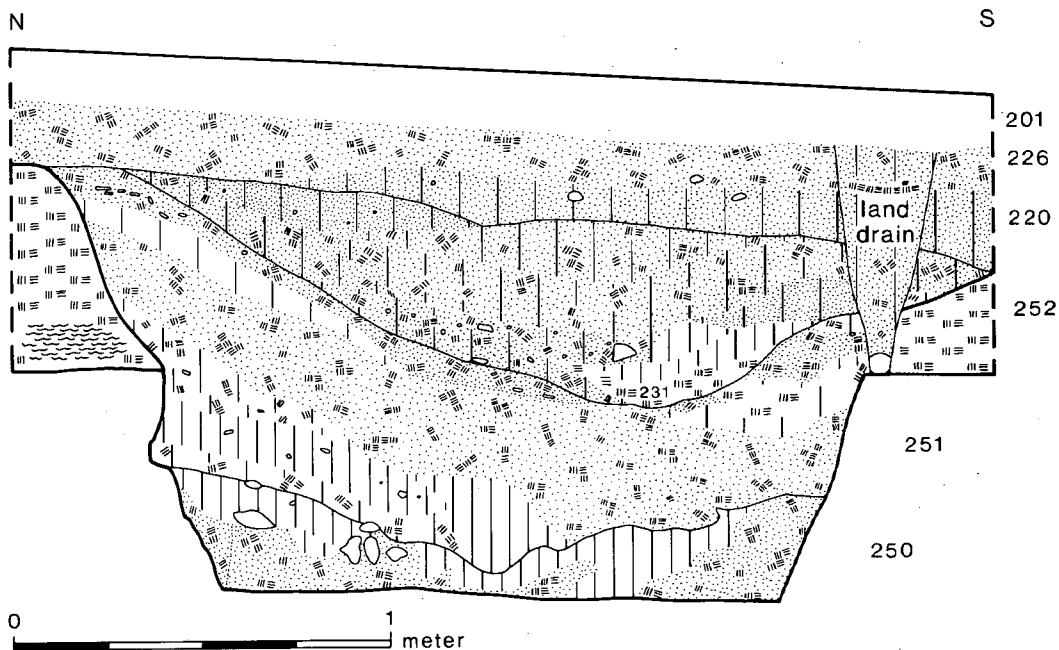
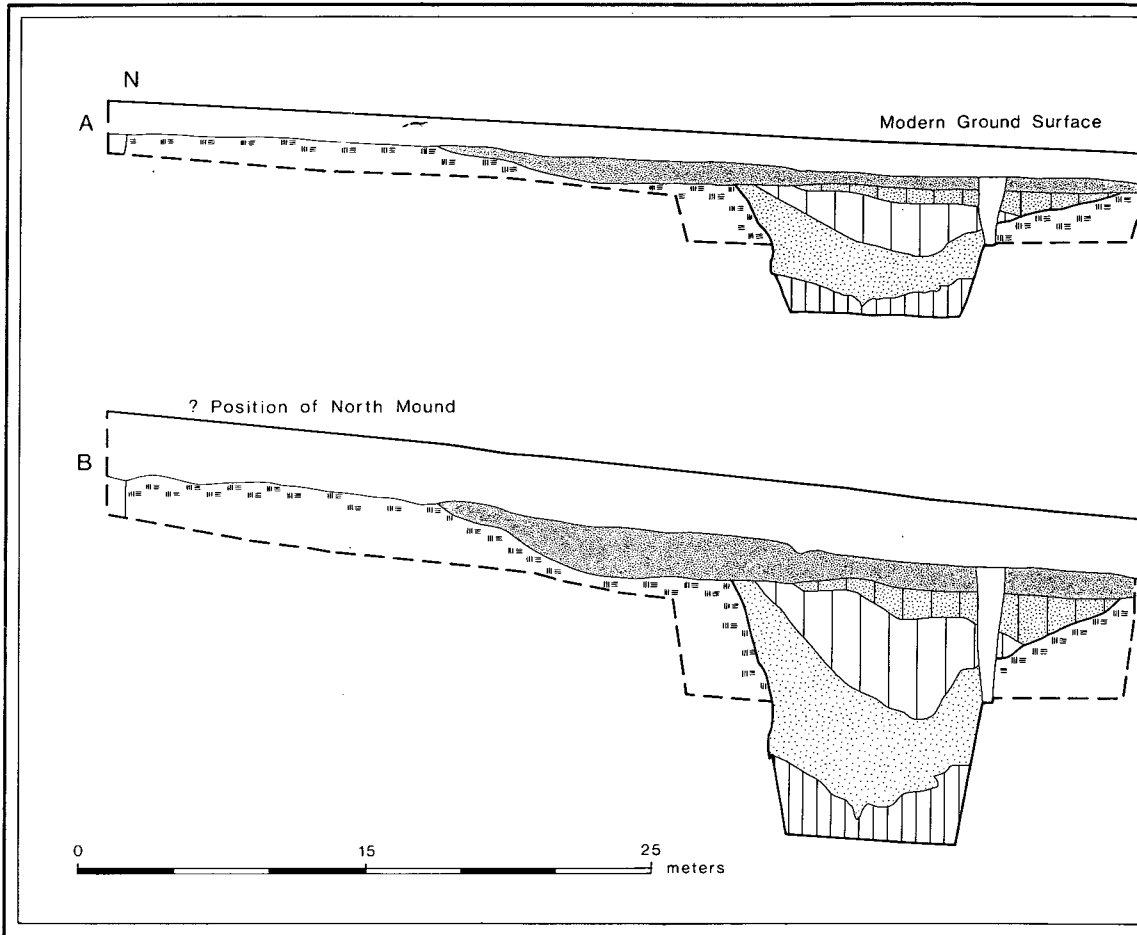


Fig. 13 Section through the vallum ditch in Woodside Avenue. See fig. 2 for position.

Avenue, over the area where the Vallum was presumed to lie, and the ditch was found there immediately opposite Nos 68 and 70: there was no positive evidence for the structure or position of the vallum mounds. The ditch was bottomed at 9' 10" (3m; 10·12 Roman feet) from the modern pavement level, and was 6' 11" (2·10 m; 7·11 R ft) deep: the actual ditch bottom was found to be level, and 9' 6" (2·90 m; 9·79 R ft) wide. As the ditch was cut through quite firm shales and impersistent coal seams, all within a general boulder clay matrix, the sides were quite well preserved, inclined at an angle of 80 degrees: the northern edge retained this gradient to the bottom of the overlying plough soil, but the south side suddenly began to level out 5' 3" (1·60 m; 5·4 R ft) above the ditch bottom. If the south edge had retained an equal gradient throughout, then the width of the ditch would have been in the order of 15' 6" (4·80 m; 15·97 R ft).

The layers within the ditch resolved themselves into three main fills (fig. 13). The primary deposit, Context 250, consisted of fine silts, and clearly represented the initial silting of the ditch. Above this were a series of clay-loam and loam fills, Context 251: the soil particles were unsorted, and tip lines were very much in evidence, indicating that the ditch had been deliberately filled at this point, soil being tipped in from the north. A lens of pure grey clay over this fill indicated that a puddle had formed on the surface during a period of stabilisation, before further fills had accumulated, the latter almost entirely through natural processes (context 252).



A hollow remained over the final ditch fill, and contained a brown loam (Context 206) which represented a post-ditch plough soil. This loam proved consistent over the whole area, gradually diminishing towards both north and south, before the edges of the hollow rose steeply and the loam disappeared (fig. 14). It would appear that this hollow, and the plough soil that filled it, had formed as a result of ploughing over the vallum mounds and the ditch fill, the plough rising as it neared the mounds and cutting less deeply into the underlying soils; such ghost evidence indicates that the vallum berms were in the order of 15 feet (5 m; 15.45 R ft) wide. A watch was kept

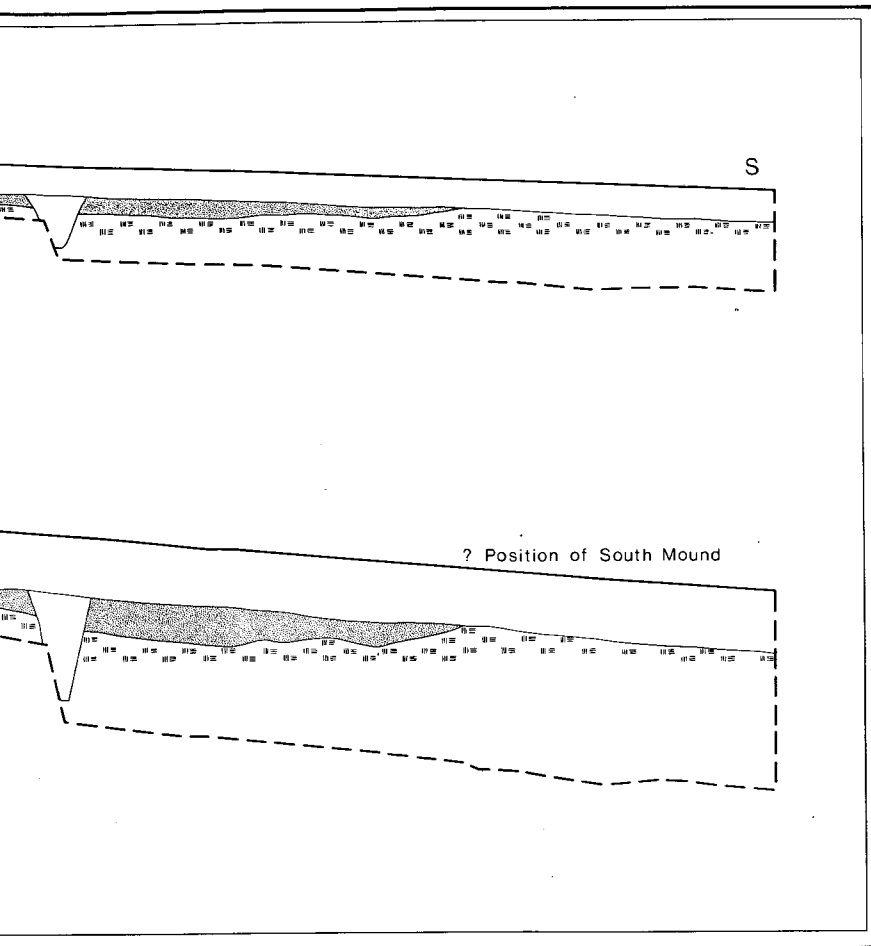


Fig. 14 Section along Woodside Avenue, Area E, showing the position of the vallum ditch and associated hollow indicating the probable position of the vallum mounds (see below, p. 42). In the lower drawing the vertical scale has been exaggerated twice to emphasize the hollow caused by ploughing over the berm and the mounds.

for the Military Way between vallum and curtain wall, but no indications of this were observed.

Discussion

In 1949, an auspicious year in Roman Frontier Studies, the late Sir Ian Richmond demonstrated that a probable reason for the use of a broad gauge curtain in the first plan for Hadrian's stone wall could be found by reference to the construction technique used: the foundations and core of the Wall were bonded with clay rather

than mortar, thus necessitating a greater width to counter any latent instability in using this medium.⁹ Mortar was used to bed and point the facing stones, but chiefly served as a method of water-proofing the main fabric. Richmond's hypothesis was formulated after the then recent discovery that the curtain adjacent to turret 26b was bonded throughout its surviving six feet (1.82 m) with clay only.¹⁰ This idea did not receive general acceptance, particularly as there were known lengths of Broad Wall that were mortar-fast throughout. Professor Eric Birley was the first, in 1960, to question Richmond's hypothesis publicly,¹¹ and in a subsequent *resumé* of the subject he has been supported by Dr. Grace Simpson;¹² two recent works have retained a neutral stance.¹³ Despite the objections of Birley and Simpson, there can be no doubt that a clay core certainly existed for a number of stretches in the broad gauge curtain, while the evidence of the 1980 Throckley excavations is unequivocal in demonstrating that clay was used not only for curtain, but also for turret sub- and superstructure, with mortar being used only to point the interstices in the wall faces. This is an appropriate place in which to review the evidence for the question and, although at least one turret in the re-built turf wall has walls bonded with clay,¹⁴ discussion here will restrict itself to the length of frontier originally intended to be defended by the broad gauge stone wall.

A clay core for the Wall curtain has been noted in a number of sections through the Broad Wall, in particular at Denton Bank,¹⁵ Walbottle Dene,¹⁶ Throckley, turret 10a, Heddon-on-the-Wall,¹⁷ turrets 18b¹⁸ and 19b,¹⁹ Brunton²⁰ and at milecastle 27.²¹ At certain of these sites, the remains are not very high, and it is conceivable that clay was used only in the lower courses of the Wall—perhaps as a damp-proofing medium. At other sites, and Brunton springs immediately to mind, with core and face surviving six feet (1.82 m) high, it is quite clear that clay was the sole binding material for some height, although the interstices may well have been mortar pointed to prevent undue erosion through inclement weather. Elsewhere, there can be no doubt that although clay might be used to bond the foundation and—perhaps—the lower courses, the superstructure was clearly mortar-fast: Heddon-on-the-Wall, where dynamite was used to remove the curtain at Great Hill, is the best example of this practice.²² No firm conclusion can yet be drawn concerning the question of clay- or mortar-core, except to note that the practice is variable, while there is even dry-built core on the Whin Sill. It may well be, as Birley has suggested, that the clay core represents work by legionary recruits undergoing training,²³ although surely we would expect the Roman army to train its recruits in the use of mortar from the start. It is equally possible that we are witnessing the use of a primitive form of damp-proofing, although here the evidence of several sites indicates that if this was the case the "damp course" was carried to a height well above that necessary. There is no objection, on engineering grounds, for the Wall to be set in clay, so long as the faces are bedded in mortar, and a sufficient base width is provided. Richmond may well have been correct in associating broad gauge Wall with a clay matrix, the later narrow gauge being adopted as mortar was generally substituted for clay. On the other hand, we do know of sites (such as Great Hill) where Broad Wall is mortar-fast. It would be easy to explain such sites as places where the Wall had been later

re-built, and there are inscriptions from the vicinity of Heddon-on-the-Wall indicating re-building by the Legio VI in the Antonine period;²⁴ in this case, however, there is no obvious reason why a broad gauge should have been retained. The solution favoured by this writer is that the Wall was originally designed to be clay-fast for the most part, thus necessitating a broad gauge, to economise or speed-up the construction. Mortar was to be used where necessary to either bed facing stones, point them, or simply to provide a through-course giving added stability. The final decision as to which bonding material was actually used, or in what combination, was no doubt left to the man on the spot. A thorough analysis of the bonding medium used in the various sectors of the Wall, together with Wall width and constructional characteristics, could enable constructional lengths to be clearly identified.²⁵

As originally designed it is clear that the Wall was intended to provide a continuous barrier with controlled crossing points at the milecastles. The turrets were to serve as observation posts and to provide shelter for a patrolling garrison in inclement weather: there is no evidence to suggest that they were intended for permanent or semi-permanent occupation. The decision, perhaps in A.D. 124/5, to place a series of forts at regular intervals along the Wall²⁶ may have affected this idealized system insofar as certain milecastles would no longer have to provide sufficient accommodation for a large patrolling garrison, more troops now being based on the forts themselves.²⁷ The turrets may well have carried on in use as before, providing shelter and mess facilities for a patrolling garrison, while also serving as *ascensii* for the wall-walk.

There appears to have been little standardisation in the interior arrangements of the turrets.²⁸ That said, however, it is clear that just as the structure of stone wall turrets differs from those on the turf wall, which in turn are dissimilar to the coastal towers, the interior arrangements within each group of structures generally seem to follow one consistent plan, suggesting that the three groups of structures were designed by three different officials. In stone wall turrets the entrance may either have a monolithic or flagged threshold, with a separate pivot stone in the latter case.²⁹ as far as can be determined, both turf wall and coastal structures had flagged entrances only. No evidence was recovered for the form of threshold at 10a, but it is unlikely to have been monolithic as subsequent removal of this would have been difficult without disturbing the door jambs, leaving some clear archaeological trace. In broad details 10a is very similar in construction to the nearby Denton turret, 7b, and it is probable that as at 7b a flagged threshold with pivot stone was originally intended. The earliest "hearth" in the turret entrance was based on a single slab, but as this was asymmetrical to the axis of the turret entrance, it is unlikely to have formed the original threshold. The semi-circular indents on top of the second course masonry may have held the battens for a timber doorframe, monolithic jambs being normally associated with monolithic thresholds. There can be no doubt, however, that at certain periods in turret 10a's history access would have been severely hindered by the practice of building fires within the entrance area: such a phenomenon has been noted elsewhere, for example at turret 18b,³⁰ and although transitory "hearths" would not have provided a permanent obstacle, except when lit, the construction of the final "hearth" would certainly have made access difficult at any time. Quite why

10a and other turrets have fireplaces occupying the doorway is a difficult question to answer: it is quite possible that the "hearths" here are non-military in origin, having been formed by "squatters", in which case no significance can be attached to their occurrence. Otherwise one is at a loss to explain this apparently unmilitary behaviour.

The internal stratigraphy of 10a was typical for many turrets, with an initial make-up of clay loam, over which were a series of patches that gradually raised the interior level in an uneven fashion, before a complete re-surfacing with cleanish clay-soil to eliminate any hollows, areas of wear, etc. The process was then repeated. In the past such complete re-surfacings have been related to distinct chronological and historical stages in the development of the Hadrianic frontier,³¹ periods of abandonment and disuse being followed by a re-commissioning of the turret. The evidence for this, however, is not as clear cut as some would imagine, and this approach is not adopted in this report: indeed, as will be demonstrated below, there is good evidence that all the re-surfacings in 10a date to the single Wall Period IA.

"Hearths" were scattered throughout the turret interior, but were notably concentrated in the north, east and entrance areas of the turret. None of them were substantially made, or constructed with any great permanence in mind, being more areas of burning rather than proper fireplaces. Coal was used for firing the "hearths" and was no doubt obtained locally: during the sewer works a usable seam was uncovered at the cross-roads.

All turrets provide evidence for similar hearths, but it is only in rare cases that they are substantially made, or in any way designed as permanent structures. Similarly, there is no consistency in where they occur in a turrets' interior, although most are either against the north wall or in the entrance area. This evidence, for what it is worth, suggests that the turrets were never designed to be occupied—at least not on the ground floor—as otherwise more permanent structures would reasonably be expected. It is probable that portable braziers were used to heat (and light) the rooms within a turret, with the "hearths" only being built as and when needed for cooking purposes: certainly, their transitory nature apart, the way that each "hearth" clearly had a limited life and the circumstances in which they could shift their position within the turret as the interior levels were gradually raised, all indicate that they were never used on a continuous basis.

Several turrets produce evidence for internal flagging, although this normally occurs in isolated patches rather than as an overall floor.³² None of the flagged areas in turret 10a were of any size, and all were associated with areas of burning, suggesting that they were directly associated with the "hearths" rather than floor patches. Some turrets have produced evidence for stone boxes, thought to have served as water-tanks, fuel stores or just as fixed containers for dry goods, but there was no evidence for such structures within 10a.³³

In comparison with most turrets that have been excavated in recent years turret 10a was surprisingly "clean". Very little pottery was found, compared with other turrets in the stretch of Wall from Tyne to Irthing,³⁴ but this did include the standard forms and fabrics. Cooking pots and jars predominated amongst the material recovered,

with a few sherds representing coarse ware bowls and flagons and some samian ware. Amphora sherds were also present, but no mortaria. This range of material is common to virtually all turrets, with a prevalence of utilitarian vessels, particularly those associated with cooking, and a dearth of finer forms.

The lack of mortaria, when set against the abundance of cooking pots, may imply that rations were taken to the turrets in a ready-prepared form, heating only being necessary, but some turrets are known to have produced quern stones,³⁵ while others have produced mortaria in greater quantities. Amphorae may have been used for liquid or solid storage, or have found a secondary use as urinals, while the presence of flagons (and drinking mugs at some turrets) does indicate the supply of a suitable beverage.³⁶ The few food remains that survive add little to our knowledge of the Roman military diet,³⁷ although attention may be drawn to the apparent lack of shellfish: of course, it is quite likely that the occupants of 10a were exceptionally fastidious with regard to the turret interior, and that all rubbish was dumped outside, in which case we have a very biased picture of this particular structure, but nonetheless it may be stressed that turret 10a is unusual in this respect.

The lack of items for personal adornment is a common feature of many turrets, reflecting their primarily spartan purpose, as is hinted at by the discovery of a broken spearhead in the matrix of the secondary "occupation" deposit. A piece of worked stone from outside the turret was probably part of an altar base, but from whence it came is uncertain: altars do occur as isolated artefacts along the line of the Wall, and a shrine is known to have existed outside milecastle 19.³⁸

No evidence was recovered to indicate the original purpose of the platform constructed in the south-west corner of the turret. It was clearly a later addition to the turrets' substructure, as all other turret platforms seem to have been.³⁹ It has been argued that all turrets were intended to have platforms from the start, those in stone wall turrets occupying the south wall in the corner away from the entrance, those in turf wall turrets generally being placed against the north wall, while the coastal towers apparently having them against the rear wall.⁴⁰ In this case, a small build up of "occupation debris" is to be expected under the platforms, the turrets clearly being used as shelter before they were finally finished. At 10a, however, and at some other turrets, the platforms are added after a substantial accumulation of debris has formed, which would seem to counter this argument. It is generally considered that the platforms served as bases for permanent stairways to allow access to the upper storey,⁴¹ and if this was the case then clearly it suggests that in their original form the access to the upper storey of any turret was only by means of a ladder, a fixed platform only being required for a more permanent structure. As noted above, the position of the platforms in turrets varies according to whether these are on the stone wall, on the turf wall, or form part of the Cumbrian coast system, and the precise position of the platform and stairway would be determined by a pre-existing opening in the upper floor: this is a further pointer to these structures being designed by three separate officials, each type of structure following its assigned blue-print.

On the basis of the Rudge Cup and the Amiens Skillet it has been held that turrets

had a flat roof, although some authorities have sought to reconstruct them with a pyramidal or gabled roof, after the fashion of those watch towers depicted on Trajan's Column.⁴² Actual evidence from the Wall is meagre, clay or stone tiles being recorded from only four sites,⁴³ This writer does not agree that the Rudge Cup and Amiens Skillet necessarily reflect the true appearance of the Wall, although on general grounds flat roofs are more likely to have been provided than pitched ones: this is perhaps supported by the relative absence of any evidence for a roofing medium at the numerous turret sites that have been excavated, although as the turrets went out of use, and some of them were certainly dismantled, clay or stone tiles may have been taken for re-use elsewhere. It is accepted, however, that the turrets had a crenellated parapet, probable merlon stones having been found at some sites,⁴⁴ but 10a produced no evidence for either merlons or roofing medium.

No window glass was found at turret 10a, and few other turrets have produced any:⁴⁵ given the need to allow smoke to escape from the internal hearths it is probable that wooden shutters sufficed. There was also no evidence for the form or position of any window openings. The turrets on Hadrian's Wall seem to lack the monolithic window lintels characteristic of many forts along its line, and which have also been found on the sites of certain German frontier towers.⁴⁶ It is probable that simple slit openings sufficed, although the possibility of rectangular or arched openings cannot be dismissed.

There was no evidence to indicate the final fate of turret 10a. The pottery found on the site, stratified and unstratified, is all of types common to Hadrian's Wall Period IA, and only one sherd—unstratified—is of a type considered diagnostic of Period IB. This is a sherd of BB II ware, which makes its first appearance in any quantity on the Antonine Wall, and insofar as the Wall is concerned indicates Period IB occupation levels. BB II was produced before A.D. 140 but John Gillam has shown that it does not certainly appear on Hadrian's Wall before that date. However, a single unstratified sherd has doubtful value when considering the occupation periods of the turret. Taken on its own, therefore, this one sherd cannot be taken to prove IB activity at 10a⁴⁷ Although it is conceded that the upper levels of the turret, to an unknown height, have clearly been removed by later road works, the absence of any other IB material, or, indeed, any other post-IA material whatsoever, amongst the unstratified finds might imply no activity here post *c.* A.D. 140. This terminal date for the turrets' occupation/use is somewhat at variance with other sites, for although virtually all the turrets seem to have been disused by *c.* A.D. 190–210,⁴⁸ a number were clearly re-occupied in the Antonine period. Whether this was after the first and/or second withdrawal from the Antonine Wall cannot be clearly established, but most re-occupied turrets produce some later Antonine material. It may well be that the turrets were only selectively used after the Wall was re-garrisoned in the later second century—allowing for the fact that we may have lost the crucial upper layers at certain sites—and this could explain why at some sites there is no clear stratigraphical distinction between the two Wall periods, the evidence being solely ceramic.⁴⁹

Nothing survived to indicate that turret 10a had ever been demolished, and the

recess subsequently built over. With the exception of 19a and 25b none of the turrets between Tyne and North Tyne seem to have been treated in this fashion,⁵⁰ and recess blockings generally are characteristic of the central sector of the Wall, i.e. the Whin Sill, where all excavated examples between 33b and 41b have been reduced.⁵¹ It is conceded, however, that a recess blocking may once have existed at 10a, and has since been removed by later activities, but this is thought unlikely: on the one hand, we have the comparative rarity of recess blockings outside the central sector, while on the other, recess blockings generally are built or founded from a level consistent with the second course of masonry, and there was no evidence for any construction work at this level in the northern part of the turret. It is concluded therefore that although the turret went out of use in the mid-second century, it was not demolished then, and although it may have been demolished in the Roman period, this was not part of the same operation that resulted in turret recesses being built over.⁵²

The section through the Vallum revealed little new evidence. The ditch had been deliberately filled at some stage in its history, but as this fill was not to a consistent depth over the ditch section it is unlikely to be connected with the regular series of breaches and crossings that exist along the vallum, and thought to be of mid-second century date.⁵³ No evidence was recovered for the date of this filling.

THE FINDS

Coarse Pottery (fig. 15)

A total of ten vessels were represented in stratigraphical contexts, with a further

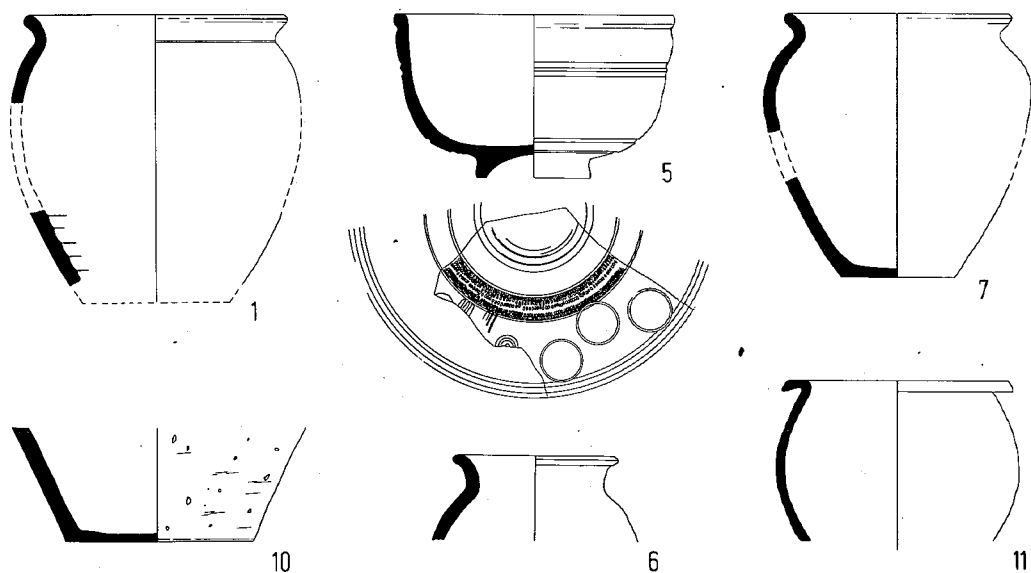


Fig. 15 Pottery from the turret, scale $\frac{1}{4}$. The external decoration on no. 5 is shown expanded below the profile drawing.

minimum of ten vessels represented in non-Roman contexts. Those illustrated are indicated by an asterisk, and the number of sherds for each vessel is noted. Unless otherwise indicated all sherds are from jars or cooking pots and are rim sherds only.

From Primary Occupation Deposits

- *1. Smooth hard grey fabric, with burnished exterior: Contexts 21, 38 and 72 (14 sherds)
- 2. Smooth grey fabric: Context 72 (1 sherd)
- 3. Base, smooth grey fabric: Context 90 (1 sherd)
- 4. Neck of flagon, smooth soft sandy micaceous orange fabric: Context 90 (1 sherd)

From Secondary Occupation Deposits

- *5. Bowl, smooth hard grey-white fabric, fired to a slate grey; decoration of impressed ring-and-dot motifs, ascending vertically, with poorly impressed ring stamps arranged in a triangular formation, and horizontal and vertical bands of "rouletting": Contexts 1 and 59 (4 sherds)
- *6. BB I ware: Context 59 (1 sherd)
- *7. Sandy hard grey fabric: Context 48 (33 sherds, mostly fingernail size)
- 8. Body sherds, same vessel, BB I ware: Context 59 (18 sherds, mostly small)
- 9. BB I ware (not 8): Context 14 (1 sherd)

From Tertiary Occupation Deposits

- 10. Base, hand-formed, calcite-gritted sandy grey fabric, many of the grits having leached out; an incipient "Huntcliff" Ware: Contexts 1 and 38 (6 sherds)

From Post-Roman and Unstratified Deposits

- *11. Smooth hard grey fabric (8 sherds)
- 12. Smooth hard grey fabric (1 sherd)
- 13. Smooth hard grey fabric (1 sherd)
- 14. Body sherd, smooth hard grey fabric with burnished lattice design (1 sherd)
- 15. BB II ware (1 sherd)
- 16. BB I ware (1 sherd)
- 17. BB I ware body sherd, with burnished lattice design (1 sherd)
- 18. Base of flagon, oxidised grey fabric, with external cream slip (3 sherds)
- 19. Handle of flagon, soft orange fabric with cream slip 9 (1 sherd)
- 20. Amphora body sherds (3 sherds)

Comments

The assemblage is typical of wares and forms that one would expect in turrets occupied in Periods IA and IB, with the sole exception of No. 15, a BB II ware rim sherd, which would normally be considered characteristic of Period IB occupation onwards. That said, however, there is a surprising amount of grey-ware types in this collection: if there had been occupation after A.D. 140 the proportion of grey-ware types and BB wares would not be as represented here, a greater concentration of BB wares (includ-

ing more BB II types) being characteristic of turrets occupied in Period IB onwards, while grey-wares tend to predominate in Period IA deposits. The sample is insufficient to enable firm conclusions to be formed concerning the occupation of the turret.

Samian

21. Body sherd, Dr. 18/31: Context 10
22. Footring, Dr. 18/31: Context 1
23. Body sherd, Dr. 18/31R, trimmed to form a rectangular gaming piece: Context 1

Iron (fig. 16)

Spearhead, in three pieces: Context 14. The type cannot be easily paralleled in a recent catalogue of British spears,⁵⁴ and is unusual for a turret find, most of the latter being the more conventional leaf-shaped type.

Flint

Four struck flaked were found within the turret, all from Roman occupation levels. None showed any signs of secondary working, or use as "strike-a-lights". Two were of buff-brown flint, with traces of white cortex, and the others had been burnt white.

Dressed Stone

Fragment of stone base, worked from a hard coarse sandstone, whiter than the yellowish sandstone used for the Wall superstructure. The base is smooth on the bottom, both from original dressing and subsequent wear, and there are two surviving half-round mouldings with traces of a third: the mouldings suggest that this is the base of an altar: context 94 (rubble outside the east wall of the turret). Small altars are known to occur at some turrets, and isolated altars are recorded along the Wall, while at least one turret has even produced a hypocaust *pila*.⁵⁵

Animal Bones, by James Rackham

The animal bones were too few in number (17) to provide meaningful results, but ox, sheep/goat and pig were represented. Little work has yet been done on the animal bones from other turrets and milecastles, with the notable exception of the work of Chaplin and Hodgson, on turrets 18*b*, 25*b*, 26*a*, 33*b*, 35*a* and 45*a*,⁵⁶ where the same species were represented as at 10*a*, with the addition of Red Deer and horse, and of oyster and mussel shells.

APPENDIX: THE PRE-WALL SOIL AND ARD MARKS, by Julian Bennett, Helen Keeley and Alexandra Miller.⁵⁷

The Soil

In areas A and B, removal of the construction levels associated with the turret and curtain wall revealed a soil layer up to six inches (15 cm) deep. The upper surface was quite horizontal, and had been cut by the Hadrianic frontier foundation trenches: it was variable in colour, being noticeably darker north of the water-pipe that bisected the site, presumably due to this having impeded drainage of the site. Apart from

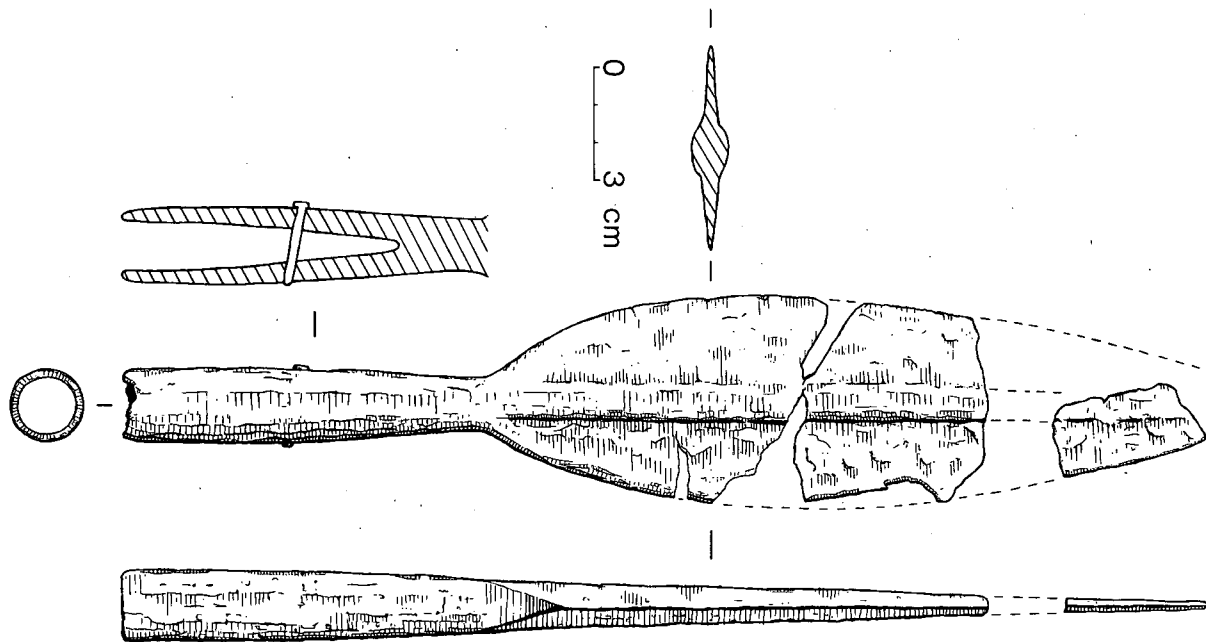


Fig. 16 Spearhead from Context 14.

other contents, on top of this layer in the northern part of the turret interior was a particularly dense spread of charcoal, forming a streak in the soil 31 inches (80 cm) long and up to 4 inches (10 cm) wide (fig. 19). Several soil columns were collected and examined in the laboratory, and all were found to be essentially similar.⁵⁸ A representative column was as follows:

- 0 to 4 cms: pale brown (10YR 6/3) friable coarse loamy sand with occasional medium distinct strong brown (7.5YR 4/6) mottles and moderate medium angular blocky structure. Stones were abundant, gravel (mainly rounded), mica fragments were noted and roots were few, coarse, woody.
- 4 to 9 cms: yellowish-brown (10YR 5/4) moderately friable medium sandy loam with many medium distinct strong brown (7.5YR 5/8) mottles and moderate medium subangular blocky structure. Stones were few (gravel), roots few, coarse woody, and pieces of charcoal, brick, ?coal and other occupation debris were present.
- 9 to 9.5 cms: a concreted yellowish red (5YR 4/6) iron pan, coarse sand in texture, with few stones (gravel and small sandstone lumps), roots were few, medium fibrous.
- 9 to 25 cms:
bAp_g was dark brown (10YR 3/3) friable humose fine silty loam with occasional medium distinct strong brown (7.5YR 4/6) mottles and moderate medium blocky structure. Earthworm channels were noted, stones were occasional small to medium bright orange lumps of weathering sandstone, and roots were few, coarse to fine fibrous and woody. Charcoal fragments occurred.
- Below 25 cms:
Bg was firm, slightly friable pale brown (10YR 6/3) medium sandy clay loam with abundant (about 30%) coarse distinct strong brown (7.5YR 5/8) mottles and moderate medium blocky structure. Occasional small to medium mudstone and sandstone fragments occurred (angular) and rounded gravel to small pebbles. Roots were few, coarse to fine fibrous and woody; charcoal and ?coal fragments were noted and manganese oxide concretions occurred.

The profile had roots throughout, but few earthworms were present. Pollen analysis of samples taken from the buried soil proved unsuccessful due to the absence of preserved ancient pollen in the soil.⁵⁹

The soil had been disturbed, and the presence of ard marks confirmed that cultivation had taken place. It was a poorly drained soil, and some of the iron and manganese movement may have occurred after burial, and it is tentatively classed as a cambic stagnogley.

The Ard Marks

In Area A the soil layer removed directly off the underlying yellow natural clay, revealing a series of criss-cross linear grooves, each filled with material identical with the overlying soil: search was not made for similar marks beneath the Wall in Area B,

THROCKLEY, AREA A, ARD MARKS

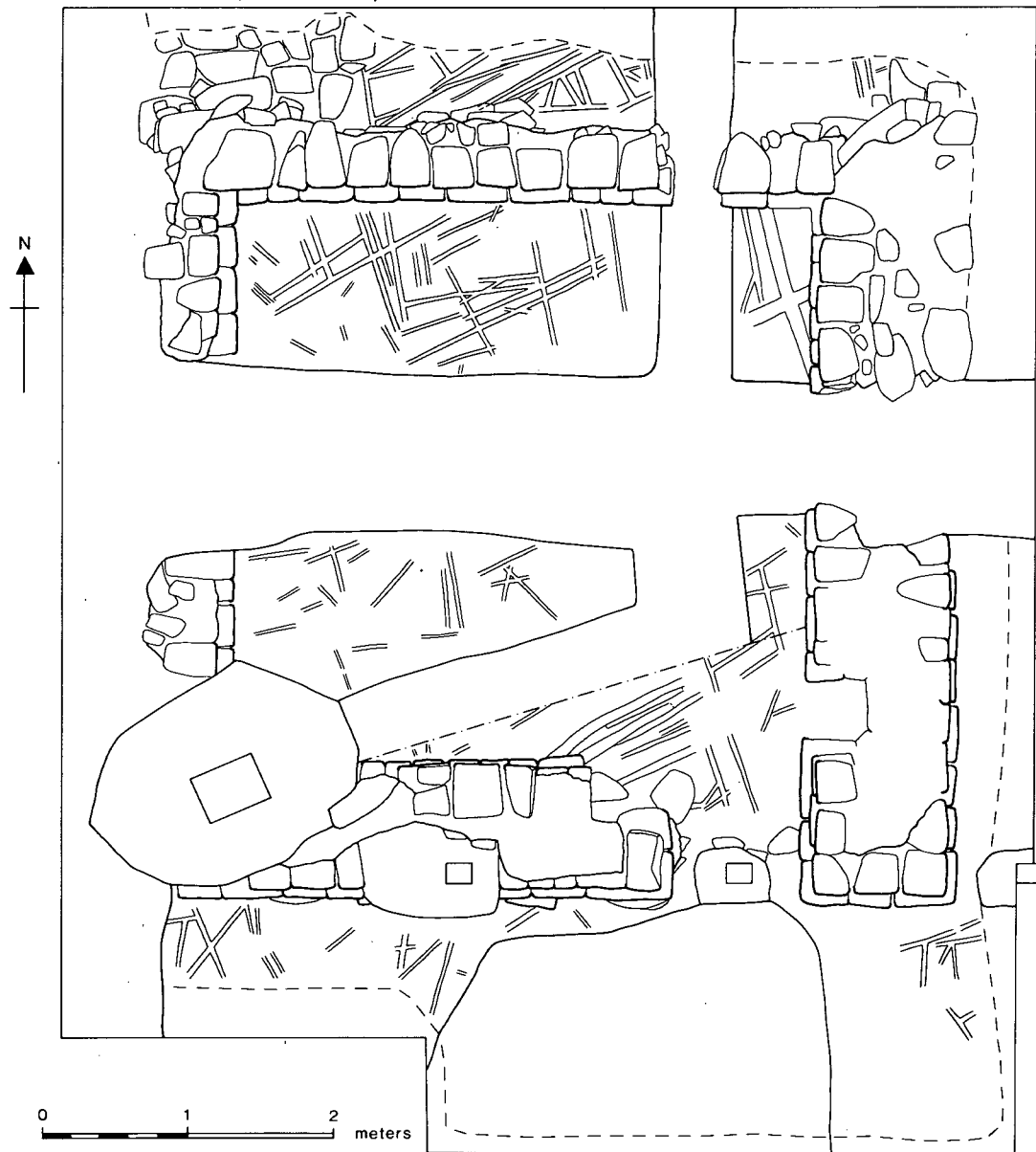


Fig. 17 Area A, showing the visible ard-marks after removal of the pre-Wall soil surface.

owing to the desire to leave the Wall structure as intact as possible, coupled with the need to fill this trench and thus improve traffic flow. In all, 130 marks were identified in Area A, 49 of which lay outside the turret interior, including some which lay beneath the foundation slabs of the turret north wall, i.e. the curtain wall (fig. 17). The marks tended to follow two main alignments, ENE-WSW and NNW-SSE, with an average width of $1\frac{1}{2}$ inches (4 cm), minimum $\frac{3}{4}$ inch (2 cm), maximum $3\frac{3}{4}$ inches (9.5 cm). Their lengths varied, the longest appearing—albeit intermittently—over a distance of 157 inches (4 m), the shortest a mere $3\frac{1}{2}$ inches (9 cm). It is likely that the charcoal spread shown in fig. 19, noted on the surface of the buried soil, was a further mark, given its alignment, but a corresponding groove in the natural clay could not be identified.

As the marks were detected at the very end of the excavation, it was not possible to examine them in any detail. Six, however, were sectioned and plaster-casts made of these, while several others were sectioned only to test their conformity with the first six: all sections were randomly chosen.⁶⁰ A selection of the profiles recorded is given in fig. 20, but the predominant cross-profile was asymmetrical, almost vertical on the deepest side with the other sloping away more gradually. A few flattened U-shapes were also noted, as was a single V-section. The only relationship conclusively proved between any of the marks was that 102 cut 103 (fig. 18).

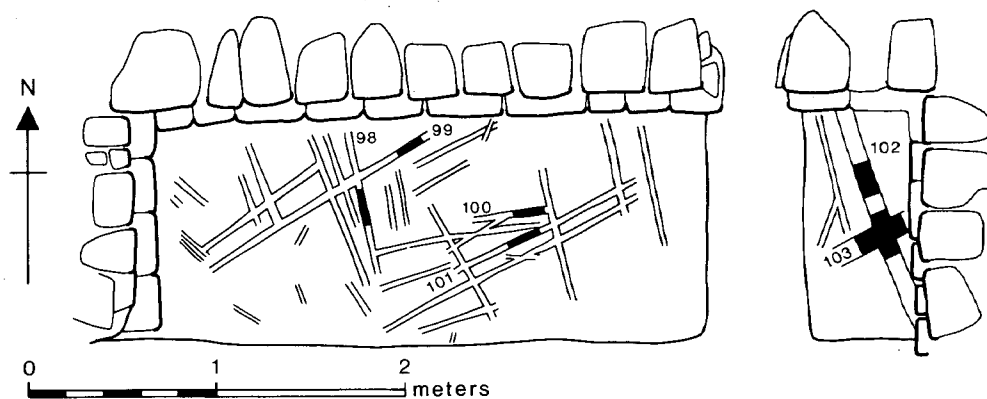


Fig. 18 Excavated ard-marks, showing sections recorded by taking plaster casts.

Interpretation

The level nature of the pre-Wall soil had immediately suggested interpretation as a previously cultivated soil horizon. This theory was supported by the discovery of the linear marks beneath it, and subsequent analysis of the soil itself, for such marks are produced either deliberately or accidentally by the passage of an ard, as it cuts back and forth through a topsoil, and then crossways to produce a seed-bed. Allowing for difference in alignment, and the demonstration that the most effective way to prepare a seed-bed is to plough at intervals of about 12 inches (30 cm),⁶¹ provisional analysis of the Throckley marks indicates a minimum of six ploughing operations.

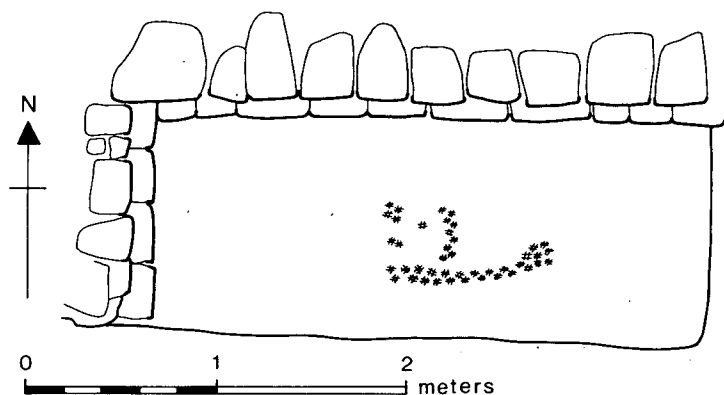


Fig. 19 Charcoal stain in the upper level of the pre-Wall plough-soil, probably spread by passage of an ard.

Little can be deduced concerning the shape of the ard used, or its particular type. The ard-share was probably V-sectioned, the reverse "dip-and-scarp" profile of the Throckley marks, and those recorded elsewhere,⁶² probably being caused by the ard being at a tilt, rather than reflecting the use of an asymmetrical share. It is also uncertain precisely why the marks occurred in short runs, rather than continuous lengths, although some thoughts are offered below.

There was no evidence in the limited area available either for a field boundary or for the ard having turned near a headland or other such physical or imaginary division. It may be noted, however, that the general trend of the marks is parallel to and at right angles to the nearby Walbottle Dene.

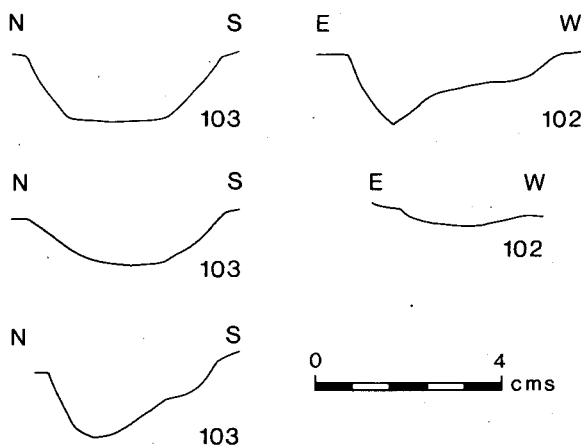


Fig. 20 Profile through selected ard-marks. For position see fig. 18.

Discussion

The Throckley grooves are an addition to the rapidly expanding series of "prehistoric" ard marks in this country.⁶³ Other than that they are undeniably pre-Hadrianic, we are unable to offer any other dating evidence for the Throckley marks. They are unlikely to be "Roman", however, in that they and other similar marks on the Tyne-Solway isthmus occur in areas where there is no pre-Hadrianic, Roman, evidence for occupation, which rules out "soldier-farmers" or native farmers working in the Roman period. The lack of an identifiable vegetational horizon between the soil and the Wall construction debris cannot be taken as evidence that the Wall and turret were built on a freshly ploughed surface:⁶⁴ the surviving soil depth is shallow for a tilth, even allowing for compression, while it is standard building practice even now to remove turf before cutting foundations trenches or erecting any kind of permanent structure, suggesting that a top layer was removed from the area before construction began.

As noted above, there was no factual evidence for field boundaries in the limited area examined, although the behaviour of the marks did suggest that the ploughman may well have aligned himself on the nearby Dene. Neither did the marks indicate what type of ard was responsible for their formation. As Reynolds has observed, it is a remarkable fact that the marks survive at any site if they were the product of regular ploughing, as this activity would eventually result in the soil being equally disturbed to a constant depth.⁶⁵ There are two possible reasons for marks surviving at Throckley: one, if the angle of the foreshare and undershare to the beam was too steep—the sign of an incompetent ploughman?—then the ard would have locked forwards, forcing the yoke downwards and bringing the cattle to a halt⁶⁶; secondly, if the form of ard used was a sod- or soil-buster, along the lines of a Spanish ard, "el cambelo", to which attention has recently been drawn,⁶⁷ then it is possible to see these marks as indicating the bringing into new ground of arable, or the re-cultivation of land that has remained fallow for some time.⁶⁸ Reynolds would see multi-directional ard marks as indicating the latter, the fields subsequently being cultivated by lighter instruments before being allowed to lie fallow again or even abandoned.⁶⁹ In view of this hypothesis, he has questioned the validity of counting the number of marks present and equating this with a number of distinct ploughing operations and cultivations: nonetheless, given the consistent regularity in the direction of the successive marks at Throckley, surely we are seeing here a field with defined limits that has been subject to successive "deep-ploughing" operations over a period of time. At any rate, a sod-buster of the Spanish type would account for the short lengths of the traces at Throckley, for this implement is drawn forward until it locks in the ground, when it is released, cleaned, and the process repeated, the tilth subsequently being broken up by mattock-hoes.⁷⁰ With hindsight, excavations of the *ends* of the Throckley marks may well have proved as informative, if not more so, than cross-sections over their centres.

To summarize, therefore, the Throckley marks indicate pre-Roman cultivation within a defined field, while the existence of the short lengths recorded might well indicate an ard of "el cambelo" type/function, especially given the heaviness of the underlying clay. The clear indication of successive ploughing operations indicates

the possibility that the field was allowed to remain fallow between periods of cultivation or there was only occasional ploughing followed by cultivation with lighter implements, the ploughing being designed solely to improve the tilth. Although no date can be attached to the marks, the likely cultural and chronological context for them—along with the other marks on the Tyne–Solway isthmus—may be the late Neolithic—Bronze Age, 2500–2000 B.C, when so much of the British landscape was first enclosed, and “marginal” soils fully exploited.⁷¹

NOTES

¹ Central Excavation Unit, Gallipoli Block, The Castle, Carlisle.

² G. R. B. Spain, “Work on the Roman Wall near Newcastle, 1928”, *PSAN*⁴ iii, (1929), 273–280. The discovery of the turret is reported on page 276.

³ A similar phenomenon has recently been noticed east of turret 7b—report forthcoming.

⁴ At turret 7b the north face of the Wall has been more severely robbed than the south, probably in connection with the construction of the Military Road in 1751.

⁵ C. M. Daniels, *Handbook to the Roman Wall*, 13th Edition (1978), 74.

⁶ R. Hunneysett, “The Milecastles of Hadrian’s Wall—an alternative identification”, *AA*⁵, viii (1980), 95–107. The attribution is given on page 107. This writer, however, does question the credibility and importance of assigning offset types to a particular legion, particularly as certain lengths of the Wall do not fall into any of the accepted categories of “standard” construction.

⁷ Similar indents have been noticed in a corresponding position at turret 7b, but neither these nor any other examples have been noted or mentioned in the available literature.

⁸ E.g. as a turret 33b R. Miket and V. Maxfield, “The Excavation of Turret 33B (Coesike)”, *AA*⁴, i, (1972), 145–78. See their fig. 2.

⁹ I. A. Richmond, “Hadrian’s Wall, 1939–49”, *JRS*, xl (1950), 43–56; see pages 43–4.

¹⁰ Richmond, *op. cit.*, 43–4.

¹¹ E. B. Birley, “Hadrian’s Wall; some structural problems”, *AA*⁴ xxxviii (1960), 39–60. See pages 52–60 for a discussion of this problem.

¹² F. G. Simpson (ed by G. Simpson), *Watermills and Military Works on Hadrian’s Wall* (1976), 20.

¹³ Daniels, *op. cit.*, 16, and D. Breeze and B. Dobson, *Hadrian’s Wall*, 2nd Edition (1978), 31.

¹⁴ C. Woodfield, “Six Turrets on Hadrian’s

Wall”, *AA*⁴, xliii (1965), 87–200. Turret 51b, discussed on page 171.

¹⁵ P. Brewis and F. G. Simpson, “The Roman Wall at Denton Bank, Great Hill and Heddon on the Wall”, *AA*⁴, iv, (1927), 109–21; for Denton, see page 111. Also observation in 1981 a little east of turret 7b (report forthcoming) and Spain, *op. cit.*, 278–9, for a clay core in the Curtain Wall adjacent to turret 7b.

¹⁶ J. C. Bruce, “Mural Notes”, *AA*², vi (1865), 220–4.

¹⁷ I. A. Richmond, *Handbook to the Roman Wall*, 11th Edition (1957), 60.

¹⁸ Woodfield, *op. cit.*, 88.

¹⁹ E. B. Birley, P. Brewis and J. Charlton, “Report for 1932 of the North of England Excavation Committee”, *AA*⁴ x (1933), 97–101; Turret 19b is discussed on page 99.

²⁰ Richmond *op. cit.*, (1950), 43–4.

²¹ J. P. Gillam, “Excavations at Low Brunton Milecastle, No. 27, in 1952”, *AA*⁴, xxxi (1953), 165–174; see page 166.

²² Brewis and Simpson, *op. cit.*, 115.

²³ Birley, *op. cit.*, 57.

²⁴ RIB 1388 and 1389.

²⁵ The demonstrable fact that clay could be and was used for bonding in the lower courses of the primary stone wall, with mortar only used for surface pointing, has an important bearing on why the Turf Wall was built from the Irthing westwards. A shortage of lime for mortar cannot be the sole reason for the decision to build in turf, nor can a lack of suitable stone be the explanation, for the Romans clearly overcame that problem—and the lack of lime—when the Turf Wall was rebuilt. An implication of the evidence is that the Turf Wall was designed as such from the start, and did not directly result from a lack of suitable building materials, while an “emergency” explanation, requiring this sector to be built with all speed, is unlikely, given that the Turf Wall extends along

the whole Solway shore line as far as Bowness. Other Roman frontiers are known to vary in the types and form of barrier used along their length, and a similar situation may easily have existed on Hadrian's British frontier.

²⁶ Breeze and Dobson, *op. cit.*, 67.

²⁷ This does not explain why the number of barracks varies in the primary phase of certain milecastles. A single, two-celled structure seems to have been the norm, e.g. 9, 19, 35 and 50TW, but double barracks occur in 47 and 48, and in the rebuilt Turf Wall Milecastle 51.

²⁸ D. Charlesworth, "The Turrets on Hadrian's Wall", in M. R. Apted, *et al.* (eds), *Ancient Monuments and their Interpretation* (1976), 13–26, provides the only authoritative summary of the evidence to date.

²⁹ For a monolithic threshold, see e.g. turret 29a, while turret 7b is a good example of a turret with a flagged entrance.

³⁰ Woodfield, *op. cit.*, 90.

³¹ As, e.g., turret 7b, E. Birley, "Excavations on Hadrian's Wall West of Newcastle upon Tyne in 1929", *AA*⁴, viii (1930); the argument is presented on pages 164–74.

³² E.g. turret 7b, Birley *op. cit.*, (1930), 148, and turrets 18b, 25b and 26a, Woodfield *op. cit.*, *passim*.

³³ E.g. turret 7b, Birley *op. cit.*, (1930), fig. 1.

³⁴ See, for example, turrets 18b, 25b, 26a and 35a, Woodfield *op. cit.*; turret 33b, Miket and Maxfield, *op. cit.*, 160–70; and turret 19b, S. Hill and H. Welfare, "The Pottery from Turret 19B, West Clarewood", *AA*⁵, iii (1975), 222–26.

³⁵ E.g. turret 7b, Birley *op. cit.*, (1930), pl. XXXIX, fig. 1. Mortaria would be less likely to break than other, thinner-walled vessels, which has a bearing on their incidence in pottery assemblages from Roman sites.

³⁶ See Hill and Welfare, *op. cit.*, 223, for a possible reason why flagons are scarce in turret contexts.

³⁷ See R. W. Davies, "The Roman Military Diet", *Britannia* ii (1971) 122–42. A. K. Bowman, "Roman Military Records from Vindolanda", *Britannia* v (1974), 360–73, discusses some local literary evidence for diet on pages 365–67. R. Chaplin, in Woodfield, *op. cit.*, 193–200, is the only comprehensive survey from a series of turrets on the Wall, and has been supplemented by G. W. I. Hodgson, in Miket and Maxfield, *op. cit.*, 176–78.

³⁸ E.g. the altars from 19b, Birley *et al.*, *op. cit.*, (1933), 99, and from near Brunton, J. C. Bruce,

The Roman Wall, 3rd Edition (1867), opposite page 143. For a shrine near milecastle 19, see RIB 1421.

³⁹ As noted by P. Brewis, "Conjectural Construction of Turret 18a on Hadrian's Wall", *AA*⁴, ix (1932), 202.

⁴⁰ R. Bellhouse, "Roman Sites on the Cumberland Coast, 1966–67", *CW*², lxix (1969) 54–101; see pages 79–93.

⁴¹ Bellhouse, *op. cit.*, 79–93.

⁴² Brewis, *op. cit.*, Pl XXIV.

⁴³ Turrets 18b, Woodfield, *op. cit.*, 89; 29b, P. Newbold, "Excavations on the Roman Wall at Limestone Bank", *AA*³, ix (1913), 60; and 48a and b, R. C. Shaw, "Excavations at Willowford", *CW*², xxvi (1926), 429–506, 444.

⁴⁴ For example turret 7b, Birley *op. cit.*, (1930), on the right of Pl XLI, fig. 2, and 51b, Woodfield, *op. cit.*, 171.

⁴⁵ Charlesworth, *op. cit.*, 16, listing 7b, 33b, 50a, 50b and 51b.

⁴⁶ For example those from the Wall forts, see e.g. any of those in Chesters Museum, while an elaborate inscribed example from Carlisle is RIB 946. The monolithic lintel in turret 44b is of uncertain origin, but fragments of what may be a monolithic lintel have recently turned up near milecastle 39 (information from J. Crow). For similar lintels used in towers on the German *limes*, see D. Baatz, *Der Römische Limes* (1975), 165.

⁴⁷ John Gillam has kindly discussed with the writer the importance of the one BB II sherd from turret 10a, although he is not to be held responsible for the conclusions expressed here. See now J. P. Gillam and K. Greene, "Roman Pottery and the Economy", in A. C. Anderson and A. S. Anderson, *Roman Pottery Research in Britain and North-West Europe*, (1981) 9–21, in which the significance of BB II Ware on the Wall is fully discussed, and J. N. Dore and J. P. Gillam, *The Roman Fort at South Shields*, 61, for the possibility of "Hadrianic" BB II Ware on east coast sites.

⁴⁸ Breeze and Dobson, *op. cit.*, 130–31.

⁴⁹ Charlesworth, *op. cit.*, has considered this point. See also Woodfield, *op. cit.*, 141 and 183, where she discusses the problems of distinguishing IA and IB levels in turrets 26a and 51b.

⁵⁰ Turret 19a, Birley *et al.*, (1933), 98–9, and Pl. V, fig. 1; and turret 25b, Woodfield, *op. cit.*, 119. Excavation at 18b was not carried into the turret recess, and Woodfield *op. cit.*, 99–100, has considered the possibility of a recess blocking there. "Structure X" in turret 7b might just be a very crude turret recess blocking in view of its position,

see Birley *op. cit.*, (1930), Pl. XL, fig. 2 and Pl. XLI, fig. 2.

⁵¹ Breeze and Dobson, *op. cit.*, 131.

⁵² Of some 37 excavated turrets for which there are detailed records or the finds survive and can be located, most have occupation terminating at the end of the second century, although some have produced evidence—often in the form of unstratified artefacts—for activity in the third and fourth centuries. The available evidence, as reviewed by J. Dockerill, *Pottery from the Milecastles and Turrets on Hadrian's Wall* (unpublished Durham M. A. Thesis, 1969), strongly supports the suggestion that the reduced turrets, i.e. those demolished and/or with blocked recesses, were all de-commissioned before the reign of Severus.

⁵³ B. Swinbank, "The Vallum—its problems restated", in M. G. Jarrett and B. Dobson (eds), *Britain and Rome* (1965), 84–94; 90–1.

⁵⁴ I. R. Scott, "Spearheads of the British Limes", in W. S. Hanson and L. J. F. Keppie (eds), *Roman Frontier Studies*, 1979, i (1980), 333–34.

⁵⁵ As note 38. For a ?hypocaust *pila*, see turret 19a, Birley *et al.* (1933), 98 and Pl. V, fig. 1.

⁵⁶ As note 37.

⁵⁷ The report on the soil by Dr. Helen Keeley, the remainder of the text by the other two writers. Dr. Peter Fowler has commented on an earlier draft of this appendix and its conclusions, and has suggested a possible cultural/chronological context for the marks, but he bears no responsibility for the interpretations offered here, or any inadequacies in our conclusions.

⁵⁸ The samples were collected by Nick Balaam, and the report is Ancient Monuments Laboratory

Report 3401, Environmental 16/81. A copy has been deposited with the site records.

⁵⁹ Analysis by Nich Balaam.

⁶⁰ The plaster casts are stored with the other finds in the Newcastle Joint Museum.

⁶¹ See P. J. Fowler, "Early Prehistoric Agriculture", in D. D. A. Simpson (ed), *Economy and Settlement in Neolithic and Early Bronze Age Britain and European* (1975) 153–82; page 175.

⁶² For similar asymmetrical profiles, see e.g. P. J. Fowler, J. Bennett and V. S. Hill, (eds) "Archaeology and the M5 Motorway: Third Report", *Trans Bristol Gloucestershire Archaeol Soc* xciv (1976) 47–91; page 57.

⁶³ See now P. J. Fowler, "Later Prehistory", in S. Piggot (ed), *The Agarian History of England and Wales*, i:I (1981), 61–298.

⁶⁴ It has been suggested that some ploughing was undertaken to break up the soil before the construction of certain Roman roads, etc., see P. J. Fasham and R. Hanworth, "Ploughmarks, Roman roads and Motorways", in H. C. Bowen and P. J. Fowler (eds), *Early Land Allotment in the British Isles: a survey of recent work* (1978), 175–77.

⁶⁵ P. J. Reynolds, "Deadstock and Livestock", in R. Mercer (ed), *Farming Practice in British Prehistory* (1980), 97–122, 101.

⁶⁶ Reynolds, *op. cit.*, 100.

⁶⁷ Reynolds, *op. cit.*, 103.

⁶⁸ Reynolds, *op. cit.*, 103–4.

⁶⁹ As note 68.

⁷⁰ As note 67.

⁷¹ See P. J. Fowler, "Wildscape to Landscape", in Mercer, *op. cit.*, 9–54.