III
Variation in the form of the Ditch, and of its equivalents, on Hadrian's Wall

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SUMMARY

The Ditch of Hadrian's Wall has received insufficient attention. The pragmatic responses, in its design, to the defensive potential of the topography – in the Central Sector, along the left bank of the River Eden, and along the Solway – are described and discussed. The asymmetrical 'one-sided Ditch' is identified, usually associated with a narrow Counterscarp Bank which should be distinguished from the Glacis, here and on the Antonine Wall. The extension of the outer scarp of the Counterscarp Bank, or of that of the Berm (or a combination of the two) was used to make the transition between the Ditch and the natural defences of the crags. In some areas only the topsoil was scraped up (the 'minimal Ditch'). Where no Ditch was provided the Wall itself may have been built higher. Study of the Ditch offer insights into the function of the frontier and how this changed.

INTRODUCTION

Bishop Gibson's edition of Camden's *Britannia* (1722) contained the 'Observations' that Robert Smith had made during an expedition along Hadrian's Wall in 1708. Smith was the first to make a serious study of the Ditch of the Wall and he set down clearly and methodically the wisdom that was to become firmly established about this particular element of the frontier. He wrote that the Ditch, which forms the immediate outer (northern) defence to Hadrian's Wall, was invariably provided "even upon the highest hills excepting only the space . . . between Caervorran and Seaven-Shale; where the vast and horrid steepness of the Rocks to the North, is more than a sufficient security to it" (*cf* Bosanquet 1955, 167). This simple equation – that the natural defences always obviated the necessity for the Ditch – was accepted by Collingwood Bruce in the *Wallet Book of the Roman Wall* (1863, 21) and his text on the subject survived, substantially unchanged, until Ian Richmond's tenth edition (Bruce 1947, 18–19). This extraordinary longevity was probably due to the fact that the Ditch had been largely ignored by scholars; when it did receive some attention there was a tendency for debate to be comfortably avoided rather than stimulated. The logical elegance of the diagrammatic section through the Wall, the Berm, and the Ditch that was published by Brewis (1927, 115–16, plate 21) produced an influential idealised view that has been barely scrutinised or challenged. Although, in his text, Brewis acknowledged that there were many variations in the dimensions of the components of the Wall, his memorable illustration (reproduced without comment by Birley 1961, 323) depicted a symmetrical V-shaped Ditch with a rectangular basal slot. The sides of the Ditch are each shown at a regular angle of 45 degrees to the horizontal, an angle correlated exactly – and this was the element that lodged in the mind, irrespective of its wholly speculative nature – with the line of sight of a Roman soldier standing on the walkway on top of the Wall. The Glacis was labelled but was not depicted as such; this is the spoil from the cutting of the Ditch which was dumped on the N side and smoothed out so as to accentuate and steepen this aspect while not providing any cover for anyone with offensive intent. After

1927 Brewis and Birley cut a number of sections across the Ditch but the results were never published and debate fell silent.

The cartographic survey of the frontier works undertaken by The Royal Commission on the Historical Monuments of England (RCHME) between 1988 and 1993 (available in the National Monuments Record, in Swindon; *cf* Bidwell 1999, 8, 35, 113–14, 137–9, 180–2) provides a consistent background to the study of the Ditch in the field but it was the fieldwork for another paper (Welfare 2000, 21–2) which suggested that the remains were rather more complex. In November 2003, advantage was taken of the low vegetation and the angle of the sunlight to investigate the variations in the forward defences of the Wall, and to understand some of the relationships between the natural and the artificial defences in those sections where the topography seemed to offer comprehensive or partial protection from attack: in the Central Sector, along the banks of the River Eden, and along the Solway shore.

Many of the best preserved stretches of the Wall and of its associated earthworks are in the Central Sector and in the flanking pasturelands; it is here that the Ditch can be most fruitfully studied without any resort to excavation. The Central Sector is usually loosely defined – in relation to the topography, or as the land between the North Tyne and the Irthing – but an archaeological definition can also be advanced. This is that the Central Sector can be taken as extending between those points on the Wall adjacent to Milecastle 34 (NY 816705) and to the West of Turret 45B (NY 668650) – the same stretch highlighted by Robert Smith – where the carefully surveyed long alignments of the curtain to the E and to the W were abandoned in favour of a markedly sinuous course; in this sector a tight adherence to the defensive potential afforded by the broken topography was given priority over the more ordered practices advocated by convention, based on the contemporary military manuals. Literal observance of the guidance in the latter was only feasible in a gentler countryside.

In relatively level ground (e.g. in many places between Dere Street and Sewingshields) the classic shape of the Ditch (as typified by Brewis) is readily apparent, the upcast being deposited in a smooth Glacis that emphasises the northern lip of the Ditch but which itself tapers gradually to the North over a distance of 10 to 15 m. It is particularly well marked between Milecastles 26 and 29 but elsewhere the Glacis is clearly unfinished: irregular small heaps of earth and rubble provide (perhaps unintentionally) an additional aspect to this obstacle. In the Central Sector the Glacis is certainly present (fig. 1): it was chosen as the outer element of the Ditch where the latter was provided in several of the 'gaps' between the crags. Examples include Ridley Common Gap (NY 783686); the Nine Nicks of Thirlwall (NY 682667), and Walltown Gap (NY 680666). It is also found between Burnhead (NY 711666) and Great Chesters, and to the West of Cockmount Hill (NY 693668), i.e. wherever the topography in front of the Wall is relatively gentle and where the geological conditions allowed a substantial Ditch to be dug.

The variations from this classic form are grouped here under five headings: the Counterscarp Bank; the one-sided Ditch; the minimal Ditch; the combination of forms to be seen on the well known stretch on Cockmount Hill and Allolee Rigg; and the use of natural and artificial defences along the banks of the River Eden and on the shores of the Solway.

THE COUNTERSCARP BANK

Immediately to the East of the Central Sector a characteristic form is visible. Opposite the former cottage of Shield-on-the-Wall, just to the West of Milecastle 33 (NY 828707), the Ditch was cut into the forward slopes above Fozy Moss. The dominant scarp faces N. The relatively small amount of upcast was deposited to the N, not as a smooth glacis but as a distinct and narrow Counterscarp Bank, the crest of which is 1.45 m above the bottom of the 'Ditch' to its rear (fig. 2). This abrupt and deliberate Counterscarp Bank must be distinguished from

Fig. 1 The Ditch, with its smooth Glacis on the far side, immediately to the W of Burnhead.

the Glacis, with its lower and broader profile, in which the upcast material was spread much more widely. The Counterscarp Bank would have been economical and effective, for this design provides the accentuated scarps of a major ditch even where the digging of a conventional one (with two opposed scarps, of approximately equal proportions) was impractical. The asymmetrical form of the Ditch (fig. 3), associated with the Counterscarp Bank, is common in the Central Sector and this is often the form that was chosen to bar the approach to the Wall in the low-lying 'gaps' between two crags. It is to be seen on either side of the easternmost of the cottages at Sewingshields, to the West of Turret 34A (NY 810703; 811703); on the western side of Clew Hill, to the W of Milecastle 36 (NY 794692); in Rapishaw Gap, to the W of Milecastle 37 (NY 781686); in Bogle Hole, W of Milecastle 41 (NY 728669); in Hole Gap (NY 715666), immediately to the W of Milecastle 42; at Thorny Doors (NY 721668); and in Walltown Gap (NY 680666).

THE ONE-SIDED DITCH

The Counterscarp Bank was not the only form that was adopted in the Central Sector. About 60 m to the west of Milecastle 34, where the Central Sector of the Wall may be said to begin, the Ditch terminates in a rounded butt-end. This neat and apparently orderly method of ending a linear earthwork can also be seen in Busy Gap (NY 797693; 798696); in Rapishaw Gap (NY 781686); and in Caw Gap (NY 725668; 726668). Closer examination reveals that the original designs were a little more complex in each case. Where the land rises only

Fig. 2 The pronounced Counterscarp Bank to the W of Milecastle 33; its inner scarp here is 1.5m high. Hadrian's Wall lies under the field-wall on the left.

gradually, and there is not a particularly rapid transition between the gentle slopes and the high crags, the Roman engineers could choose to extend the line of the outer scarp of the Counterscarp Bank, or to extend the line of the inner (southern) scarp of the Ditch – the scarp that marks the edge of the Berm that separated the southern lip of the Ditch from the face of the Wall. Either of these alternatives neutralised the point of weakness that might have been created by the ending of the Ditch, preventing an attacker from approaching unhindered around the butt-end and onto the Berm.

Extension of the outer scarp of the Counterscarp Bank

An example of the first of these two types may be seen (fig. 4) on the eastern flank of Winshields (NY 746675), approaching Milecastle 40. Here the Glacis is suddenly replaced by the Counterscarp Bank, composed mainly of rubble and standing up to 3 m high externally. This extends for 120 m before it is reduced to a simple outer scarp for a further 35 m. At this last point, 100 m up the slope from the butt-end of the Ditch, opposite Milecastle 40, the slopes of the Whin Sill are once again sufficiently steep that no further artificial defence was necessary. To the W of the butt-end, inside these outer defences, the line of the Ditch survives as a terrace about 4 m wide, its southern edge formed by the North-facing scarp of the Berm, 1 m high. Only the overburden, and nothing more, was removed by the Roman engineers (*cf* Birley 1961, 80). Less than two miles to the E, in Crag Lough Wood (NY 769679), where the ground rises westward to Highshield Crags, the same general design

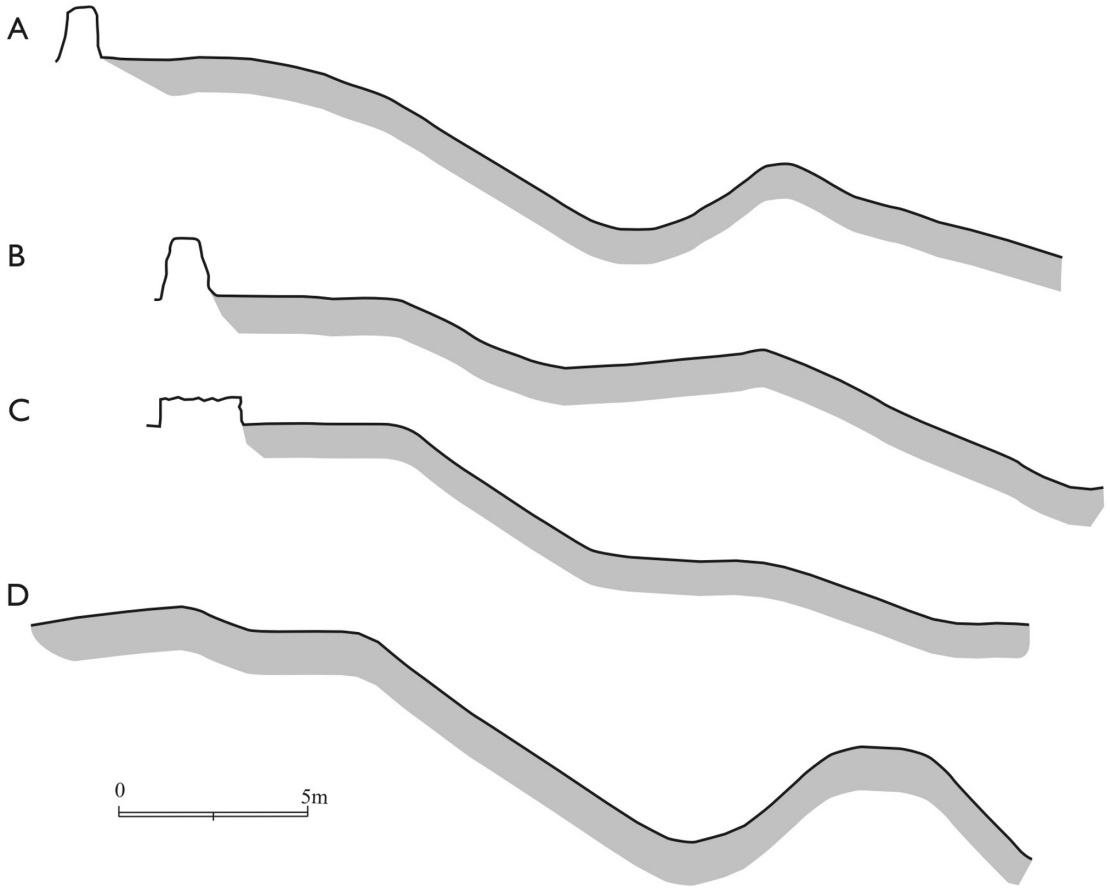

Fig. 3 Profiles across the earthworks on the N side of the Wall (S is to the left).

A. At NY 828707, just to the W of Milecastle 33, showing the asymmetrical Ditch and the Counterscarp Bank; the field-wall overlies the S face of Hadrian's Wall.
B. At NY 795692, on the E side of Clew Hill, to the W of Milecastle 36; the Counterscarp Bank is minimal here.
C. At NY 725668, on the E side of Caw Gap, where the lower courses of Hadrian's Wall have been consolidated; this is an example of the 'one-sided Ditch'.
D. At NS 864798, at Watling Lodge on the Antonine Wall, showing the Counterscarp Bank there.

recurs; in its present state the butt-end of the Ditch is comparatively muted but the outer scarp of the Counterscarp Bank continues beyond it for another 20 m.

Extension of the scarp fronting the Berm

Immediately to the W of Milecastle 34 it is the scarp marking the front of the Berm that was extended, apparently for as much as 130 m; it is best appreciated about 80 m to the W of the butt-end where it survives to a height of 1.7 m. Farther W it tapers out as the natural slopes (here 14 m high) steepen significantly and no artificial earthworks were required.

The single scarp of this variation of the 'one-sided Ditch' also seems to have been provided on either side of Turret 40B. Here the Wall

Fig. 4 The view E from Milecastle 40. The Ditch of the Wall, and the Glacis, end suddenly in the middle distance; they are replaced by the Counterscarp Bank (consisting of scraped-up overburden from the 'Minimal Ditch') and then by a single extended scarp.

extends along the crest of a ridge formed by the Whin Sill but the slopes to the N are steep rather than precipitous. The dolerite would have made the digging of the Ditch in its conventional form extremely difficult. Access to the Wall would have been possible for a determined force, and this potential weakness seems to have been addressed over a distance of nearly 200 m: for about 70 m to the E of the Turret (as far as the crest of the slope to the NE where the Wall alters alignment at NY 73676726), and for as much as 120 m to the W to a point where the slopes steepen further. This strengthening is very simple. On the N side of the Wall, and beyond the level Berm (only 2 m wide approximately), the natural forward slope has been artificially enhanced to form a single scarp. Opposite the Turret the face of this scarp is 6 m broad and about 3 m high. This is not in any way a dramatic earthwork in its present form and it is little surprise that it has not been recognised before; yet, when fresh, the scarping would have been enough to have provided a check to an attack. Its very presence would have boosted confidence, especially if it was already in place during the construction of the stone curtain. (This scarp is not be confused with the one formed by the rubble tumbled from the Wall, an example of which can be seen on the crest to the E of Milecastle 41.)

Scarps extended in combination

A combination of two extended scarps can be seen on the northern side of the wood to the E of the Knag Burn gate, immediately to the E of the fort at Housesteads (NY 791690; fig. 5).

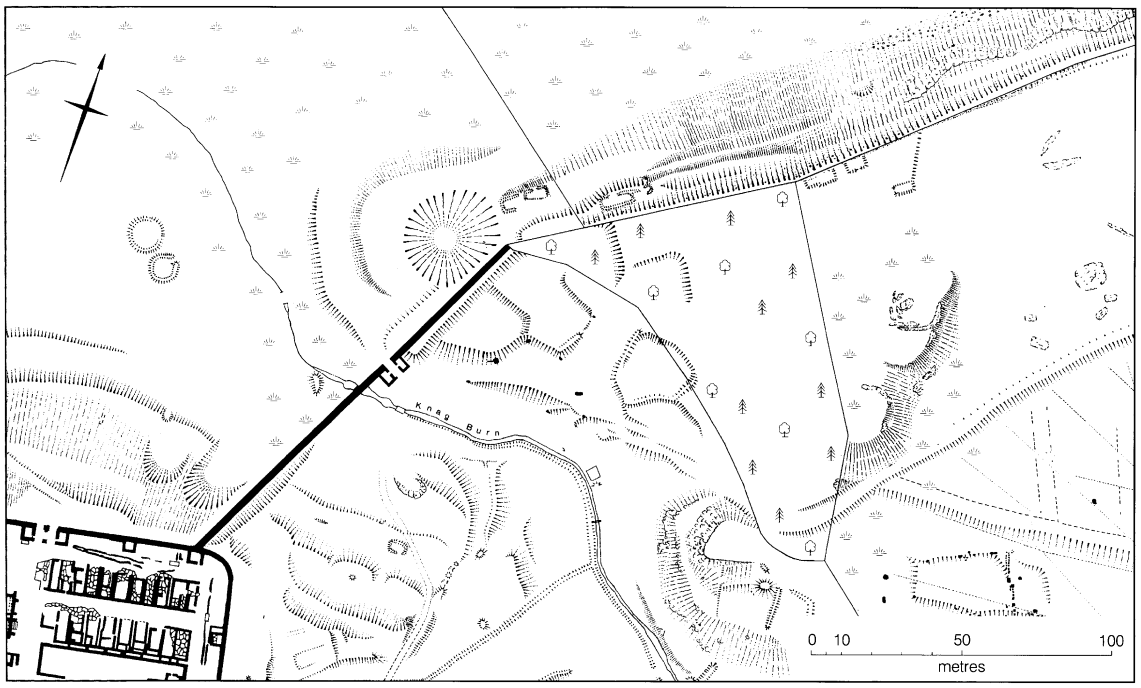

Fig. 5 An extract from the RCHME survey of the multi-period landscape around the fort (lower left) at Housesteads. Outside the NW end of the wood are two terraces, crossed by a field-wall that extends NW. The lower terrace is partly occupied by two contiguous rectangular buildings, probably of medieval or later date. The single scarps that define the terraces may be modified remnant extensions of, respectively, the scarp fronting the Berm of Hadrian's Wall, and the outer scarp of the Counterscarp Bank. These would have provided a transition between defences constructed across the valley of the Knag Burn and the ground to the NE, where the slopes steepen and the crags begin. The broad scoop immediately to the N of the NE angle of the fort may be a fragment of the Ditch but its origin is uncertain. Other scarps parallel to the Wall are probably due to excavation and consolidation.

Here the two parallel scarps may be fragments of longer extensions – from the Counterscarp Bank and from the Berm – of a length of the Ditch that may have lain across the burn. (A simple butt-end of this portion of the Ditch seems to survive close to the NE angle of the fort.) Such an earthwork would always have been difficult to construct across a watercourse; whatever additional defences were provided to strengthen this little valley they were presumably substantially modified when the Knag Burn gate was inserted, and the last traces of them may have been finally obliterated when the stretch of Wall adjoining the fort was excavated and consolidated. (It may be worth reconsidering, in this context, the strange curvilinear earthwork to the N of the Wall that has been thought to be a quarry. Since it is dolerite that outcrops here this conventional explanation seems unlikely; perhaps its form preserves something of the Berm and, conceivably, of the Counterscarp Bank also. Its origins remain unclear.)

A further example of this combination of scarps can be seen immediately to the E of Caw Gap (fig. 3; fig. 6) where two short segments of the Ditch (NY 725668; 726668), each with neat butt-ends, were provided with a Counterscarp

Fig. 6 The eastern side of Caw Gap where the Ditch becomes a terrace before this merges with the steeper slopes of the crags in the middle distance.

Bank. Between these two segments there is an unexcavated boss of rock that seems to have been the pivot of a minor re-alignment. The Roman engineers appear to have baulked at driving the Ditch through this solid obstacle. The Berm here is 4 m wide; its outer scarp, 3.5 m high, forms the forward face of the outcrop. Lower down the slope, beyond a terrace 4.6 m wide (which represents the line of the Ditch), the outer scarp of the Counterscarp Bank (1.5 m high) also continues. At the western end of the more westerly Ditch segment the N-facing scarp of the Ditch and that of the Counterscarp Bank, still divided by a terrace, fade into the rising crags. It is noteworthy that to the S of this segment of the Ditch the Berm has been widened appreciably, to 14 m – i.e. the Wall and the earthworks of the Ditch are diverging in another pragmatic response to the topography.

Single scarps in the gaps between the crags

In some cases a single scarp seems to have been provided as a defence in a gap between the crags. Whether in each case this should be seen as representing the scarp of the Berm or that of the Counterscarp is probably immaterial. In Sycamore Gap (NY 761677) a single scarp, about 3 m high, seems to have been provided as much as 13 m forward of the face of the Wall itself. This scarp is in poor condition, having been scoured out close to its central point, and seems to have gone unnoticed. Similarly, in Castle Nick (NY 760677) there is a marked crest 9 m forward of the gate of the Milecastle. No Ditch seems to have been provided here – or, if it was, its remains have been totally masked by spoil. (*N.B.* In all the stretches where the Wall has been excavated and consolidated, and where the associated

spoil-heaps may still be present, caution is necessary in the interpretation of such short individual scarps.)

THE MINIMAL DITCH

In some places in the Central Sector it seems that the engineers, on removing the overburden, found the quartz-dolerite of the Whin Sill so close to the surface that they decided against further excavation. (An example of this, beside Milecastle 40, has already been mentioned.) An instance is clearly visible in the small in-bye field immediately to the E of Hotbank Farm (NY 772682), where the line of the Wall has descended from the crags; the topsoil here was scraped up, revealing the outcrops of the Whin, and was then dumped to the N to form a slight outer bank (the equivalent of the Counterscarp Bank). There was no attempt to excavate the Ditch, which only resumes a conventional form to the W, opposite the farmhouse.

In Peel Gap (NY 753674) a marsh occupies the valley bottom and probably it always did so, forming in itself an effective outer defence. On the W side of the Gap, where the land begins to rise, the Ditch and the Counterscarp Bank are comparatively well defined for a distance of about 15 m. However, as the defences turn sharply to the N the Ditch fades rapidly out, becoming little more than a broad terrace 1.6 m below the level of the Berm. The Counterscarp Bank, composed principally of rubble, gradually attains a height of 0.8 m but fades out again before the top of the slope. Here again, it seems, only the overburden was removed from the intended line of the Ditch. (If any ditch of significant proportions had ever been dug down this slope it would surely have been scoured out further by erosion.) As the line of the Wall turns W again at the crest of the slope – Steel Rigg – the Ditch and the Counterscarp Bank disappear completely for a distance of 40 m; the only defence here is the outer scarp of the Berm which stands up to 1.5 m high. This section, between the base of Peel Gap and the shoulder of Steel Rigg, is a good example of how the blueprint for the construction of the frontier works was adapted on a wholly pragmatic basis. In the drive to complete the barrier with all speed this is not altogether surprising; the fact that the ideal was never returned to can only mean that the concept and the practice of the frontier had itself undergone modification.

COCKMOUNT HILL AND ALLOLEE RIGG

These instances of the absence of the Ditch do not appear in the literature. The textbook example is that on Allolee Rigg (NY 690669), to the W of Cockmount Hill, where the line of the Wall closely follows the northern edge of the Whin Sill; here the sudden geological changes ensured that the pragmatism of the Roman construction was more complex than is usually implied. One Roman mile to the E, between Burnhead (NY 711666) and the fort at Great Chesters, the Ditch and the Glacis are well preserved (fig. 1); this state of survival diminishes (as one would expect, given so much later activity) in the immediate vicinity of Great Chesters farm itself. To the W (NY 699668) there is now no more than a slight scarp on the N crest of the Ditch, and at a point about 200 m to the E of Cockmount Hill the earthworks have disappeared altogether. Clearly some of this can be attributed to cultivation but the absence of the earthworks must also beg the question whether the Ditch was ever dug here, for geological fieldwork has demonstrated that the dolerite of the Whin Sill meets the line of the Wall again just to the E of Turret 43A (Johnson 1997, 34). The engineers may have been caught unawares for in this stretch the Whin has not formed any crags; as far W as Milecastle 44 there are no steep slopes and the presence of such an intractable rock would not have been suspected. Between Burnhead and Cockmount Hill the partial absence of the Ditch may not have been considered critical as the land to the N dips gently, maximising visibility and providing no dead ground, before rising to the next ridge about 400 m away.

Fig. 7 The Ditch, on Allolee Rigg, ends at an outcrop of the Whin Sill. On the right, the attempt to flatten a hillock on the line of the Glacis was abandoned. The N face of Hadrian's Wall forms the base of the field-wall.

At the NW end of Cockmount Hill Plantation (NY 694668) the Ditch emerges from a dense stand of conifers and is comparatively well defined. It has an asymmetrical profile: the southern scarp is 0.7 m high and the slightly steeper northern scarp is 0.4 m high. There is a Glacis, about 11 m wide. Farther West – after a short stretch in which the Ditch has been exceptionally well constructed – it then ceases abruptly (fig. 7) before the face of a rocky boss (as at Caw Gap). This cessation of excavation may have been anticipated immediately to the E where an unsuccessful attempt was made to quarry away (and thus flatten) a rocky hillock that stood on the line of the Glacis. This hillock would have provided some dead ground close to the Wall and it was obviously desirable that it should be removed. However, the rock was dolerite and it seems that after progressing about 10 m through the hillock the decision was taken to abandon the work; the bedrock had proved to be too much of an obstacle. Despite its southern scarp being up to 0.7 m high, the Ditch at this point is little more than a marker trench: the 'minimal Ditch'. It seems that the overburden was stripped off but that work then stopped. The overall picture, therefore, is that the engineers did not give up lightly; they had taken off the topsoil with the intention of digging the Ditch, in some form, over the gentle contours of Cockmount Hill and Allolee Rigg. It was only their discovery that the dolerite was so close to the surface that defeated them.

THE EDEN AND THE SHORES OF THE SOLWAY

Towards its western end Hadrian's Wall was built across deposits of boulder clay and of

comparatively recent alluvium or gravel (Johnson 1997, 78–86). The natural defences provided by the cliffs of the Whin Sill were not available but the Roman surveyors were evidently still keen to take advantage of every landform that would strengthen the frontier-line. To the WNW of Carlisle the exact position of the Wall is not known for certain but all the indications are that it was set out along the left bank of the River Eden. The river would have been no mean obstacle in itself but between Willow Holme and Grinsdale the river-cliff on this southern bank attains (at NY 370572) a height of 12 m above the water, providing a commanding view to the N and NE. There was no need to dig a conventional Ditch here. (The short length of 'ditch' shown at NY 368578, to the S of Grinsdale, on successive editions of the Ordnance Survey *Map of Hadrian's Wall* may perpetuate the line of the Ditch but in its present form it is a product of relatively recent land-use.)

For about a mile beyond Grinsdale it is noticeable that – as far as we can infer – the Wall again assumes the angular and apparently erratic course that it had so characteristically adopted in the Central Sector. The cause was essentially the same: the reliance upon natural features for defence. Here, between the Doudle Beck and the Monkhill Beck, the advantage is not provided by dolerite crags but by the softer cliff (still 10 m high) left behind by the River Eden when it gradually assumed its present course, up to 600 m away to the N. Again, no Ditch was required here although two possible fragments, heavily overgrown, may survive at the extreme N end of this section, on either side of the steep cleugh whence the Monkhill Beck discharges into the Eden (NY 350591). If these fragments are genuine, the more easterly portion appears to coalesce with the line of the river-cliff; any junction has been smoothed away by cultivation.

It was probably the economy of this utilisation of natural defences that led Henry MacLauchlan to speculate (1857, sheet 5) that the Wall might have taken a more southerly route to the W of Watch Hill – along the edge of the enclosed land to Boustead Hill and thence NNW to Drumburgh – rather than cross Burgh Marsh and Easton Marsh. Whatever the truth of this, at one time or another the Roman engineers certainly made use of the potential offered by the Solway, supplemented with artificial provisions where necessary. This was found to be the case at Milecastle 79 where, in 1949, Ian Richmond and John Gillam revealed that this structure (and the Turf Wall itself) had been erected on an artificial platform of turf and gravel, 1.45 m high. The excavators also concluded that the provision of this sea-bank meant that no Ditch was cut in front of the Wall (Richmond & Gillam 1953, 18, 26–8). The 'one-sided Ditch' provided by the forward scarp of the sea-bank would have been a check to any attacker, even though the principal defence would have been the Solway itself. The same arrangement was identified by trial trenching at Milecastle 78 (Simpson *et al*. 1935, 217) and may still be apparent in the similarity of the surface remains at both locations. Richmond and Gillam speculated (1953, 27) whether provision of this sort might have been made across Burgh Marsh, if the Wall had indeed crossed it. An indication of the defensive potential may be given by the marked scarp on the seaward side of the modern road just to the N of Turret 78A; this, standing 2 m high at NY 2425 6185, was cut off from the marshland by the embankment of the railway (now disused). Such a scarp would have been more than sufficient; here, looking out over the sands and the waters of the Firth, there was no need for much additional height to provide an efficient platform for those on watch from the Wall.

DISCUSSION

Within the scope of this short paper no attempt has been made to provide a full survey of the Ditch of Hadrian's Wall. The intention has been simply to point to some of the variations in form that can be readily observed. The Ditch was certainly not uniformly cut to the symmetrical template that Brewis (1927) had so memorably depicted, nor to any neat unitary system of Roman measurements designed to

produce a ditch 30 feet wide and 10 feet deep. The following additional examples should make this clear.

As early as 1807 John Lingard had noted, to the W of Portgate, that 'The ditch is cut through the rock. Its north side slants; the south is perpendicular' (Bosanquet 1929, 146). To the W of Birdoswald, Haverfield (1897, 187–8; 1898, 351) looked at the Ditch of the Turf Wall, finding it to be a 'blunted V'. In 1931 Brewis and Birley 'cut sections across the ditch in the Wall-miles 23/24, 31/32 and 36/37, finding that there was marked variation in the angles of the sides, which in every case seemed to have been cut as steep as the subsoil conditions permitted' (Birley 1961, 79). Unfortunately the results were never published. Under the E and the W gates of the fort at Halton Chesters the two sections across the Ditch (whilst broadly symmetrical) were dissimilar and it is hard to draw conclusions from them (Simpson and Richmond 1937, 155, 159). Over twenty years later, rescue excavations at Bay's Leap, Heddon on the Wall, by George Jobey (1958), and at Longbyre near Greenhead, by Peter Salway (1959), found that in each of these locations the northern scarp of the Ditch was steeper than the southern one – something that Brewis had apparently also observed in those unpublished excavations in 1931 (Jobey 1958, 55). At Longbyre the bottom of the Ditch was flat and nearly 3m across. More recently, a section was cut at Matfen where the intact and buried profile of the Ditch was found to be U-shaped (*Britannia* 32 (2001), 328), whilst at Black Carts the Ditch was only 3.5 m wide and 0.8 m deep – quite a contrast to the enormous effort expended on the Ditch at the top of the same hill at Limestone Corner (Wilmott, *in* Bidwell 1999, 121).

On the Antonine Wall the Ditch has received more diligent attention. Both the Glacis and the Counterscarp Bank (fig. 3) are present although, again, they are not distinguished in the nomenclature: both are lumped together, rather unhelpfully, under the label of the Outer Mound. Where the Wall was carried along the crest of the crags (e.g. at Croy Hill) the Ditch was dug along their foot. This has given archaeologists the impression that the Antonine engineers were more assiduous than their predecessors had been on Hadrian's Wall in creating a continuous outer barrier. Recent excavations, however, have postulated that the Ditch of the Antonine Wall was not fully dug out in some instances. At the site known as Brewers Fayre, in Falkirk (Dunwell *et al.* 2002, 260), it was suggested that the apparent absence of the Ditch may have been because, at this point, the line of the Wall was low-lying and very poorly drained. Similarly, perhaps, no trace of the Ditch was found at Shirva where the line of the Wall crosses the Board Burn (*ibid*. 271–4). Elsewhere, careful excavation and assessment have illuminated the sequence of work. In Callendar Park the Ditch and the Rampart were constructed together, as a single phase. The upper levels of the Ditch were removed (paralleling the removal of the overburden that is evident on Hadrian's Wall) and were used in the make-up of the Rampart; the material from the lower levels was spread out on the counterscarp (Bailey 1995, 586–7). At Tentfield Plantation the excavator found that the northern limit of the Glacis had been carefully determined by a small marker bank before the spoil was deposited (Robertson 1964, 194). Such care must also have been necessary on Hadrian's Wall where comparatively little of the material from the Ditch would have been used in the construction of the curtain, and where the amount of spoil available for the Counterscarp Bank or for the Glacis must have been considerable. (An exception to this general picture may have been the stretch between Portgate and Heavenfield where the Ditch was cut into relatively soft sandstone, shale and limestone, much of which could have been used for facing stones or for the core of the Wall itself.)

The surface of the Glacis varies considerably on Hadrian's Wall, leading to suggestions that in some stretches it may have been left unfinished. This must be the subject of a separate study but it is worth noting here that in a few instances on each Wall a later track has developed along the line of the Glacis – e.g. in Falkirk within Callendar Park (Bailey 1995,

591) and at Mary Street, Laurieston (Dunwell *et al.* 2002, 260), and also to the W of the farmhouse at Hotbank on Hadrian's Wall. The likelihood of this happening would have been greatly increased if the Glacis in these areas was well smoothed by the Roman army rather than left uneven in the way graphically described by Hodgson (1840, 276) to the W of Portgate.

CONCLUSIONS

The profile of the Ditch, and its very existence, was determined – on both the Hadrianic and the Antonine frontier – by the local topography and the subsoil, factors that also fundamentally affected the choice that was deliberately made between the construction of a Glacis or a Counterscarp Bank. The choice between these alternatives was summed up in the *Inventory* of Stirlingshire: 'The upcast from the ditch was deposited on its northern margin and was either spread out to avoid giving cover when the ground is flat, or was heaped up in a ridge to form a counterscarp bank when the ground level at the N side of the ditch is by nature lower than that at the S' (RCAHMS 1963, 93).

It is suggested that the distinction in nomenclature between the Glacis and the Counterscarp Bank is a useful one; it should be adopted, for these differences may be additional factors in assisting us to identify and to understand further the varying approaches that were taken to the construction of Hadrian's Wall. Variation was clearly acceptable. Within the grand design of Ditch, Wall, Milecastles, Turrets, Forts, Military Way, and Vallum, the Roman engineers were allowed to be pragmatic, especially in the ways that the details of their structures were adapted as a response to the topography. Local decision-making was the order of the day, both in the execution of the initial plans and in their subsequent modifications. This appears to have been true in relation to the removal of the causeways that had been left across the Ditch of the Wall at each Milecastle in the first phases of the work (Welfare 2000, 19), just as it was in the more familiar differences in the design of Milecastle gateways. The RCHME survey of Hadrian's Wall suggested that the Military Way also varied considerably, being at some points reduced in the steeper gradients of the Central Sector to no more than a packhorse track (Bowden *in* Bidwell 1999, 137–9). It may be that every component of the Wall varied in some such way; these variations are more likely to have been demanded in the Central Sector, where subsequent land-use has also assisted their differential survival.

This pragmatism was, essentially, a practical response. In the gaps between the crags of the Whin Sill there could be no smooth elision with the precipitous slopes without the extension of single scarps beyond the butt-ends of the Ditch, as in the instances described briefly in this paper may serve to show. These were, in a sense, small enhancements of the crags themselves. Is this what Horsley was referring to when he wrote that Hadrian's Wall '. . .runs along the very brink of the precipices, which in some places seem to have been made steeper by art, in order to make them more inaccessible . . .' (1732, 146)?

In the original design it seems that an attempt was conscientiously made (especially within the Central Sector) to address any potential point of weakness but the precise method chosen varied from place to place.

The function of the Ditch seems to have been simply to act as a check to any hostile advance, rather than to be an insuperable barrier of the kind that the sheer northern face of the stone curtain attempted to provide. The lack of uniformity – even the absence of the Ditch in such areas as Allolee – does highlight the question of whether the Ditch was considered to be an *essential* component in the defence of the Wall. Clearly it was thought to be desirable for a prodigious effort was expended on it. If it was provided early in the sequence of construction some of the benefit may have been immediate for the troops would have felt themselves to be most exposed during these initial phases. Nevertheless the provision of the Ditch may have been a habitual reaction (albeit on a vast scale) rather than a continuing and irreducible

necessity. There may have been other methods of increasing a feeling of security – e.g. the four rows of branches (*Britannia* 33 (2002), 293–4) that are thought to have been provided as an obstacle on the Berm on the S side of the Shields Road in Byker. (This would have been especially important at night. During the day anyone approaching the Wall would have had the sun in their eyes and would thus have been immediately at a disadvantage.)

The minimal provision of the Ditch (e.g. on the western flank of Peel Gap), or its absence (on Cockmount Hill and Allolee Rigg), pose particular problems. During the fervent programme of construction the Wall may have been defended in differing degrees of intensity, according to the perception of local variations in the level of threat. Allolee may have been considered remote and a comparatively low risk area, even then. It seems more plausible, however, to envisage that the Roman army may have made provisions for strengthening the defences in ways that may not be readily appreciable in archaeology. Where the Ditch could not be provided (and there was neither crag nor river), the sheer face of the Wall had to be sufficient defence; it may not be unreasonable to speculate that – in these particular sections – the Wall might have been built higher. Why is it tacitly assumed that the Wall was of a uniform height (still unknown), when it appears that pragmatism and choice overcame uniformity in so many of the other components of the frontier?

The provision of the Ditch makes it clear that defence was one of the primary considerations in the minds of those planning the Wall. Its existence made the frontier more of an obstacle and thus more effective as an instrument of control. Defence and control are not mutually exclusive in this context. The design – comprising two of the basic components of standard castrametation: a rampart and a ditch – stems from a background of military practice in which defence (even for troops on the move) was *always* a consideration (*cf* Welfare and Swan 1995, 6–21). There must have been an initial assumption that the barbarians to the N (and some to the S also) were hostile – hardly surprising in the face of a major and divisive initiative by an occupying army, even after forty years. This assumption may have played more heavily with the imperial hierarchy in Rome than with the commanders on the ground for, despite the historical references to unrest, there appears to be no real evidence in our knowledge of contemporary settlement that the inhabitants were particularly bellicose. Thus the closing of the Milecastle gates, revealed as archaeological evidence, may not have been a further strengthening of the defences in response to civil disorder so much as an unwillingness (by an army that preferred to be mobile) to commit too many resources to a static linear garrison.

Certainly in nearly three centuries of military occupation no one considered that the Ditch had to be completed to a uniform pattern. It may be that after the initial phase of the frontier, the Ditch became more of a symbolic and psychological barrier than an actual one: worth keeping but not worth constructing anew. The debate about the function of the Wall in its wider contemporary context (*cf* Breeze 2003) should not seek black and white answers when the situation – beyond the conception of the initial blueprint – was never so clear-cut. We should expect variation in the execution of the grand plan, and we should not be surprised by some of the contradictions that will inevitably have emerged over so long a period of occupation.

In any age the excavation of a ditch of this size is a significant undertaking; the fact that the Roman army had the confidence, and the resources, to embark on the digging of this one for a length of 80 miles is just staggering. Such an entity (arguably worthy of World Heritage Site status in its own right) deserves more attention. The words of Eric Birley (1961, 80), over forty years ago, about the Ditch of the Wall still hold true: '. . . many more sections ought to be taken across it, and accurate measurements taken of its berm and counterscarp, before we can be satisfied with our knowledge of the most northerly element in the anatomy of the Wall.'

ACKNOWLEDGEMENTS

The plan of the RCHME survey of the landscape of Housesteads was drawn by Iain Sainsbury; the extract was prepared for the press by Philip Sinton. Figure 3 was drawn for publication by Mark Hoyle. I am grateful to David Breeze for his comments on the text.

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