

VIII.—THE SPACING OF THE FORTS ON HADRIAN'S WALL

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The following abbreviations are employed:

AA⁴=*Archaeologia Aeliana*, 4th series.

CIL=*Corpus Inscriptionum Latinarum*.

CW^{1, 2}=*Cumberland & Westmorland Transactions O.S.*, N.S.

HB=*Handbook to the Roman Wall*, 10th edition (1947).

JRS=*Journal of Roman Studies*.

NCH=*Northumberland County History*.

PSAN^{3, 4}=This society's *Proceedings*, 3rd, 4th series.

PSAScot=*Proceedings of the Society of Antiquaries of Scotland*.

The writers wish to thank Mr. Eric Birley and Mr. J. P. Gillam for their unfailing help and encouragement in the preparation of this study; Professor I. A. Richmond has also read it in draft and has contributed a number of valuable suggestions, which have been taken into account in the final version here printed. The text is given substantially as it was read to the Society in May, but reference has been made in one or two footnotes to results obtained by excavations, conducted by the first-named writer, in September, 1950.

I.—*The forts on Hadrian's Wall and the Antonine Wall.*

In comparing Hadrian's Wall with the Antonine Wall in Scotland, the dissimilarity in the spacing of the forts is immediately apparent. If the Antonine Wall had nineteen forts along its forty miles, as Sir George Macdonald concluded,¹ a simple calculation will show that the forts should

¹ *Roman Wall in Scotland*, 2nd edition (1934).

occur at an average distance of two and one-tenth miles or approximately every 3,700 yards. In fact the distance from Castlecary to Westerwood is 3,047 yards, Westerwood to Croy Hill 3,203, to Bar Hill 3,070, to Auchendarry 3,152, and from Cadder to Balmuildy 4,075, to New Kilpatrick 4,832, to Castle Hill 2,610, to Duntocher 3,365, and to Old Kilpatrick 4,125 yards; in this stretch are seen the greatest and the least distances between any two known forts along the Antonine Wall. A similar calculation for Hadrian's Wall (for which the *Notitia Dignitatum*, the Rudge Cup and surviving structures give a total of seventeen forts for a distance of eighty Roman miles) shows that the average interval should be five Roman miles; but Stanwix is as much as nine Roman miles from Castlesteads, and Carvoran is no more than three miles from Greatchesters on the east and Birdoswald on the west. There is thus great variation in the spacing of forts on Hadrian's Wall.

A suggestion made by Professor Richmond,² that there are two distinct series of forts in relation to the Vallum, makes it desirable to examine the course of the Vallum in this connection.

II.—*The Vallum.*

As the Vallum has not been traced further east than milecastle 5,³ there is no evidence for its behaviour at Newcastle (in any case, it did not extend as far east as Wallsend), so that the survey must start with Benwell.⁴ At this fort the Vallum makes an asymmetrical diversion to the south, in order to avoid the site of the fort, and leaves an original causeway of undisturbed boulder-clay, revetted with stone, opposite the south gate of the fort. There is no diversion at Rudchester,⁵ because the Vallum runs well to the south of the fort, but there is a diversion at Halton;⁶ and at Chesters, where the Vallum is visible on the west side of the fort running on a line which would coincide with the

² HB p. 20. ³ HB p. 47. ⁴ AA⁴ xi, 177. ⁵ CW¹ xv, 178. ⁶ NCH x, 468.

latter's south ditch, another diversion seems likely.⁷ No attempt has been made to find an original causeway at any of these three forts. At Carrawburgh excavation has shown⁸ that the Vallum was obliterated to allow the building of the fort. Housesteads is like Rudchester, except that an original causeway across the Vallum there has been found by excavation.⁹ Chesterholm is really a Stanegate fort, lying a mile south of the Wall, though it is included in the *Notitia* as a fort *per lineam valli*; from structural, ceramic and epigraphic evidence it is clear that it was abandoned when Hadrian's Wall was built, and not re-occupied until c. 163, so that it may be left out of account in the present discussion.¹⁰ At Greatchesters, as at Rudchester and Housesteads, the Vallum runs well to the south of the fort; there are visible traces of a causeway, but it is not known whether it is an original one or if, in that case, it went with the fort or with the milecastle which preceded it.¹¹ Carvoran is like Chesterholm, technically a Stanegate fort, but is deliberately cut off from the Wall zone by a northerly diversion of the Vallum, as though avoiding an earlier structure on a different alignment: this diversion, however, may simply be to avoid a bog.¹² At Birdoswald it is now clear that the fort was built first, and that the Vallum was squeezed through the gap between the fort and the escarpment, with no north mound, a double-sized south mound and an original causeway opposite the south gate of the fort.¹³ Although the fort at Castlesteads lies some 300 yards south of the Wall, the Vallum sweeps round at a distance of 90 yards, as though deliberately including a fort within the Wall zone.¹⁴ Although diversions have not been proved

⁷ Cf. PSAN³ ii, 284.

⁸ Durham University Journal, xxix, 97; JRS xxv, 203.

⁹ AA⁴ ix, 225; xi, 188.

¹⁰ Cf. HB p. 136.

¹¹ Cf. HB p. 150. Excavations in September 1950 have proved that this causeway is a stone-revetted one, like those at Benwell, Housesteads and Birdoswald, to be associated therefore with the fort and not with the milecastle.

¹² Cf. Horsley, *Britannia Romana* (1732), p. 151.

¹³ HB p. 173 and plan at p. 169. ¹⁴ CW¹ xv, 254; CW² ii, 385 and iii, 339.

at Stanwix¹⁵ or Burgh-by-Sands,¹⁶ the known course of the Vallum in those sectors makes it probable that they occurred; original causeways, too, are likely but have not yet been found. The relation of Drumburgh¹⁷ to the Vallum is unknown, and it is not known what happens to the Vallum when it approaches Bowness.¹⁸

III.—Classification of the forts.

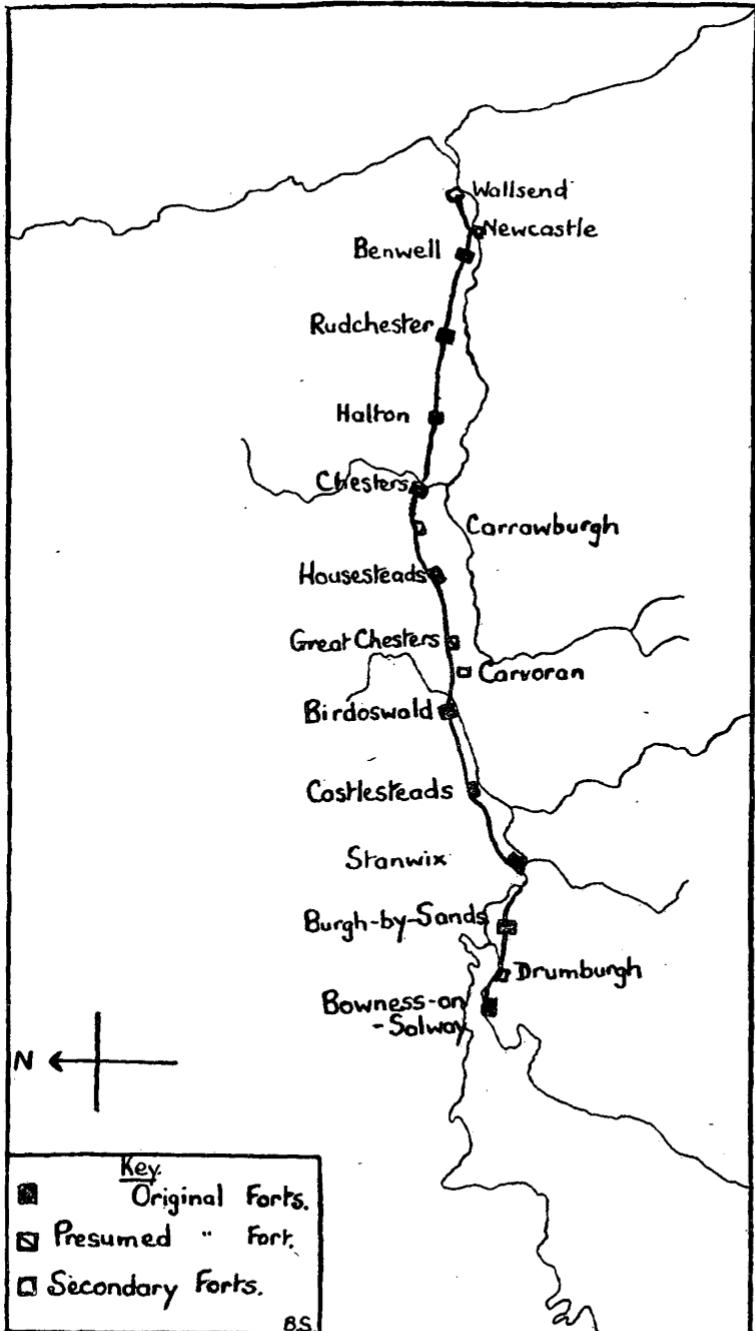
It is now clear that if the Vallum turns to avoid a particular site, that is *prima facie* evidence that the planning, if not the building, of a fort on that site took place before the construction of the Vallum; the converse is true where the Vallum runs underneath a fort. The forts can now be classified into earlier, uncertain and later than the Vallum, as follows:

TABLE I.

Fort	Vallum deviation	Original causeway	Relationship
Wallsend	No	Unnecessary	Later?
Newcastle	Unknown	Unknown	Unknown
Benwell	Yes	Yes	Earlier
Rudchester	No	Likely	Presumably earlier
Halton	Yes	Likely	Earlier
Chesters	Presumed	Likely	Presumably earlier
Carrawburgh	No	No	Later
Housteads	No	Yes	Earlier
Chesterholm	No	No	Later
Greatchesters	No	Yes ¹⁹	Unknown ¹⁹
Carvoran	Yes, to north	Perhaps?	Later
Birdoswald	Yes	Yes	Earlier
Castlesteads	Yes	Likely	Earlier
Stanwix	Presumed	Likely	Presumably earlier
Burgh-by-Sands	Presumed	Likely	Presumably earlier
Drumburgh	Unlikely	Unlikely	Later?
Bowness	Unlikely	Perhaps?	Presumably earlier

¹⁵ HB p. 200.¹⁶ HB p. 205.¹⁷ HB p. 207.¹⁸ HB p. 209.

¹⁹ Excavations in September 1950 confirmed the existence of an original causeway; for the relationship of the fort *as built* to the Vallum see below.



SKETCH PLAN OF FORTS ON HADRIAN'S WALL.

Five of the forts are earlier than the Vallum, five may be earlier, three are later and the remaining four are uncertain. If the ten forts which are earlier or presumed earlier than the Vallum were planned under a single scheme, there might be some regularity in their spacing. Working from east to west, the spacing of forts is in fact as follows:

TABLE II.

<i>From</i>	<i>to</i>	<i>Wall miles</i>
Benwell	Rudchester	$7\frac{1}{3}$
Rudchester	Halton	$7\frac{2}{3}$
Halton	Chesters	6
Chesters	Housesteads	$9\frac{1}{3}$
Housesteads	Birdoswald	$12\frac{2}{3}$
Birdoswald	Castlesteads	$7\frac{2}{3}$
Castlesteads	Stanwix	$8\frac{2}{3}$
Stanwix	Burgh-by-Sands	6
Burgh-by-sands	Bowness	$8\frac{1}{3}$

Except for the rather large interval of $12\frac{2}{3}$ Wall miles in the centre, it is apparent that the "normal" distance between forts is roughly eight miles. Next, if the ten forts are divided into two groups of five, each group is spaced over a comparable Wall mileage:

Benwell (near turret 6a) to Housesteads (turret 36b)= $30\frac{1}{3}$ Wall miles.
 Bowness (near m/c 80) to Birdoswald (turret 49a)= $30\frac{2}{3}$ Wall miles.

The gap of $12\frac{2}{3}$ Wall miles in the centre must be taken into account, and it can be conveniently split into two exactly equal parts by the fort at Greatchesters, which is situated over the site of milecastle 43. This fort, it should be noted, lies $36\frac{2}{3}$ Wall miles from Benwell on the east, and 37 from Bowness on the west. On this spacing evidence it seems reasonable to suppose that the fort, hitherto assumed to have been a late edition, was planned in the original

scheme for the construction of forts: yet the building-record of the stone fort at Greatchesters cannot be earlier than A.D. 128,²⁰ in its present form the fort is considerably smaller than the other original ones, and moreover it is of one build with the Narrow Wall,²¹ which is secondary. Thus, while the *prima facie* evidence suggests that this is a secondary fort, on the spacing evidence Greatchesters should be placed in the original fort scheme. The explanation, we suggest, is that a large fort at Greatchesters was planned, but that its construction was delayed for a time, and when the time for construction did arrive, it was no longer thought necessary to have a large fort there; perhaps this fort was given a lower priority because the Stanegate fort at Carvoran (the existence of which at this time is generally assumed) could adequately perform its function for the time being. Then, when the builders of the Narrow Wall were well on their way, it was decided to construct a smaller fort at Greatchesters, and another fort of similar size at Carrawburgh, each to hold 500 infantry, in place of the planned 1,000 infantry at the former place.²²

Another fact reinforces the argument that Greatchesters was originally planned as a large fort. There are four ditches at its west side, which are earlier than the Narrow Wall and earlier than the existing fort, which is bonded in with the Narrow Wall.²³ Similar ditches have not yet been sought on the east or south sides of the fort,²⁴ but it would not be surprising if excavation were to reveal that the outer ditch at least encloses a space of five acres or more, suffi-

²⁰ CIL vii, 730, from the site of its *porta praetoria*, credits Hadrian with the title *p(ater) p(atriae)*, only accepted by him in that year.

²¹ AA⁴ ii, 197.

²² A fragmentary inscription from Carrawburgh, assignable to the governorship of Sex. Iulius Severus (CIL vii, 620a, cf. JRS xxxiv, 87-88), may thus be dated c. 130-132, two or three years later than the earliest possible date for the Greatchesters text.

²³ AA⁴ ii, 197.

²⁴ Excavations in September 1950 showed that there were at least two ditches on the east side; but the weather prevented a complete examination of the ditch-system, and more work will be needed before the suggestion here put forward can be confirmed.

cient to contain a large fort of the Housesteads type. Excavation in September 1950 has proved the existence of an original fort causeway of the Benwell type across the Vallum south of the fort.

Wallsend was not in the original scheme.²⁵ It is at this point that the narrow wall complicates the picture. Its exact relationship to the Vallum is uncertain, but it seems certain that the Vallum was at least begun before the change to the narrow wall took place. Although it may be argued that Wallsend was planned as part of the original fort scheme but that its construction was delayed until the change had been made to the narrow wall gauge (as was the case with Greatchesters), it seems unlikely that this was so; for Wallsend was a small fort, of one build with the narrow wall, and the Vallum does not extend further east than Newcastle: and these are sufficiently strong reasons for supposing that Wallsend fort was not part of the original fort scheme, but was a secondary addition to that scheme.

IV.—The placing of the forts.

Working, then, from the assumption that there were eleven forts originally planned, for the distance of 76 miles of Wall from Hadrian's Bridge at Newcastle upon Tyne to Bowness-on-Solway, and assuming the possibility that forts were originally intended to be placed at either end of the Wall (as was the case at Bowness), there are ten "fort intervals" for 76 miles, giving approximately $7\frac{2}{3}$ Wall miles for the normal interval between adjacent forts. More precisely, 76 Wall miles would allow eight intervals of $7\frac{2}{3}$ and two of $7\frac{1}{3}$ Wall miles.

The spacing of the forts²⁶ may give a valuable clue to the order in which they were planned, at least, if not the order of their construction—whether it was from east to west, from west to east or both at the same time. Beginning from

²⁵ HB p. 41.

²⁶ See map at end of HB; MacLauchlan's *Survey of the Roman Wall*; O.S. maps, especially the 25 in. series.

the west coast, Bowness is where it is expected, replacing milecastle 80, thus being the western terminal fort of the Wall. Burgh-by-Sands should be $7\frac{2}{3}$ miles further east, that is, replacing turret 72a; but in fact it seems to replace turret 71b (though it must be pointed out that the milecastles and turrets of the western sector of the Wall have not yet all been identified). There seem to be two possible explanations of this peculiarity:

- (a) The fort was placed further east in order to guard the northern approach, by the eastern edge of Burgh Marsh (which, though invaluable for obstructing raiders, would be an obstacle for the cavalry garrison of the fort).
- (b) The river Eden once flowed further south, where Burgh Marsh now is, so that the fort could not be placed in the planned position.

Stanwix should be situated over turret 64b; but in fact it has been moved a mile westwards, to guard the crossing of the river Eden, occupying the site of turret 65b. Castlesteads ought to be over milecastle 57; it is indeed very close to that milecastle, but it has been placed on the summit of a steep declivity above the Cambeck, some hundred yards south of the Wall: the advantage of such a situation needs no comment. Birdoswald fort is in its calculated position, overlying turret 49a;²⁷ it occupies a wonderful site, high on a summit above the Irthing escarpment. Greatchesters, the centre fort, should have been over milecastle 42, which is equidistant from Hadrian's Bridge on the east and Bowness on the west, and is $7\frac{1}{3}$ miles from Birdoswald; but in fact it overlies milecastle 43,²⁸ which is almost equidistant from Benwell and Bowness.

²⁷ PSAN⁴ x, 274.

²⁸ JRS xxx, 161, 163-164. The difference of $\frac{1}{3}$ mile is accounted for by the fact that an interval of $7\frac{2}{3}$ miles in each case would produce a total of $76\frac{2}{3}$ miles, whereas the Wall is only 76 miles from Hadrian's Bridge to Bowness; $\frac{2}{3}$ of a mile have to be omitted, and it seems that the Romans intended to effect this by making the two central intervals each $7\frac{1}{3}$ instead of $7\frac{2}{3}$ miles.

There are two possible explanations of the peculiarities in the spacing of the forts in the eastern half of the Wall:

Theory A:

The Wall began at Hadrian's Bridge. The extension to Wallsend had not yet been contemplated. Why, then, was Benwell (the eastern terminal fort at this stage) not placed closer to the bridge? It can only be suggested that the bridge was thought to be sufficiently guarded by the garrison of milecastle 4, then the first milecastle on the Wall; and the first fort, instead of standing in the hollow to guard the bridge, was built on the crest of the hill, with a commanding all-round view, but still within easy reach of the bridge, $2\frac{1}{3}$ Roman miles to the west, a little west of turret 6a.

It seems that, in view of the first fort having been built further west than Hadrian's Bridge, the interval between the forts in this eastern sector was reduced from $7\frac{2}{3}$ to $7\frac{1}{3}$ Wall miles, so that the fort builders working from east to west should not upset the spacing of those working from west to east. They were to meet, it may be presumed, half-way along the Wall, that is at milecastle 42, where the central fort was to be placed. Rudchester, therefore, occupies its correct position, some $7\frac{1}{3}$ miles from Benwell, presumably overlying turret 13b. Halton should cover milecastle 21, but in fact it lies slightly west of turret 21a, $7\frac{2}{3}$ miles from Rudchester; if an explanation of the interval is required, it may well be that it was to avoid having to place a fort on the awkward slope of Down Hill, where milecastle 21 stood. Chesters, the next fort, should be situated over turret 28a, but in fact it overlies turret 27a.²⁹ The reason for this is obvious: the fort was moved a mile east of its planned position, so as to guard the crossing of North Tyne—and to obtain the ample water-supply necessary for a cavalry garrison. (By contrast, when we consider the trouble and expense entailed by bringing an adequate water-supply

²⁹ PSAN⁴ x, 274; JRS xxxvi, 134.

to the cavalry fort at Benwell, it is clear that there must have been a compelling reason for placing it there and not at the bridgehead: the outlook and the strength of the hill-top site were held to compensate for the increased cost of water-supply.)

Housesteads fort should replace turret 35b, but in fact it overlies turret 36b.³⁰ Here, too, the reason can easily be found in the lie of the ground: the ridge on which the fort stands is obviously more suitable for it than the depression of Busy Gap would have been, and the necessary water-supply could be obtained with little difficulty from the Knag Burn.

Finally we come to Greatchesters, the planned position of which should be over milecastle 43 (that is, 35b plus $7\frac{1}{3}$ Wall miles), and that is where the fort is. In other words, the fort builders working from east to west had encroached one mile on the territory assigned to the group working from west to east: as has been said above, milecastle 42 is in the centre of the Wall, from Hadrian's Bridge to Bowness; but measuring from the initial terminal fort at Benwell (placed further westward than anticipated), milecastle 43 is almost half-way between the two terminal forts (as opposed to the two ends of the Wall itself). The average interval between Benwell and Greatchesters is precisely $7\frac{1}{3}$ miles; and it may be added that milecastle 43 provided an ideal situation for a fort, while it would have been out of the question to fit one into the steep-sided gap where milecastle 42 stands.

Theory B:

Theory A, with its modified $7\frac{1}{3}$ mile interval, does not account for the fact that both Birdoswald and Housesteads are $6\frac{1}{3}$ Wall miles from Greatchesters, and suggests that it was a mere accident; Theory B maintains that this spacing was deliberate, and that the two fort intervals in the centre, which should have been $7\frac{1}{3}$ miles each, were reduced to

³⁰ PSAN⁴ x, 274; HB p. 113.

$6\frac{1}{3}$ miles. The fundamental difference between the two hypotheses is that Theory A assumes that the forts in the eastern sector were planned in the order in which they were built, from east to west; Theory B assumes that the forts were planned from west to east, but built from east to west, and furthermore that Greatchesters was planned to be equidistant from Bowness and Benwell. The two missing miles in the centre (because the intervals have been reduced to $6\frac{1}{3}$ instead of $7\frac{1}{3}$ Wall miles) must on this hypothesis be inserted at the eastern end of the Wall; thus the eastern terminal fort should have been at milecastle 6 instead of at either Hadrian's Bridge or the Benwell site. The fort at Greatchesters is equidistant from Bowness and milecastle 6; Rudchester comes in its correct position, $7\frac{2}{3}$ miles from milecastle 6; Halton also is in its correct position, $7\frac{2}{3}$ miles from Rudchester. Chesters is out of position for the reasons given above, under Theory A. Housesteads is in position, $15\frac{1}{3}$ miles from Halton. In other words, the only misplaced fort, apart from Chesters, is Benwell, which is 620 yards west of its planned position; and when one considers that a fort placed at milecastle 6 would be half-way down the hill, with adequate water no easier to obtain than on the summit, the main reason for moving it 620 yards further west will have been to get the better outlook over the Northumberland plain. Theory B, it will be noted, has one less fort out of planned position than Theory A.

V.—*The garrisoning of the Wall.*

It seems reasonable to expect that there was some logical system in the garrisoning of the eleven original forts which have been dealt with above. It seems certain that Benwell,³¹ Rudchester,³² Halton,³³ Chesters,³⁴ and Burgh-by-Sands³⁵ were designed as cavalry forts, each to accommodate 500 men; these five forts have the same basic features and cover similar areas, and the internal buildings of the three of them

³¹ AA⁴ xix, 1-43; HB p. 50.

³² HB p. 59.

³³ HB p. 68.

³⁴ HB pp. 83, 90.

³⁵ HB p. 205.

which have been examined in detail (Benwell, Halton and Chesters) include cavalry barracks and stables. Stanwix³⁶ was a cavalry fort for 1,000 men (only one unit of that type being known in the Hadrianic Army of Britain); while Housesteads³⁷ is known to have accommodated a milliary cohort. It seems clear that Birdoswald held an infantry garrison from the first, though its plan and its relationship with the Wall suggest that it was at first intended for a cavalry regiment:³⁸ it seems that the projecting forts with six gates can be classed as cavalry forts, and indeed it is difficult to see any other reason for their having side gateways north of the Wall, except to allow a cavalry force to issue rapidly northwards through three main gateways.

There remain Greatchesters, Castlesteads and Bowness to be accounted for. The stone fort at Bowness is big enough to accommodate either a milliary cohort, with two acres to spare, or a quingenary *ala* and the greater part of a quingenary cohort as well. But there is no reason to believe that the existing remains at Bowness belong to the first half of the second century; and even if they do, they are not necessarily Hadrianic. The possibility has been considered, for some time past, that the forts west of the Red Rock Fault were originally of turf, and were later replaced in stone. It is known that that was the case with the Turf Wall in the western sector; and excavation at milecastle 79 in 1949³⁹ showed that the replacement of turf by stone at that point cannot have taken place before the end of Hadrian's reign at earliest. There is thus a strong case for supposing a similar date for the replacement of turf by stone in the forts, and it may be suggested that there was originally a turf fort of about five acres, to accommodate 500 cavalry, at Bowness.

The unusually large fort at Stanwix, too, may be thought likely to overlie an equally large turf fort; but one may wonder whether it did not project north of the Wall, like

³⁶ HB p. 198.

³⁷ HB p. 113.

³⁸ HB p. 172.

³⁹ Report to be published in CW².

the other cavalry forts—unless, as at Bowness, the lie of the ground was thought unsuitable for such a projection.

There is evidence for a turf fort below the existing stone one at Castlesteads, though its size and precise layout have not been established.⁴⁰ The Vallum sweeps round at a distance of 90 yards, and there is therefore enough room between it and the Cambeck to include a large turf fort, presumably of Hadrianic date, capable of accommodating either an *ala* 500 strong or a milliary cohort; and in view of the fort's situation, it seems that the latter is more likely.

Finally, we come to the garrison of Greatchesters. As has been said, the writers would be quite prepared to find that the extraordinary ditch system on the west of this fort was repeated on the east, and that the outermost ditch encloses a space substantially larger than that occupied by the existing fort: in other words, that a larger fort was originally planned here, and its outer ditch dug to mark its position, but that when the fort builders arrived, it had been decided to build two small forts, one of them here and one at Carrawburgh, instead of one big one at Greatchesters. Carvoran, which had plugged the gap for the time being, and had been excluded from the military zone proper by the Vallum, was presumably now abandoned, only to be re-occupied in the closing years of Hadrian's reign.⁴¹ It is suggested, therefore, that Greatchesters was originally planned to house a milliary cohort, but that in the event quingenary cohorts were established there and at Carrawburgh.

To summarize, it looks as though in the original fort scheme there was to be a block of 4,000 infantry in the centre, with a block of 2,000 cavalry on either flank. But this scheme never materialized, as the result of the introduction of a series of modifications. Carrawburgh was added, to plug the gap of nine miles between Chesters and Housesteads; so were Wallsend and Drumburgh. By the end of Hadrian's reign, the Wall system of milecastles and

⁴⁰ CW² xxxiv, 163f.; HB p. 192.

⁴¹ PSAN⁴ ix, 250.

turrets had been continued for 50 miles or more along the Cumberland coast,⁴² with a number of forts spaced more widely than those on the Wall, and it is possible that the fort at South Shields, 4½ miles east of Wallsend, should be regarded as representing an eastward extension of the frontier.⁴³ Outpost forts were constructed at Bewcastle, Netherby and Birrens, but it is not yet known what types of unit they housed under Hadrian.⁴⁴ Carvoran was re-occupied c. A.D. 136, a stone fort for a cohort 500 strong being built there.⁴⁵ One may wonder, on the analogy of Greatchesters and Carrawburgh, whether the rebuilding of Castlesteads in stone was intimately connected with the rehabilitation of Carvoran, two units 500 strong at those two sites replacing one 1,000 strong at the former of them. The importance of Carvoran, guarding the gap between Irthing and South Tyne, can hardly be exaggerated; on the other hand, the reduction in size of garrison at Castlesteads may be connected with the building of the outpost fort at Netherby—or the rebuilding at Castlesteads may have occurred considerably later. But if the replacement of the turf wall by stone did take place late in the reign of Hadrian, as Professor Richmond has suggested, it seems most likely that the stone fort at Castlesteads is Hadrianic also.

To recapitulate: the original design of Hadrian's Wall comprised a stone wall, with milecastles and turrets, from Newcastle to Irthing, and a similar wall in turf from Irthing to Bowness; the Stanegate forts, with fortlets added between them, were at first thought sufficient military backing to the Wall. The first modification was the addition of eleven forts to the Wall itself (and the abandonment of the Stanegate forts), though in fact only ten of the eleven were built to

⁴² HB pp. 212-214.

⁴³ The fort at Newcastle may have been another addition at this stage, but evidence is not yet available.

⁴⁴ Bewcastle: CW² xxxviii, 195-287. Netherby: CIL vii, 961. Birrens: PSAScot lxxii, 275f.

⁴⁵ PSAN⁴ ix, 250.

the intended plan. Very shortly after this came the construction of the Vallum and, at that time or later, the decision was taken to reduce the Wall from ten to eight feet in thickness, and to replace the turf wall by a stone wall from Irthing to the Red Rock Fault. The forts at Wallsend and Drumburgh were added, and there was a rearrangement of garrisons in the Chesters-Greatchester sector. Still later came the reoccupation of Carvoran, most probably the rebuilding in stone of the fort at Castlesteads, and perhaps the replacement of the turf wall by stone wall from the Red Rock Fault westwards to Bowness; and by the end of Hadrian's reign a flourishing outpost system had been established, as well as a strong chain of defence along the Cumberland coast.

The following table summarizes the situation at the end of Hadrian's reign:

Wallsend	500 infantry		
Benwell	500 cavalry		
Rudchester	500 cavalry		
Halton	500 cavalry		
Chesters	500 cavalry		
			}
Carrawburgh	500 infantry		
Housesteads	1000 infantry		
Greatchester	500 infantry		
			}
Carvoran	500 infantry		
Birdoswald	1000 infantry		
Castlesteads	500 infantry		
			}
Stanwix	1000 cavalry		
Burgh-by-Sands	500 cavalry		
Drumburgh and Bowness	500 cavalry?		
	and 500 infantry?		}

Note: The writers assume that Drumburgh fort, too small to house a complete cohort, was occupied by part of one unit, the remainder of which shared Bowness fort with a complete unit.

In addition there were the outpost units at Birrens, Netherby and Bewcastle, and the garrisons of the forts on the Cumberland coast. The numerous additions to the original series show that the Romans had realized the shortcomings of their first scheme, and demonstrate increasing pressure on the frontier, which had to be met by increasing its garrison; the radical change in frontier policy effected by Pius becomes easier to understand in the light of this continual modification of the Hadrianic scheme.

Appendix I: The governors of Britain and Hadrian's Wall

It is reasonably certain that there were at least four Hadrianic governors concerned with the Wall:

1. A. Platorius Nepos, A.D. 122-c. 126.
2. The unidentified governor of the Bewcastle inscription, CIL vii, 978, c. A.D. 126-130.
3. Sex. Iulius Severus, c. A.D. 130-133.
4. P. Mummius Sisenna, attested A.D. 135.

It seems reasonable to suppose that some at least of the modifications which have been considered were due to the different policies of successive governors; tentative allocation of specific parts to individual governors is here made:

1. *A. Platorius Nepos.*
(a) Building of broad wall, milecastles and turrets. Wall ditch. Turf wall and its structures.
(b) Decision to build eleven forts on the Wall, and commencement of at least ten of them.
2. *Unidentified governor.*
(a) Addition of Vallum.
(b) Change from broad to narrow wall.
(c) Reduction in size of Greatchester, and decision to build Carrawburgh.
(d) Extension of Wall to Wallsend and construction of Wallsend fort.
(e) Replacement of turf by stone from Irthing to Red Rock Fault.
(f) Addition of Drumburgh fort.
(g) Commencement of outpost system (CIL vii, 978).
(h) Commencement of Cumberland coastal system.

3. *Sex. Iulius Severus.*

- (a) Construction of Carrawburgh.
- (b) Continuation of outpost system and Cumberland coastal defences.

4. *P. Mummius Sisenna.*

- (a) Rebuilding of Carvoran fort in stone.
- (b) Rebuilding of Castlesteads and Wall forts further west in stone.
- (c) Rebuilding the Wall in stone from the Red Rock Fault westwards.

Appendix II: The spacing of forts on the Stanegate

The spacing of forts on the Stanegate may be worth noting. The writers assume the existence of a cohort-fort, not yet identified, at Newbrough, and leave out of account the fortlets (such as Haltwhistle Burn and Throp). The distance by the Stanegate from Corbridge to Carlisle amounts to 41 Roman miles, and with five intervening forts one gets six fort-intervals, the average interval being just under seven Roman miles; the following table shows that the actual intervals are in fact fairly close to the average:

<i>From</i>	<i>To</i>	<i>Roman miles</i>
Carlisle	Old Church	8½
Old Church	Nether Denton	6½
Nether Denton	Carvoran	5½
Carvoran	Chesterholm	7
Chesterholm	Newbrough	7
Newbrough	Corbridge	7

Mr. Birley suggests to the writers that the spacing of forts on the Wall, as originally planned, may have been based on that already found convenient on the Stanegate, but the point is obviously incapable of proof.

