

THE Roman camps at Rey Cross, Crackenthorpe and Plumpton Head, situated at about twelve miles intervals between Stainmore and the River Petteril have been seen as perhaps dating from the first Roman move into Cumbria from Yorkshire. This was possibly under Quintus Petillius Cerialis after the reduction of the Brigantian *oppidum* of Stanwick.¹ But in discussing subsequent developments, Professor Shotter² has struck a note of caution – “It is less clear how far and in which direction Cerialis’s campaigning may have developed from Stanwick”. Two questions arise; a) Are these camps the work of the same force? b) If so, are there similar or related camps elsewhere in northern England? Bearing in mind that only a small proportion of all possible camps can have been found, it is useful to review the evidence they yield in the light of some recent research on Roman camps.

Camp area and occupying force

From the writings of Polybius and Hyginus and the published plans of several Roman camps, the author has outlined a simple paradigm which links a camp’s area to the composition of the forces encamped.³ The imperial army appears to have been specifically organised to facilitate camp layout by being comprised of planning units that conveniently may be called *notional cohorts*; infantry units of 480 men and cavalry units of 240 men. These were divided and amalgamated to give the *cohortes* and *alae* with which we are familiar. A quingenary infantry cohort was one *notional cohort*; an *ala quingenaria* comprised two. The *cohortes equitatae* actually had slightly less than this allowance in camps and a legion appears to have comprised 12 *notional cohorts*. Each *notional cohort* required two *actus quadrati* (*a.q.*) within an *intervallum*, whose width was one eighth of the sq. root of the area it enclosed.⁴ The camp was almost always based upon a regular rectangle whose sides were in a ratio of $n : (n + 1)$; i.e. 2:3, 4:5, 5:6 and so on until a square configuration was reached. This configuration means that the *intervallum* is one tenth of the square root of the area defined at the inner face of the rampart.

This paradigm can be written upon a computer spreadsheet so that the dimensions of camps can be calculated quickly for particular forces, or, by writing the paradigm in reverse order, the number of *notional cohorts* can be estimated in known camps. The relationship between the area within the rampart and *notional cohorts* is virtually one per acre. But because many camps have ramparts deflected to give outlines distorted from the symmetrical rectangle upon which they are based, it is necessary to define the area of the base rectangle, since that is the most significant value.

Rey Cross, Crackenthorpe and Plumpton Head

For the present study, the published plans of Welfare and Swan were used.⁵ Rampart lengths (inner face) were determined from the plan scale and a ruler and set square

used to define the base rectangle which was drawn on the plan. There were bound to be small errors of drafting and measurement.

The actual areas of these camps over the ramparts are 20, 23 and 23.5 acres respectively.⁶ But they have asymmetrical outlines with ramparts so disposed as to make defining their base rectangles and aspect ratios somewhat awkward. All have gates with *tituli*.

Rey Cross is almost, but not quite, square and measures eight *actus* at the inner face of the rampart. None of its four angles is a right angle. The *intervallum* would have been 96 feet (i.e., 1/10th of $\sqrt{64}$, or 0.8 *actus*) enclosing an area of 40 *a.q.* for 20 notional cohorts.

Crackenthorpe is slightly bigger with a right angle at the eastern corner and an eastern side of eight *actus*; but the other sides are disposed to enclose 70.4 *a.q.* This suggests that the base was also an 8 x 8 *actus* square, but distorted for some reason not now clear.

Plumpton Head resembles *Rey Cross* in not having a right angle at any corner and its outline is capable of more than one geometric interpretation. It appears to be based on an 8 x 8 *actus* square (64 *a.q.*) modified to an oblong of 7 x 9 *actus* (63 *a.q.*) but then its northern rampart follows a shallow dog-leg and the eastern rampart bends outwards to take advantage of a marshy area for the northern defence.

There are similar sized camps at Malham (North Yorks.); Chew Green 1 and Fell End (Northumberland); Calverton 1, (Notts.); Walford (Herefords.); Bromfield (Shropshire) and Horstead (Norfolk).⁷ There are thus two clusters; one in the north and the other on the Welsh border, with Calverton in the middle and Horstead on its own in the east. Leaving aside Horstead and the midland camps, the northern group might reasonably be the work of the same force, a legion plus eight notional cohorts of auxiliaries. If the actual areas within the ramparts are ignored and only the base rectangles considered, they appear to be a much more homogeneous set. Their features are shown in Table 1.

TABLE 1.
Features of the base rectangles of six Roman camps.
(R= area at perimeter: A = area within *intervallum* in *a.q.*: T = *tituli*: C = *claviculae*)

<i>Camp</i>	<i>Aspect ratio</i>	<i>acres</i>	<i>R</i>	<i>A</i>	<i>Gate type</i>	<i>Notional cohorts</i>
Rey Cross	11:12	20.0	62.42	40.0	T	20.0
Crackenthorpe	10:11	23.0	70.41	45.0	T	22.5
Plumpton Head	3:4	23.5	64.52	41.1	T	20.5
Malham	6:7	20.0	63.27	40.4	C	20.3
Chew Green 1	1:1	19.0	62.81	40.2	T	20.1
Fell End	2:3	21.5	61.85	39.2	T	19.6
<i>means</i>		21.16	64.2	40.9		20.5
Probable model			64.0	40.0		20.0

Only Malham has *claviculae* (internal). If all these camps were the work of the same force, then it campaigned over much of the north, the Yorkshire dales, the Eden valley and Northumberland, and almost certainly made other, as yet undiscovered, camps.

From a putative reconstruction of the internal partition of space suggested by the gate positions at Rey Cross, Richmond and MacIntyre⁸ estimated the force as a legion plus a vexillation. This estimate, though reasonable at the time, is not consistent with the later work of Grillone whose study of Hyginus led him to conclude a rule of thumb of 480 men per acre.⁹ This is one notional cohort per acre. The likely force at Rey Cross needs reappraisal.

A legion accounted for 12 notional cohorts and legions unaccompanied by auxiliaries would have made camps of about 12 acres.¹⁰ Such camps occur at Wath, North Yorkshire;¹¹ Kirkby Thore 1, Cumbria;¹² and Burnswark South, Dumfriesshire;¹³ perhaps also Ardoch 2, Perthshire¹⁴ and Chew Green 3, Northumberland.¹⁵ Twenty notional cohorts therefore probably represent a legion and eight notional cohorts of auxiliaries. Auxiliary forces attached to a legion tended to comprise, in notional cohort terms, about half cavalry, half infantry.¹⁶ The Rey Cross force might have comprised a legion (12) plus two *alae quingenariae* (4) and four quingenary infantry cohorts; total 20 notional cohorts.

Possibly related camps in Cumbria

The thrust from Stainmore is likely to have been towards the Solway either at Carlisle or the west coast, but no other 20-acre camps have been found in Cumberland. The nearest is Fell End, close to the Wall fort at Carvoran. It is bisected by the *Stanegate* and may be reasonably regarded as pre-dating that road. It could have been made by the Stainmore-Plumpton Head force after it had swept down the Eden valley and was looping back to a base east of the Pennines. This hypothesis would suggest another 20-acre camp near Carlisle. The site at Cummersdale, excavated by the late Professor Barri Jones covered such an area but whether it was a vexillation fort or a temporary camp is not known. Pending the resolution of the matter, there is another possibility.

At Plumpton Head, the force might have split into two. A legion, having 12 notional cohorts probably would have divided into a half comprising the legionary staff, the first cohort, the legionary cavalry (three notional cohorts in total) plus three standard cohorts, giving six altogether; leaving six standard cohorts for the other half. Thus the force at Plumpton Head could have given two groups of 10 notional cohorts, each centred on half a legion and needing a 10-acre camp.

Such a camp is Troutbeck 1, nine miles away at the junction of the Vale of Keswick, Mungrisdale and Matteredale.¹⁷ It was the earliest of the three camps in that area, since it is crossed by the Roman road which bends to avoid camps 2 and 3. It is well placed to command the North Lakes area and covers 10 acres (32.15 *a.q.*) with a 10:11 aspect ratio and internal *claviculae*. The spreadsheet to give the “best fit” of infantry and cavalry¹⁸ suggested eight notional cohorts of infantry (3,840) and two of cavalry (480). This would be exactly half the force at Plumpton Head and could have comprised six notional cohorts of legionaries, two *cohortes quingenariae peditatae* and one *ala quingenaria*.

On this hypothesis, one might expect another 10-acre camp near Carlisle. Moss Side 2, near Brampton, is a possible candidate. It is about 16 miles as the crow flies

from Plumpton. It is called camp 2 for convenience by Welfare and Swan who disclaim that this infers a dating sequence.¹⁹ Thus, the force at Plumpton Head may have planted a flank guard at Troutbeck while the other half of the force swept the lower Eden and Petteril valleys. Such a division of forces in the face of an undefeated enemy would have been unwise, but Professor Shotter has pointed out that Cerialis has the reputation of being a “chancer”.²⁰ On the other hand, the local Britons may have been defeated and scattered before any such division took place. The Troutbeck flank guard may have rejoined its companion group before the full force moved on to Fell End.

Later Roman fieldworks at Troutbeck

The later Troutbeck camp 2 covers 40 acres, exactly twice the size of Rey Cross, Crackenthorpe and Plumpton Head, and is big enough for two legions and 16 notional cohorts of auxiliaries. It predated the road from Old Penrith towards Keswick which continued to Papcastle and Moresby²¹ because this road passed its southern rampart and made a bend at its south-west corner,²² Shortly east of the camp, the road sent a branch to Ambleside, via Matterdale and the Kirkstone Pass.²³ The forts at Ambleside, Hardknott, Moresby and Ravenglass are probably not earlier than the late Flavian period and not later than Hadrian, and the road through Troutbeck was probably contemporary with them. Troutbeck camp 2 must therefore have been made some time between Troutbeck 1 (early Flavian) and the making of the road.

The fort at Troutbeck (3.2 acres), standing between camps 1 and 2, is the right size for a quingenary infantry cohort.²⁴ It was probably made after the camps went out of use during a subsequent phase of the pacification. During the excavation of its western rampart in the 1970s, the author assisted (in a labouring capacity) Miss D. Charlesworth and Mr R. Farrar. A piece of Roman glass found just under the turf over the rampart in an unstratified context was identified by Miss Charlesworth as “early second century”. She did not mention this in her report but it suggests that the fort was in use until at least the Hadrianic period.

Two phases might be discerned; the second comprising two sub-phases of uncertain duration.

Phase One (early Flavian, A.D. 70-75): A campaign possibly starting and ending east of the Pennines by a legion and eight notional cohorts of auxiliaries that made Rey Cross, Crackenthorpe, Plumpton Head, Troutbeck 1, Moss Side 2, Fell End. This force may have also operated in the southern Yorkshire dales and in Northumberland.

Phase Two (late Flavian – Trajanic, A.D. 75-117): A second campaign involving two legions each with eight notional cohorts of auxiliaries, making a camp at Troutbeck 2. After an interval, the road from Old Penrith to Keswick and Moresby was made, with a branch from Troutbeck to Ambleside and Ravenglass, perhaps at the time of the Trajanic fortification of the west coast.

Discussion

Speculations on the dates and purposes of Roman camps are notoriously difficult and

those advanced here are offered lightly, especially in the context of the uncertain chronology of events in the north-west in the late first century. The areas and dimensions of Rey Cross, Crackenthorpe and Plumpton Head support the long-held hypothesis that they were the work of the same force. But it is here suggested that this comprised a legion and eight notional cohorts of auxiliaries. A similar, if not the same, force operated in the southern Yorkshire dales and in north Northumberland, though not necessarily in the same period. Since Rey Cross, Troutbeck 1 and Fell End appear to have predated the Roman roads through them, they all are probably contemporary and early, perhaps about A.D. 70. Similarly, Chew Green camp 1, apparently the first on a site subsequently occupied by other field fortifications, might be equally early. It seems that in the late first century a legion and eight notional auxiliary cohorts was the preferred tactical formation in this part of the country.

Acknowledgements

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Notes and References

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