



Drawing by Mike Baskott from various sources.

**Roman military signalling between forts in East Cornwall:
lines of sight between Nanstallon and Restormel.**

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BODMIN BEACON FROM NANSTALLON FORT

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Roman military signalling between forts in East Cornwall: lines of sight between Nanstallon and Restormel.

Michael Baskott, BA. Lexden, Fore Street, Kingsand, Torpoint PL10 1NB. 01752 823755
michaelbaskott@hotmail.com

The recent unexpected discovery of a Roman fort at Calstock has stimulated new interest in the only previously known forts in Cornwall. Nanstallon, near Bodmin (SX034670), has been known about since at least the early 19th century and was part excavated between 1965 and 1969 (Fox and Ravenhill, 1972) and was thought to have dated between AD 54 to 80.

Restormel (SX10256106) near the Norman castle at Lostwithiel has been known for many years, but had not been fully identified as a Roman fort until recently (HES Report 2007). It is now been tentatively accepted as a complex multi period Roman site occupied from about AD54 into the third or fourth century. (Fig. 1)

SURVEY AND FIELDWORK

Given that these military bases needed to communicate with each other it seems worthwhile to try to establish how this was done assuming that Nanstallon and Restormel were at least occupied jointly for a period of time.

Since Nanstallon and Restormel are not intervisible it follows that at least one intermediate signal station would have been necessary to pass messages between them and in the case of Nanstallon the most obvious site is Bodmin Beacon (SX06056603). Although some field research into this possibility can be made at present day ground level it is obviously better to attempt a simulation of the assumed heights of fort look outs and signal stations. These appear to have been at 10 metres above ground level (Woolliscroft, 2001, p16 and fig.65).

Consequently on October 10th 2009 with the kind permission of Cornwall Council and the generosity of Adam Stanford of Aerial Cam we set up a high resolution camera at a height of 10 metres above ground on Bodmin Beacon. The camera position was at SX 06762 66376 at ground elevation 160 metres. From here the Nanstallon fort site was visible towards the west and there is a clear view south east towards Lanhydrock in the direction of Restormel. A series of photographs were taken at 360 degrees from this position.

The equipment was set up again on the site of the south east angle tower of Nanstallon fort based on fig.7 of the Fox and Ravenhill report; again 360 degree shots were taken.

The same exercise was then carried out from the estimated position, using ground features, of the north east corner of Restormel fort

The Beacon so dominates the surrounding area that it seems to be a good starting point as a possible signal station site. The distance between the Beacon and Nanstallon is 3.4 kilometres. This would be within the range of semaphore signalling using a tower with a swinging arm as described by Vegetius and illustrated on Trajan's Column. Assuming that such a structure once existed the problem then is the onward transmission of signals to Restormel. A straight line between the sites passes across the Lanhydrock Estate, Peter Nicholas has posited a likely area for a signal tower in the environs of Lanhydrock church; I had hoped that that the church tower could be seen given our elevated position on the Beacon, but the nearest visible point to the church is in the woodland at The Belts, SX08596400, (Photo ARC 2935) elevation 122 metres at a distance of 2.98 kilometres. This position is about 600 metres from SX080630 which is the reference which Peter Nicholas gave me as to the rough location of a find site of several Roman Coins. Unfortunately Anna Tyacke of the Portable Antiquities Scheme has no record of this but if further information was forthcoming from some quarter it could be extremely helpful. Whilst there is a clear view for many kilometres in all directions from the Beacon it is not within the remit of this discussion to comment on this mainly because there is no firm evidence of any other Roman site in the area covered.

RESTORMEL

Looking back from Lanhydrock towards the Beacon it is interesting to note that about the upper third of Bodmin Beacon obelisk can be seen through the trees on (Photo ARC 2971 at 6.9 kilometres.

This tree line obscuring the lower portion of the obelisk is Great Wood at (SX089632) 2.55 kilometres away and under a thousand metres from the point near Lanhydrock church mentioned above. Assuming that the Roman Army would have clear felled a line of sight it is likely that they could have seen Bodmin Beacon from Restormel.

With regard to the other features to be seen from Restormel the most striking is the commanding view to the north and south of the River Fowey. Today much of the river and its old bed is obscured to the north and east by trees. Even so at 10 meter height the visible stretch of river runs from SX09086295 just below Brownsqueen Plantation (Photo. ARC 2972) north to below Milltown Wood at SX107577 in the south, a distance of about 5 kilometres.

Another interesting point which also needs more work and is purely hypothetical is the view towards Tregays (Photo.ARC2979) to the South East. There is a reported enclosure at about SX122567 which would fit well into a signal station location. From here there is a view which covers the river from Milltown Wood to Fowey and also a commanding view of the River Lerryn and its junction with the Fowey. The site would need a 10 meter tower as it is some 30 meters below the brow of the hill viewed from Restormel. However a geophysics survey on the location was carried out in July 2009 but there was no trace of an enclosure. I understand that an RAF photograph exists but does not seem to have been traced.

NANSTALLON

Again if proof was needed that this fort was sited to watch the River Camel then the Aerial Cam photos endorse this. (Photo.ARC 2958) is looking west along the river and it is estimated, ignoring tree cover, that one can see to about SX 020679 below Cotton Wood where the small River Ruthern joins the Camel. (Photo.ARC2963) shows a point to the east below Boscarne Wood at SX05146823 a total distance of about four kilometres along the river.

There is a clear view of Bodmin Beacon from all corners of the fort. It may be coincidental but it is nevertheless interesting that the orientation of the fort allows the East Gate to face directly towards the Beacon. The excavation report conjectures a second storey over the gateway which was reached by a ladder (Fox and Ravenhill, 1972, p 68), although I can as yet find no firm evidence as to where in a typical Roman fort signals were received and sent this second storey parapet is a possible candidate.

Again without firm evidence of Roman military installations to the west or north it is futile to discuss from where any other stations might have been sited. However to the south west there is an indication of another route for signals between the forts. This is via Penvivian Down , which it seems is also called Fox Park, (SX 0676163309) and which is five kilometres from Nanstallon (Photo.ARC 2949). Looking back from Restormel the Fox Park position can be seen at a distance of 3.4 kilometres from a field (SX1018161149) to the west of Restormel at about 800 metres from the fort. This proposal would mean two signal stations but need not be ruled out as the suggested position could have been useful for transmitting down the River Fowey to the sea. It should be noted that the above suggestion has not been tested by either photography or field walking, and has been constructed using the Memory Map digital mapping system. As with the other proposals because the Romans could have used these routes and methods it does not follow that they did.

DISCUSSION

It is worth observing that that quite a large corpus of evidence exists that the locations of Roman forts particularly in Frontier regions were made almost entirely on the basis of signalling requirements. For example the position of some of the mile castles on Hadrian's Wall do not make any strategic sense unless considered from the necessity of signalling (Woolliscroft, 2001 p 64ff). In a recent issue of the magazine Current Archaeology, (March 2010 no.240, pp 56-59) John Poulter makes a convincing case that the whole Wall was designed not for the strongest position against attack from the north but to retain good lines of sight to the south.

The role of signalling and good lines of communication should not be underestimated.

ANCIENT SIGNALLING SYSTEMS. *

Fire beacons in certain conditions can be visible in excess of 30 kilometres. Actual locations are difficult to prove archaeologically unless built on a datable platform. These were able to pass simple messages by masking or causing the fire to flare.

Pitch torches singly or several in a row were visible in clear air at well over 10 kilometres. They are known from Classical writings but obviously where they were used simply cannot be proven. Used to synchronise the start of water clocks or to pass prearranged messages by showing a different sequence or pattern of lights.

Signal Stations using semaphore were a more sophisticated method probably developed from the mere waving of flags and other items at ground level. These consisted of a tower typically 10 metres by 9 metres (Webster 1981, p256) up to 10 metres high probably constructed of wood or stone and wood with a roof., The tower would have been enclosed by a single ditch and rampart of some 20 metres diameter. From a parapet beneath the roof a wooden arm about four metres long was attached to a fulcrum. Signals were transmitted by moving the arm vertically through 180 degrees. For use at night a pitch torch was attached to the end of the arm. The maximum range would have been about 5-6 kilometres by day. This could have been increased up to 8 kilometres by night if a stationary light was used behind the moving arm as reference point. The towers in this area were, I suspect, made of wood and were probably used for only a short period of time, evidence for their existence is therefore difficult although geophysics may help.

This list is not exhaustive, it includes only the methods that the writer considers could have been applicable in the area under discussion. For example heliographs have not been included due to the vagaries of English weather, or the more bizarre methods such as carrier pigeons vaguely referred to by one Classical writer.

*All information has been taken from various parts of Woolliscroft, 2001.

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PHOTOGRAPHS (reproduced by kind permission of Aerial Cam).



ARC 2935



ARC2971



ARC2972



ARC2979



ARC2958



ARC2963



ARC2949

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Figure 1

Map showing locations of the sites mentioned in the text.

