

On the Trail of the Legions

Raymond Selkirk



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Watts House
Capel St Mary
Ipswich
Suffolk, IP9 2JB

its cargo: it could discharge into lighters either in a non-tidal basin or in the tidal estuary. The latter would have entailed the ship sitting on the river bed at low tides. A third option was open to the Roman captain; he could move up-river at high tide, over the shoal water and anchor in the deep reach at Hylton, where there was sufficient water to float the ship at all stages of all tides. Evidence points towards this last option.

When the keelmen were engaged in the Picktree-Sunderland coal trade, they relied on the flooding tide to carry them upstream and provide depth for loading at Picktree, which meant that they had to commence their journey as soon after low water as possible. At Hylton Ferry, there was an artificial barrier across the river which impeded their progress. The keels had to be manoeuvred through a gap at the southern end of a solid causeway, through which water poured in a torrent at low tide. The structure was finally dismantled at the insistence of the keelmen, in 1865 (*Proceedings of the Society of Antiquarians of Newcastle upon Tyne*, 1884). The local name for the structure was the “Brigstanes” and it was acknowledged by the antiquarians of the period that it was of Roman origin, but they were at a loss as to its function. Except for the rough gap at the southern end, the surviving remains formed a huge solid barrage across the river, lined up south-west to north-east at 45 degrees to the river flow. At a meeting attended by the Sunderland Antiquarians late in the 19th century (date lost from manuscript), the origin of the structure was discussed at great length. The secretary, Mr Blair, read out a letter from the historian, Mr F Haverfield, and in this letter, Haverfield made the following points: an inscribed lead plate (described in *Archaeological Journal*, XL, 1883) was found at a Roman bridge or causeway over the River Wear, and historians Mr Hodges and Mr Robinson had reported that the structure was not a bridge, but a causeway. After hearing the reading of Mr Haverfield’s letter, another local historian, the Rev W Featherstonhaugh described how he had interviewed some old inhabitants of the area who remembered the structure before and during its removal. These witnesses described it as a causeway of solid stone masonry extending across the river and raised some feet above its bed. It had formed a substantial dam, over which at ebb tide, the water fell in a considerable cascade. A witness of the destruction said that initially, the masonry was broken into between the centre and the northern shore, and the stones were of massive size, of regular shape, and tied with iron cramps bedded in lead. These stones were laid on oaken piles driven into the bed of the river, and on the lower side, and outside the structure stood piles of greater height. There was a good deal of horizontally laid timber with morticed joints between the piles.

The witness had told Rev Featherstonhaugh that he understood the structure to be a Roman causeway to cross the river, and that it had always been known in his lifetime as the “Brigstuns” or “Brigstanes.” The Rev Featherstonhaugh said that this name had caused people to think that this structure had been a Roman bridge, but he went on to point out that Roman bridges were not constructed in this manner - they were never built on level masonry extending across a river; each Roman bridge pier had an independent foundation on the river bed. He came to the conclusion that the structure was a built-ford, a level causeway of solid masonry, possibly

protected on the lower side by a massive open rail or parapet.

The name "Brigstanes" does not necessarily imply a bridge. In County Durham the first railway bridge in the world, built in 1778 survives. It carried an early wooden wagonway over the Beamish Burn. The bridge is called the "Tanfield arch" whereas the solid earthen *embankment* close by which carried the later steam railway across the ravine is called the "Tanfield bridge."

A meeting in Newcastle upon Tyne in 1884 further discussed the Roman structure. Records were read which mentioned that the "Breakstones" were always dry at low water, leaving a steep channel from twelve to fourteen feet wide at the south side, through which the river rushed with great velocity. This gap had been made by keelmen at an earlier date. It is not known if an engineered spillway or channel already existed at this point.

Some of the lead plates connecting the cramps to the stones had curious markings; one circular metal plate out of one stone had Roman letters and figures raised on the margin. The letters were IM.D.AG.....AVG around the margin, and S.C. or S.G. in the body of the plate. Many stones had finely cut decorations of columns, vine leaves, and castellations. Also, the causeway did not lie straight across the river; it ran at an angle north-east to south-west.

An interesting point was raised at the meeting; if the structure was a ford, then it was a dangerous one. A Mr William Maude was drowned in 1753 when trying to ride over it, and Mr Rowland Burdon was so inconvenienced that it gave him the incentive to prospect the new Sunderland bridge. At the close of the meeting, the purpose of the causeway remained a mystery.

It does not seem to have been known to antiquarians of that period that the Romans had dammed a branch of the Rhine, and that they had built barrages for various purposes at many places in their Empire. The Hylton structure certainly wasn't a bridge; if the Romans could build a three-quarter-mile-long bridge with piers 150 ft high, across the Danube, they wouldn't build a causeway over the Wear with three times the amount of stone needed for a bridge. Also rivers were regarded as public property and blocking them to navigation was forbidden under Roman law; therefore any barrage must have been either *to assist* navigation or have had a bypass around it.

The site of the Hylton dam is at NZ 351 570 and lay between the present "Golden Lion" public house on the south bank of the river and the "Shipwrights" on the north. To the west of the Shipwrights inn is a very large old quarry cut into the cliffs. This is probably the source of the massive amount of stone for the Roman causeway.

The position of the barrage defeats the argument that it was a built-up ford. This is the deepest part of the river for miles and, just 250 yards downstream, shallows with only one to three feet of water at low tide, extended to Sunderland.

The usual mention of fish-traps has been made, some unfortunately from people of academic standing. Do they really believe that salmon fishermen of old could afford the equivalent of multi-million pound structures? No doubt the dam *was used* as a fish-trap, as were all other barriers across rivers both natural and man-made. A purpose-built fish-trap usually consisted of a few wooden stakes with wicker baskets between.

Why build a fish-trap at a place where the river was over fourteen feet deep

at low tide, when there were extensive shallows of one to three feet beginning only a few hundred yards away? The fourteenth-century bridge at Newbridge, above Picktree is built in the typical mediaeval manner with its piers standing on a massive sloping ramp which forms an artificial waterfall. This ramp is the present limit of Spring tides. As a small boy, I used to lift fish out of the river at the base of the ramp, and an excellent fish-trap it was and still is, but it was not built for that purpose.

Let us now visualise our Roman ship lying at Hylton in the deep water below the barrage. Originally, a gate may have been installed in the gap at the south end. If this gate were left open, the flooding tide would pour through and at High Spring tides perhaps go over the crest. If the gate were closed at High tide, the river would remain navigable to keel-sized barges all the way to Chester-le-Street, and remain navigable after the tide below the dam ebbed, thus obviating the need to stick to tide times for the run to Picktree. As the moon circles the earth once per month, the tides are fifty minutes later each day and can occur at very unsocial hours. With a barrier turning the whole river upstream into an elongated non-tidal basin, regular daylight navigation routines could have been established by the lightermen.

A single gate in a river barrier is known as a flash-lock and is an ancient device. It was known to the Romans and used on the Tiber and elsewhere. The disadvantage was that when the gate was opened, the river above the barrier drained away quite violently in a "flash-flood" for a while. A barge proceeding upstream could be winched through the gap against this flood and when through the barrier, the gate was closed. The river level above the gated-barrier would then rise and the barge could proceed upstream to the next "flash-lock." Bargemen coming downstream would open the gate and lower the river level before negotiating the aperture but some were tempted to shoot the artificial rapids and many lives were lost. Often, a barrage across a river, known as a dam or weir served the dual purpose of ponding back water for navigation and also providing a head of water for a mill-wheel. There was a conflict of interests between the bargemen and the millers. The lightermen had to transit the barriers and the miller needed to keep a head of water to power his wheel. Many quarrels ensued and in dry weather, bargees often had to wait several days before the miller would agree to open the gate.

If our Roman dam at Hylton had been equipped with two sets of gates, one at the upstream end of the gap and the other at the downstream end, the river above the barrier could have remained at a level equal to permanent high tide and barges could have negotiated the dam without lowering the river level upstream. According to the little information available, it is likely that any such gates would have been of the lifting "guillotine" type. The chamber enclosed by the gates is what is known today as a "pound-lock" and those in modern use are small versions of the massive engineering structures of the Panama canal, described earlier. Lifting gates do not need underground sluices or the controllable apertures of "mitre-gates."

If a barrage across a river is used for navigation, it is usually called a "weir." If impounded water is used to drive a water-mill, the head of water was originally called the "dam" but this now also refers to the masonry structure. The leat which takes water to a mill-wheel is called the head-race, and the

Addendum

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Since the main script of this book was finished, more important information has come to light, hence this addendum.

That Hylton Dam again...

Fairly recently, repairs to the north inner mole at Sunderland Harbour (photo p256) revealed dozens of stones which appear to be reused Roman material and it is highly likely that these very large blocks came from the great Roman dam at Hylton when it was dismantled in 1865 (p210). The stones have wedge-shaped horizontal recesses for iron butterfly-cramps and remains of Roman structures elsewhere have produced similar handiwork. The abutment of the Roman bridge at Risingham is one example. Also, in Glasgow's Hunterian Museum, a stone almost identical to the Sunderland stones is on display to the public. This stone was removed from the remains of a Roman bridge which had spanned the River Kelvin north of the Antonine Wall near Balmuidy.

In the eastern abutment of the Roman bridge at Chollerford (Chesters), similar butterfly-cramp holes can be seen in the pier of the earlier bridge. This pier base has been encapsulated in the later abutment. The stones of this later abutment have not used butterfly-cramps but most have lewis-holes.

Some of the stones at Sunderland also have lewis-holes (p257). Butterfly-cramped stones were found in the Roman bridge at Carlisle and also at Chester-le-Street. The latter were found in the bed of the River Cone when it was cleaned out and cemented in 1930. The findspot of the Cone bridge was in line with the north gate of the Roman fort.

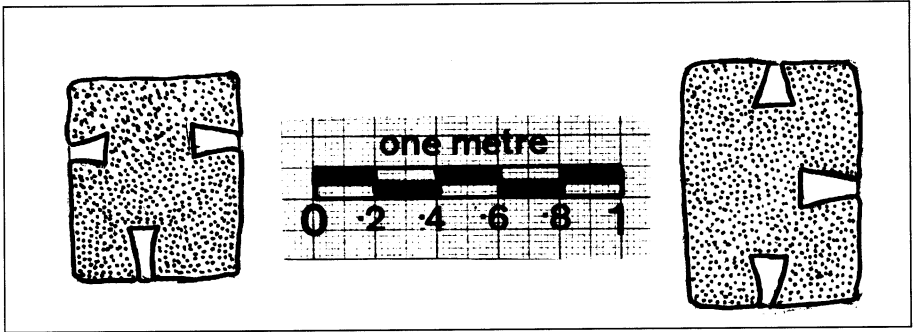
More documentary evidence has also been brought to my attention regarding the Hylton structure. *The Proceedings of the Society of Antiquarians*, 1884, Vol 1, p134, tells us that:

“Mr Lister (shipyard owner) saw hundreds of tons of stone taken out nineteen years ago and hundredweights of lead taken by apprentices during dinner hours. There was an oak frame underneath and he was convinced of a bridge. A lighter loaded with stone sprang a leak, the stone landed on the quay reached a height of ten feet.”

The Sunderland harbour engineer's report of 1881 has also come to light:

“Gentlemen,

I beg to report that a cut of from 90 to 100 feet in width and from 12 to 15 feet in depth below zero level, has now, by means of the dredger Hercules, been completed through the 'Brigg Stones' at Hylton, and the



Stone from Roman Bridge over River Kelvin on display in Hunterian Museum, Glasgow

Sunderland Stone (from Hylton Dam?). Several lying at Roker

result is that the low water of an Ordinary Spring tide has been lowered from the level of a similar tide of 8' 4½" on the Hylton tide gauge in 1870, to 3' 0" on the same gauge in 1881, thus giving a vertical tide gain of 5' 4½" at Hylton. It is satisfactory for me to state that this is the result which I anticipated in 1870 would be accomplished by the dredging of the River when carried up to Hylton. I am not yet in a position to state definitely what the actual amount is of tidal gain at Ordinary Spring tides but I do not consider it to be less than 390,000 cubic yards. The dredger *Hercules* is at present engaged cutting through a sand bank above the Hylton Ferry and on the completion of this cut, I propose that she shall commence to remove the projecting point of rock and sand at Parks Nook.

Your obedient Servant,
(signed) Henry H Wake."

Deeds respecting the Manor of Offerton have also been brought to my notice. These refer to a parcel of land known as the "Damflatt":

"In le Westriding qatuor siloes. In Weststrotheracris septe silioes & vnu heuedland. In Est strotheracris octo siloes. In le damflat qatuor silioes. In le schortflat qatuor siliones & dimid."

In the Westriding, four selions; in Weststrotheracres, seven and one headland; in Eaststrotheracres, eight selions; in the Damflat, four selions; in the Shortflat, four selions and a half

The above tells us that in the "Damflat," there were four selions, (strips of rig & furrow).

A photograph of one of the suspected Roman stones at the mouth of the Wear, appeared in the *Sunderland Echo* on 5.12.94 and further reports were received about several Roman stones lying at Hylton North Farm which is very close to the dam site. These stones turned out to be of the lewis-holed variety.

A geology student at Sunderland University has offered to try to find the quarry which the harbour's reused stones came from, and he will use the information for his degree dissertation.

The curator of a local museum has claimed that the Hylton dam was a

figment of Victorian antiquarians' imaginations. Mr Maude would not have agreed with him as he was drowned in 1753 while trying to cross the river via the structure. Another "expert" claims that the massive stone construction was a mediaeval fish-trap in spite of its Roman inscriptions. The structure could have trapped a fish the size of one of Hitler's U-boats, let alone a salmon. Although all the ramshackle wicker fish-traps are recorded in mediaeval documents, there is a stony silence about a fish-trap at Hylton. The same historian claims that the Wear was not navigable in Roman times due to shoals at the river mouth. What an astonishing comment! Even if the bed of the river dried out completely, the fifteen feet tides sweeping in every 12½ hours could hardly be termed un-navigable. Shoals do not rise and fall with the tide. I noted that "Time Team" on television ITV CH4 on 29,i.95, mentioned that Roman ships came up the shallow Thames on the tide and then dropped anchor in the deep pool which later became the Roman port of London. I am sure that is exactly what happened at Hylton.