

Of locks and weirs...



Weir under repair, 2012

Locks and weirs are an integral part of the management of the Thames. Our weir, in particular, is often seen as a recreational asset, where canoeists can enjoy practicing their white-water skills. It is, in fact, a piece of industrial archaeology with a very long history. We are going to look at the origins of our lock and weir, and how they have evolved over the centuries to their present form.

Most weirs are artificial and began as small dams, designed for excess water to spill over the top, which built up the pressure of the flow to turn a mill-wheel. The Romans introduced water-mills to England and, it seems, this was one innovation which the Saxons did not shun because, by the time of the Domesday book, six thousand of them were recorded.

Marlow had its mill in 1086, but whatever weir was here was not entirely artificial. This is the site of one of the five rapids on the Thames between Reading and London, formed by the end of the chalk ridge on which the High Street stands. Boats would originally have been ported overland round the weirs and rapids on wooden rollers. This was probably how the Vikings sailed a war fleet up to Reading. As trade on the Thames developed portage became impractical and another solution was necessary.

The medieval Thames was very different from the river we know now. It was shallow and very apt to overflow, flooding the water-meadows on either side. This could be useful for agriculture, but was often unhelpful. The Austin priors at Bisham complained that their buildings were constantly flooded and their animals suffered from foot-rot. The area immediately to the west of Marlow was covered by three large meres, known as the Aldermar Lakes. In a land survey of that area dating from 1658, at least ten pools, including these three, are listed. The holding of so much water within the land meant that the flow of the river was much reduced, making the construction of a mill dam very necessary.

The Ware

This name, used for our weir for centuries, probably indicates its ancient beginnings. Rather than being just a dialect word, it is closely related to 'Wehr', the modern German word for 'weir'. If the word is pronounced with an English W it sounds exactly as the title, so is probably Anglo-Saxon in derivation. The length of water to be dammed was daunting, so it is a tribute to medieval



Weir and flash lock, pre 1872

Marlovians that they managed the job so efficiently. Probably, in the Saxon era, the dam only closed part of the space, raising the water level on the northern side sufficiently to turn the mill wheel. Victorian photographs, taken out on the dam,

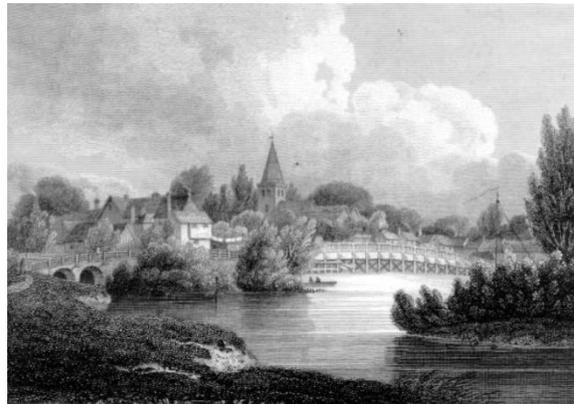


Eel bucks at Harleyford

have recently come to light, giving us considerable insight into how it was constructed. Great blocks of chalk, reinforced below the dam by huge baulks of timber, probably of oak, form the outer skin of a dam at least twelve feet (four metres) wide, which was probably filled with packed soil and flint rubble. At the up-river end was an undammed section, allowing the river to fill the weir pool. Across the top of this was fixed a wooden frame which held a row of eel bucks. These baskets are recorded as being in use

in 1086. The ones in Marlow remained until the early nineteenth century, while the rack at Harleyford still existed in 1900.

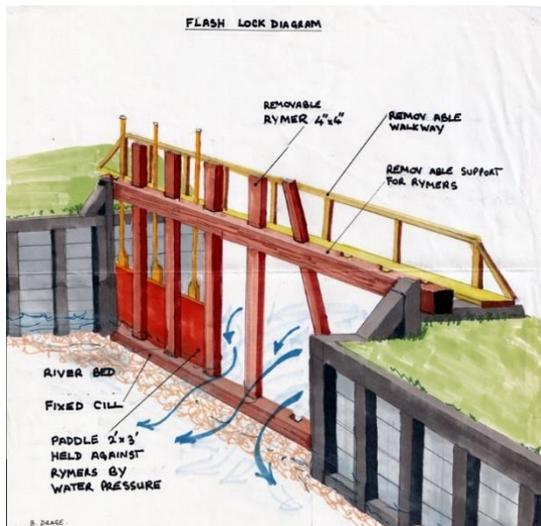
So large an obstruction to the river's flow as the ware could cause problems when the Thames was in spate, so at some time two overflow channels were constructed. The upper one left the river in the area of Stoneyware, ran diagonally behind the Complete Angler and discharged into the weir pool. Its outlet is visible in a number of illustrations of old Marlow bridge, and the remains of the bridge over it can still be seen on the approach to the bridge on the Berkshire bank. The lower one was dug out of the mill wharves, now the gardens of the houses near the lock, and ran behind the mills, where it split into two. The right-hand branch discharged direct into the lower mill pool, the left-hand one ran across the ground below the mills on the Bucks bank to discharge just above the bypass bridge. The lower end of this was still visible in the mid-twentieth century as a dry dyke, at least two metres deep, which filled to the brim with water when the river was in flood.



Flood channel outlet on left

The Flash Lock

Weirs had the effect of completely blocking what was at that time the most direct and safest route to central southern England. Obviously some way of allowing river traffic to pass through the mill dams had to be contrived. The answer, again dating from the medieval period, was the flash lock. A timber-lined gap about 6m wide was made in the weir, and the flash lock mechanism inserted into the gap.



Brian Drage's excellent diagram explains the construction and working of a flash lock much better than I can. The 'pulling' of a lock was, understandably, fraught with danger for the hands working the lock, who needed both strength and speed, and the bargemen shooting the resulting rapid or being winched up through the lock after the first rush of water had subsided. The first record of a winch in Marlow dates to 1306. This indicates that a flash lock existed at that point, but a flash lock could exist without a winch.

Boats

could be hauled upstream by a group of men with a rope, but at Marlow the width of the river and the shallow depth of the lock, which meant that boats had sometimes to be pulled over the bottom of the lock and the sill, made a winch necessary. The last flash lock winch on the Thames, thought to have worked on Hurley flash lock, was found on the Wittington estate in the 1980s and restored by Chris Wallis.



Hurley winch

From an early date Marlow lock had an evil reputation. In 1585 Stow, in a far-reaching survey of London, remarked on...

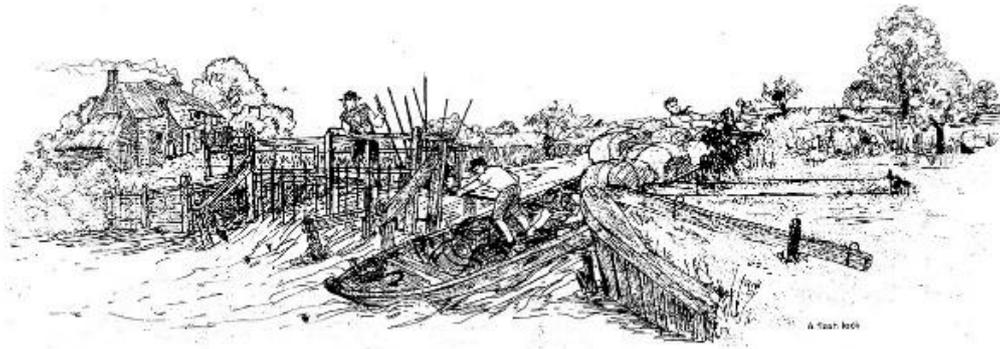
'especially one lock, called Marlow Lock, of which there had been great complaints. It was held by one Farmour. The streams there were so strong, and the water had such a dismal fall, that four men within a short time were lost; three whereof were drowned, and a fourth had his brains dashed out. And all the recompence the poor widow had, was that Farmour gave her five shillings. But beside the danger, it was very expensive to the poor bargemen, the millers selling the water in the stream for above £300 a year.'

Nothing new about expensive season tickets, then! It seems, as Farmer was recompensing the widow, that it was one of his own men who was brained. The likelihood is that most of the deaths on the lock were of local men. There is no record of a winch on the far side of the weir-pool, so when barges had to be poled down through the drained lock, the mill hands must have gone into the water with ropes and rollers to pull it through. As barges increased in size and weight there must have been considerable scope for accidents. In 1632, in a poem about the Thames, John Taylor said,

**The Marlow locke is worst, I must confess,
The water is so pinched with shallowness.**

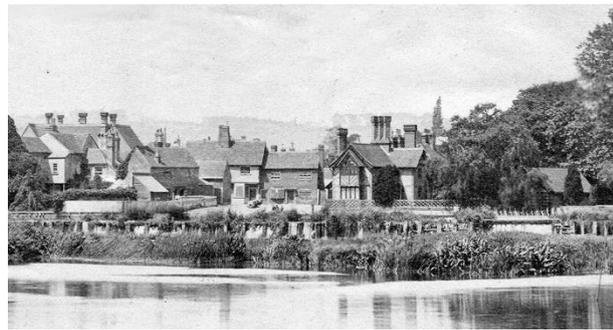
Although the water was shallow, the current was so rapid and strong that the area became known as Marlow Race, of which another poet said that it...

**...hath made many a Child to weepe.
Their mothers begg from dore to dore
Their fathers drowned in the deepe.**



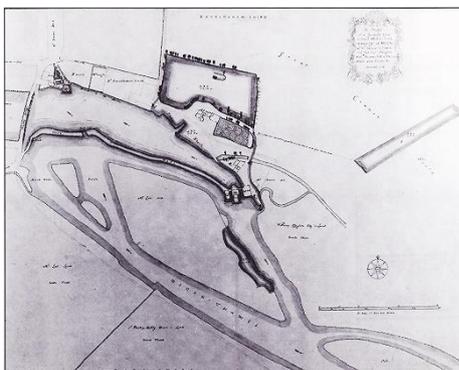
Shooting a small flash lock

Who was responsible for this vast piece of medieval technology? The ware and flash lock, together with the winch at the bottom of St Peter's Street, formed part of the mill estate. This embodied a violent clash of interest. The miller wanted to run his mills regularly in order to make money, but every time he pulled the flash lock it took at least forty-eight hours for the river to rise again to a useful level.



The ware, flash lock and Marlow wharf

Hence the vast charges made to Elizabethan barge-masters for use of the lock. Originally the mills had belonged to the manor, but ownership of the two in the town had been passed to the miller. At the beginning of the fourteenth century, in a sudden rush of blood to the head, he gave them both to St Thomas's Hospital in return for an indulgence reducing his time in Purgatory by twenty days. By 1530



John Leland reported that the mills, as well as grinding corn, were pressing linseed for oil and making thimbles. At the Reformation they were sold off to a wealthy local family, the Farmers, who unfortunately became recusants and had eventually to sell the mills to pay their fines for non-attendance at church. Several generations of the Ferrars family owned and ran them, until in 1755 the wife and daughter of the last miller put the whole estate up for sale again, leaving us this magnificent estate plan.

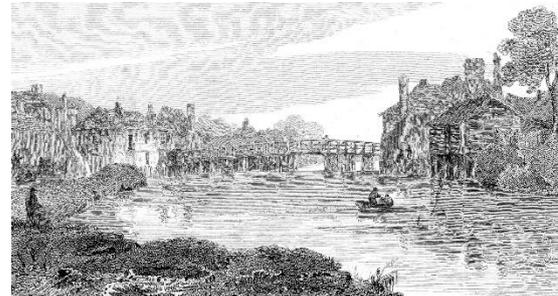
Until this period there had been no planned maintenance or improvement of the navigation of the middle Thames. From very early the Corporation of London had assumed responsibility for the state of the river between Staines and the sea. In the early Stuart era a commission, set up to improve the navigability of the river above Oxford, had inserted pound locks and cleared the stream with excellent results. The intention had been to follow this up with a similar commission on the middle Thames, but the Civil War put paid to that, and the inflation which followed the Restoration made the idea seem less attractive.



Thames sailing barge, 1830

Goods had been moved up and down the river since before the Norman conquest. Once London had been established as the capital city large quantities of grain were moved through Marlow from south Buckinghamshire. Billets of firewood, not only for kindling, but to fire London's bread ovens, were coppiced from the Chiltern woodlands. From further afield, wool from the Cotswolds came from Oxford on the packhorse road which

entered the town down Chalkpit Lane and ended on the manor wharves. From London came goods from overseas; fabrics, spices and food and, as the eighteenth century advanced, sea-coal. Brought by sea from Newcastle and the Humber, it came up-river to heat the homes of the wealthy and the emerging middle class. Marlow was a bustling in-land port...

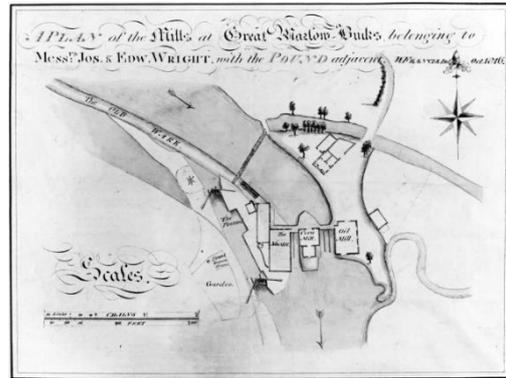


Winch housing on right

The Pound Locks

...and every single ton of cargo had to be hauled through every flash lock on the way up the Thames. In 1767 56,365 tons of goods were moved up-river through our flash lock, the equivalent of over 150 tons for every day of the year. Probably a comparable amount was going in the opposite direction. But the flash lock was certainly not pulled every day. Obviously something must be done. In 1751 the Middle Thames Navigation Commission was formed. To say that this was an unwieldy body is putting it mildly. Every landowner on either side of the river with land worth over £100 had a seat. So did the mayor of every riverside town and several representatives of the University of Oxford. This amounted to about six hundred people, but business could be transacted with a quorum of eleven. The commission had no revenue except the tolls from the locks, which it had taken over from the millers. It took them some years to amass enough capital to undertake any large works. The largely sleeping majority of the commission could also be a problem. If a landowner was faced with a proposal which he disliked, he and his neighbours would attend a management meeting and vote it down. At one point the landowners seriously suggested that a canal should be constructed from Oxford to London (not, of course, traversing their land) to completely bypass the river.

Nevertheless, by 1770 the commission were ready to begin replacing the most problematic flash locks with pound locks. The first they converted was Boulter's Lock, the third, in 1773, was Marlow. Problem solved! Well, not quite. The locks on the Thames above Oxford were earth-sided, with gates inserted at either end; perfectly adequate for a small river. The mid Thames commissioners recognised that this would be inadequate, so reinforced the locks by lining them with baulks of pine. The force of the current here washed ours out within seven years. Nothing daunted, they reconstructed it, but problems persisted. Both the lock itself and the channel downriver silted up to such an extent that two windlasses had to be inserted, one at the top end of the lock, the other on the bank beyond the lower mill-pool, and barges were winched through the pound lock and the channel below, sometimes on rollers. Occasionally even that became impossible and the flash lock came back into use. It was still being pulled in 1794. Indeed, it appears that Marlow came to permanently distrust the pound lock, as photographs of the flash lock in the mid nineteenth century show it in good repair. This was all made more difficult by the fact that the construction of the pound locks had encouraged barge-masters to build bigger vessels. Thames barges were always wider in the beam than canal barges, with a very shallow draught, but now the locks accommodated longer boats.



Plan showing first pound lock



Marlow Mills

In 1794 a survey for the Commission, undertaken by John Rennie the elder, an eminent civil engineer and hydrologist, shed further light on the problem. In his words:

'When we began our work this morning, the mills had worked the head down one foot, or eighteen inches, under high water mark; and I was informed by Mr Clarke, your surveyor, and by the lock keeper, that the water is sometimes two feet lower than now.

There are three paper mill wheels, and two corn mill wheels at this place, and they seem to be under very bad regulations indeed, otherwise they would not be suffered to work down the water so much as three feet six inches under pen; in such cases one cannot be surprised at there being a deficiency of water for the navigation; this abuse of power is much against the interest of the mills as well as the navigation, and ought to meet the earliest attention of the Commissioners.'

In other words the millers, when it was no longer in their financial interest to do otherwise, were stealing the water from the river traffic.

Eventually the commissioners bit the bullet and decided to build a stone lock. This was put through beside the old lock, which they intended to fill in the next year. In the event they built the new lock in 1825 and filled in the old one in 1848. Thames House and Ringrone now stand on the site of the original lock. It seems that the problem with the mills had also been solved by that time, because the new lock caused a significant rise in the river level, which had one unforeseen consequence.



Interior of old All Saints

Marlow's medieval church, closer to the river than the present one, had long been a victim of flooding. As its floor was lower than the ground around it, water was slow to drain away, and now it was flooded more often and deeper. A drawing from the 1820s shows the flood watermark, seventeen inches up the sides of the box pews. In December 1830, on a night of gales, the wooden spire fell in through the nave, bringing half of the Norman tower with it.

For fifteen years freight could move easily on the river, and vast quantities of goods came, via the Oxford Canal, from the Midlands down the Thames to London. In the 1840s the coming of the railways changed everything. This new form of bulk transport, faster and infinitely more flexible than the river and canal system, killed off its rival within twenty years. By 1860 the Navigation Commission, dependant on freight tolls, went bankrupt and was wound up in favour of the Thames Conservancy Board.



Marlow weir, 1880

This new body was differently funded and controlled the river from source to sea. All this time, weirs had remained the responsibility of the millers, but ownership was now transferred to the new body, which was tasked with updating these ancient structures. The mills continued to make paper until the 1930s, but their use of water was under the control of the Conservancy

Board. Officially, our weir was rebuilt in 1872. In fact, at that point the Conservancy Board began an update which lasted until the period between the first and second World Wars. The photograph taken by Henry Taunt from All Saints tower in 1880 shows that this was a very gradual process. At that point they had raised the level of the weir by adding two steps and a sill to the up-river side. This had apparently also raised the water-level in the weir-pool, but the baulks of timber supporting the original structure were still clearly visible. So was the flash lock! Marlow was very reluctant to part with that lock, but eventually it was pulled for the last time and replaced with a set of deep sluices which, when fully open, allow the Thames to roar through in a horizontal wall of water. Locally this (and possibly the flash lock before it) is called the Lion's Mouth. With the original sluices which flanked it, it was probably inserted in the earlier part of the twentieth century.



Finished weir, 20th century

I would take a small bet that, somewhere under the weir, encased in layers of waterproof cement, is our medieval ware, simply because there is no record of it ever having been removed. I cannot believe that anything on such a large scale could have happened without the town noticing! The angle of the Lion's Mouth, visible in aerial photographs, shows where the flash lock was and points to the whereabouts of the windlass, which was on a

staging built out from the bank just east of St Peter Street.

We may think that we have finally tamed the Thames, but it constantly reminds us otherwise. These photographs, taken during the 2014 floods, show the weir-pool completely full, with water only a few inches below the footway, and the lock with the water above the up-stream gates deeper than the water in the pound. We can enjoy our river, but we should never take it for granted.

