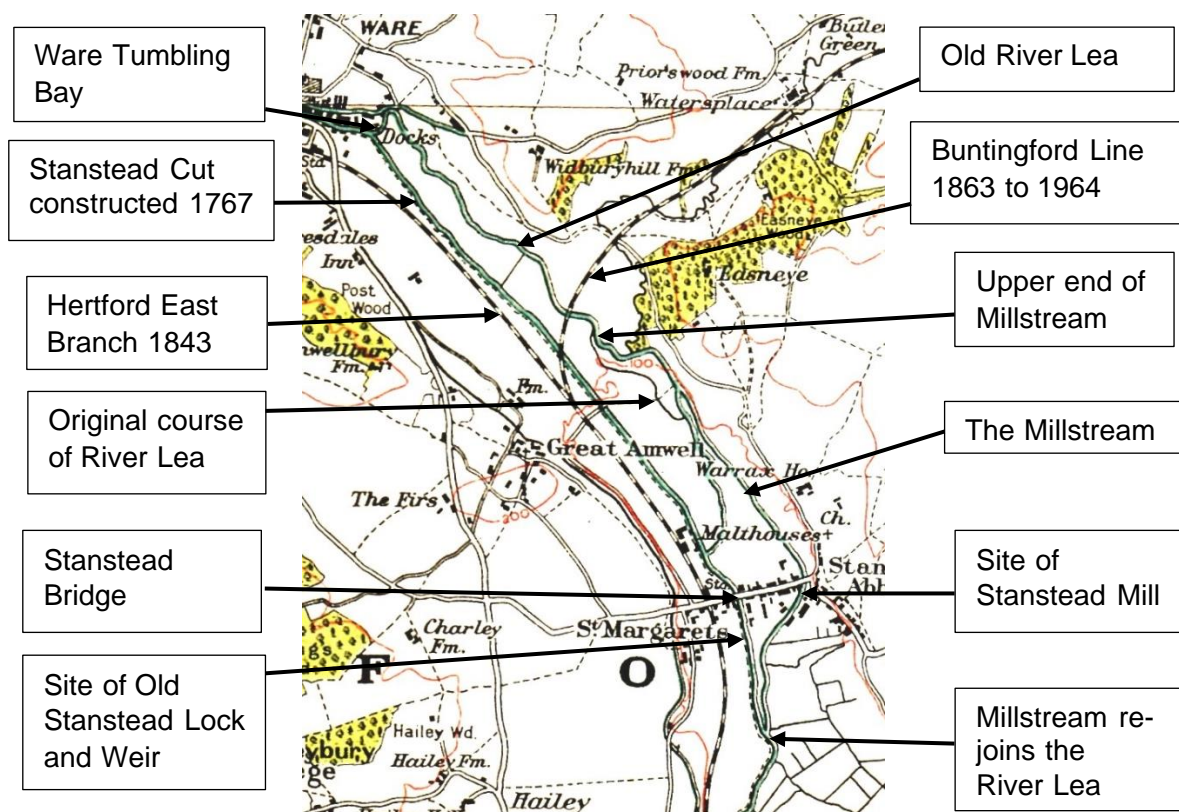


THE BUILDING OF THE LEA NAVIGATION 1767

By
Stuart Moye

Given its importance in transporting goods to a growing London the River Lea remained a flash lock navigation for longer than might have been expected. By the end of the 1600s there was a need for even more and larger barges on the river as well as greater production from the water mills. This meant that it became more difficult to manage the water flow in the River Lea to balance the needs of millers and the barges. Flash Lock navigations were not very efficient in the use of the available water especially in the drier summer months. It was normal practise on the Lea for different days during the week to be set aside for the movement of barges and the remaining days, allowed the water to be diverted to the water mills. The single operation of a flash lock was so expensive in the use of water that barges were organised into groups which moved down the river together, sharing the considerable amount of water that was released by each opening of the flash lock gates. To improve this situation on the Lea was going to cost a considerable amount of money. As the traditional arrangement could be made to work reasonably well the system was tolerated long after other rivers had been canalised and some had adopted the cistern locks that we are familiar with today. It was not until the end of the 1730s that minds became more seriously concentrated on improving the navigation on what was traditionally referred to as the Ware River. This eventually led to an Act of Parliament in 1766 which gave the powers needed to construct a more modern navigation on the Lea, from Ware to the Thames.

MAIN LOCAL FEATURES OF THE RIVER LEA NEAR STANSTEAD ABBOTTS



By the 1750s there were growing problems on the river which saw increasing amounts of traffic going by road to London. In 1659 Thomas Hankin, a well known Stanstead Abbots Maltster, informed Parliament that when there was sufficient water a barge could travel from Ware to London in 5 days. Sometimes a complete stoppage could occur through lack of water. In such cases a barge might take a fortnight or even three weeks to complete the journey. He went on to explain how goods could be kept waiting in warehouses in Ware and Stanstead for the situation on the river to improve, only in the end to be sent by road to London. In 1760 the River Trustees were shocked to discover that even malt was being transported by road to London. In addition, it was reported that there had been a reduction in the number of barges plying their trade on the river during the 1750s. Things had indeed reached a parlous state. It was on August 5th 1765 when the Trustees decided to embark on a new plan for the navigation along "The Ware River". This led to John Smeaton and his assistant Thomas Yeoman being instructed in July 1766 to carry out a survey of the river and make recommendations for the improvement of the navigation. It is likely that Smeaton had already been consulted in depth about what might be a sensible way to proceed. This is perhaps supported by the fact that the report was delivered to the Trustees just two months later in September.

Information gathered during this period provides an interesting insight into the traffic on the river. There were approximately 800 barge journeys a year from places on the upper part of the navigation. Only 100 of those were from Hertford the remainder from Ware and Stanstead Abbots, the majority being from Ware. In 1765 it was estimated that about 36,000 tons of goods were carried on the navigation. The traffic was dominated by malt, meal and grain going downstream with limited coal moved upstream. Tolls paid to the private owners of the mills and fisheries to pass through their locks meant that barges were paying up to 59/- for a one-way journey per barge. The barges themselves were said to be carrying 35 to 40 tons of goods downstream but only 10 to 15 tons upstream due to the difficulties presented by a navigation dependent on flash locks.

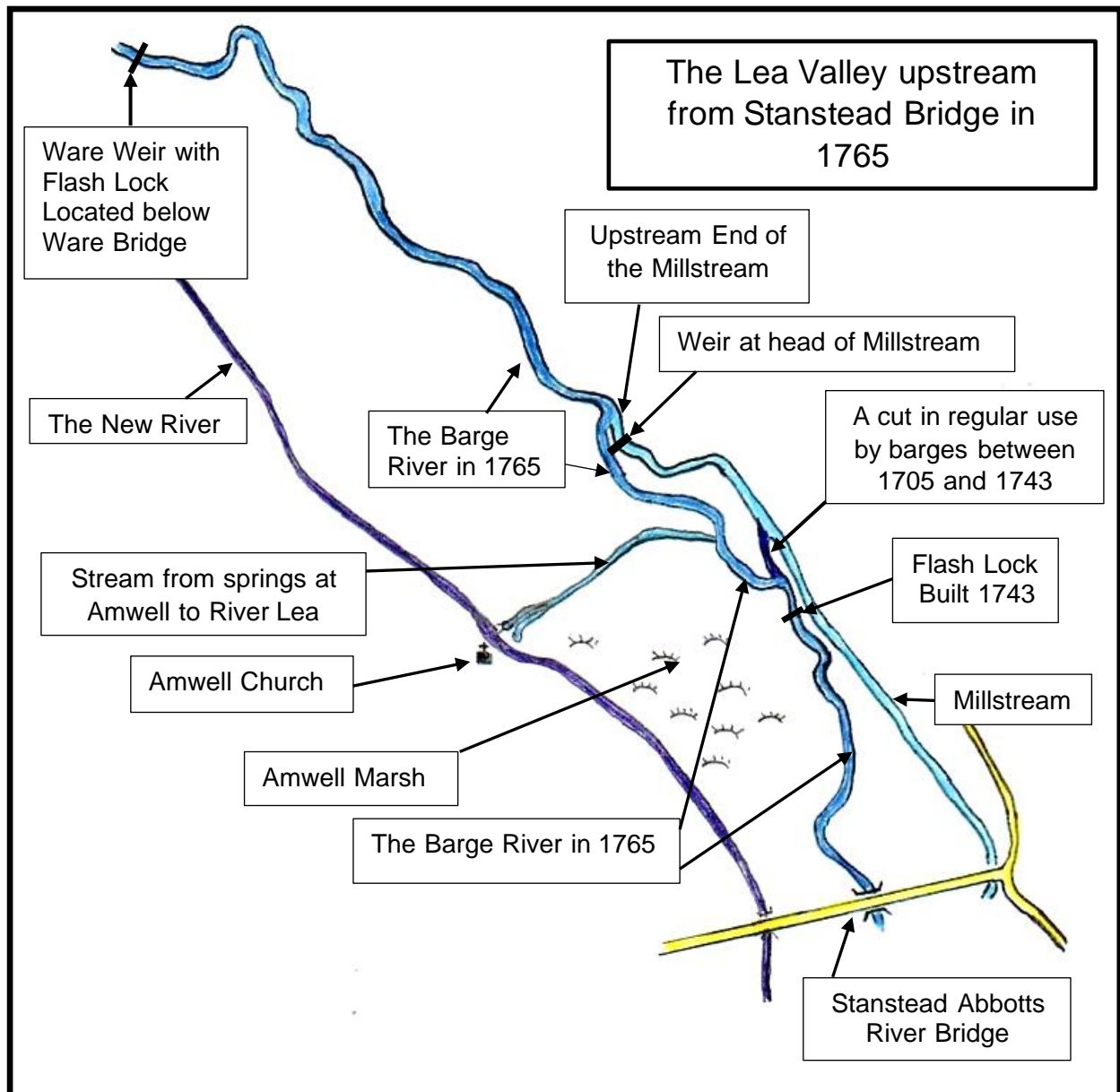
The report consisted of three possible schemes, the most comprehensive was estimated at £29152 7s 0d, a mid range scheme at £ 26652 18s 0d [Smeaton's recommended scheme] and a minimal scheme at £25634 7s 0d. All included the requirement of a minimum depth of 2 feet 6 inches and the use of the existing channel where it was possible for it to be altered and maintained to suite the requirements. Cistern locks were to be employed and positioned where they would serve the purposes of maintaining the navigation rather than the specific needs of the millers.

Quite quickly an Act of Parliament was submitted and due to it being very well thought through and presented most concerns raised by interested parties had been resolved well before its passage through parliament. The 1766 Act 7 Geo III c 51 "Improving the Navigation of the Lea from Hertford to the Thames, and for extending the navigation to the floodgates belonging to the Town Mill of Hertford" received its Royal Assent on the 29th June 1767. The Act allowed the Trustees to remove all weirs and turnpikes along the new navigation. All fishing weirs were to be purchased and removed only if they were on the new line of navigation. Permission was granted for 14 new artificial cuts to be made to divert the navigation in line with Smeaton's recommendations. For the first time land was to be purchased and a proper towpath was to be constructed and maintained. Tolls at locks having all been abolished by the Act the Trustees were empowered to charge a toll, based on a tons per mile basis, as was standard practise on most canals. The navigation was to be maintained at all times with a general depth, even in times of drought, of 3 feet and only allowed to be reduced to a minimum of 2 feet 6 inches at existing fords

At Stanstead Abbots there were new navigation cuts specified both upstream and downstream of Stanstead Bridge. These were specified in the Act as:

- a) Above Ware Weir but below Ware Bridge to some point above Stanstead Bridge
[This became known as the Stanstead Cut] and
- b) To bypass Stanstead Weir by a new canal from the river below Stanstead Bridge into the tail stream of the mill.

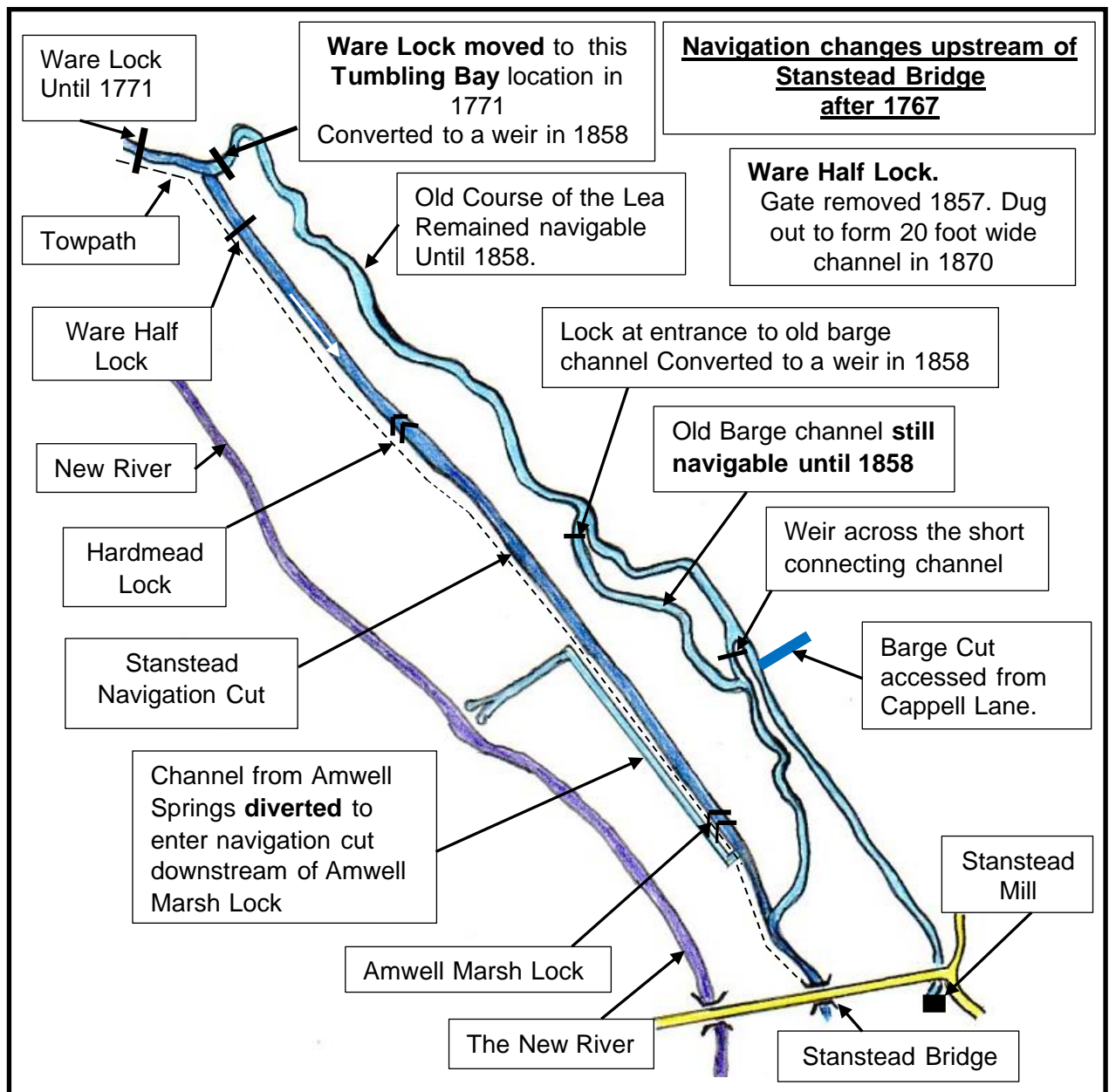
UPSTREAM OF STANSTEAD BRIDGE



In 1765 the navigable channel for barges followed the course of the River Lea and did not use any part of the millstream. Between about 1705 and 1743 barges had regularly used the upper stretch of the millstream before returning to the channel of the Lea via a short artificial cut. It is not clear if this short cut was partially silted up between 1743 and 1767 or remained a fully navigable channel. It was not part of the Lea navigation channel for barges after 1743. This short channel dated from the navigation scheme of the 1570s.

An unusual feature of the valley was the stream that carried water from the remaining two springs below Great Amwell church across the valley floor to join the River Lea on the far side of the valley floor. This stream had been even more vigorous before 1613 when the New River was opened and took about 70% of the water from the Amwell Springs. A large area of the valley floor downstream from Amwell was known as Amwell Marsh. This wet area had been traditionally used for grazing cattle in the summer months only and had been considered quite dangerous in the winter. There are stories of cattle drowning after they had wandered into the treacherous marshland during the winter months.

A NEW NAVIGATION AFTER 1767



Between Ware and Stanstead, a new navigation cut some one and three quarter miles long was constructed. In Smeaton's report dated 26th February 1767 the costs estimated for forming the cut was £468 12s 0d. This required a gently rising embankment in relation to the valley floor to provide a level pound of water. The water in the Cut was at first controlled by three locks, Ware Half Lock, Hardmead Lock and Amwell Marsh Lock. Ware half Lock and Amwell Marsh Lock lasted only until the changes of 1857. The Amwell Marsh Lock being replaced by today's Stanstead Lock. The Old course of the Lea was however maintained as a navigation until 1858. Ware Lock which until 1771 was located a little upstream from where the new navigation turned off from the Lea was moved to stretch across the entrance to the old course of the Lea in 1771. This took the form of a weir with a central gate to allow river traffic to pass. This location today is a weir known as the Tumbling Bay. Another new lock was built further down the course of the old Lea just downstream of where the Stanstead Millstream branched off. This allowed water to flow more freely down the millstream unless the now much reduced river traffic in the Old Lea required to pass through the lock. A weir across the short channel between the millstream and the main river controlled the flow of water from the millstream back into the course of the Old Lea. It also helped maintain the flow of water down the Millstream to Stanstead Mill, which continued to use water power until 1893.

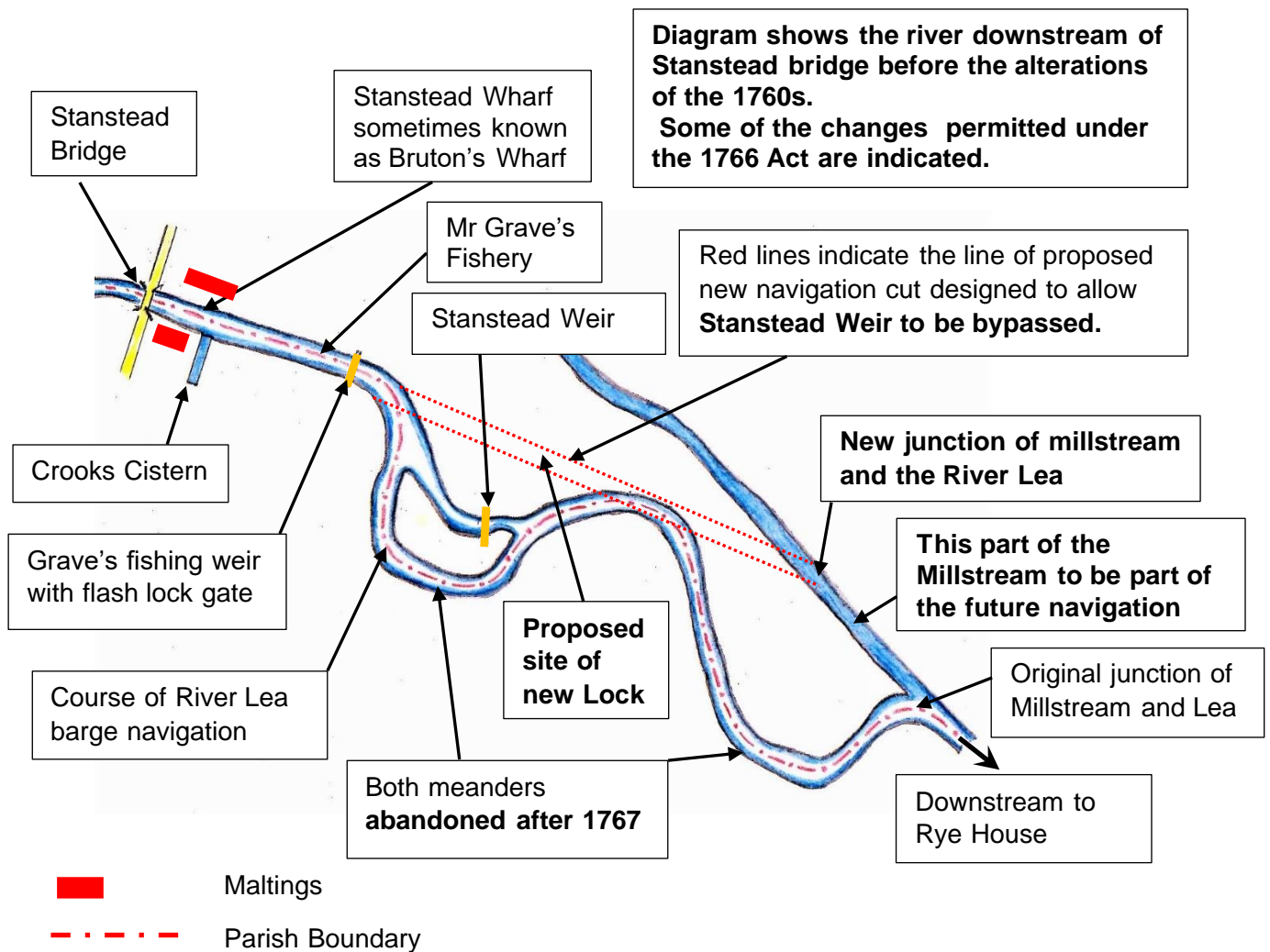
The barge traffic between Ware and London now used the new navigation cut between Ware and Stanstead leaving the old course as a bit of a backwater. Barges still used the old course some going to and from a barge cut from the millstream across the field towards Cappell Lane. The field today through which it ran sits between Easneye South Lodge and the millstream. Traces of this barge cut appear to have been removed some time in the mid - 1900s. A patch of water often sits in this field in the winter months no doubt sitting on remnants of the puddling clay that once lined the channel. This barge cut is believed to have been built to transport goods away from a sand quarry and a lime kiln. The sand quarry was located on the slope above today's Wilberforce Cottages. The lime kiln was situated beside the track that today runs up the valley side from its junction with Cappell Lane close to Easneye South Lodge. As late as the 1970s this track would be referred to by locals as Lime Kiln Hill. The navigation changes in the 1850s saw the Ware Lock at the entrance to the upper end the Old River Lea being rebuilt as a weir known as the Tumbling Bay. Similarly, the lock in the Old Lea close to the entrance of Stanstead Millstream was also turned into a weir. This of course brought to an end any through navigation on the old course of the River Lea between Ware and Stanstead. With the removal of locks on the Old Lea and replacement with weirs in 1858 the barge cut near Cappell Lane would no longer have been accessible by barge from the main navigation at Ware or Stanstead. In the 1760s the stream carrying spring water from Great Amwell was diverted to run parallel with the navigation embankment before entering the river below Amwell Marsh Lock. Amwell Marsh itself was now bisected by the new navigation and efforts were made to ensure the land was better drained, which transformed it into all year-round cattle grazing pasture.

The 1760s navigation, for the first time, saw land purchased to provide a towpath alongside the barge route. Horses had been introduced onto the Lea in a limited way from as early as 1715. After 1740 more horses began to appear and landowners began to charge a toll for the use of horses across their land. This was despite the fact that the men who had traditionally pulled the barges along had never been charged for access to the banks. By 1750 these tolls had become exorbitant with each land owner charging up to 3d a man. Over the next decade these tolls doubled and one land owner pushed the cost up to 1/-. The towpath provided after 1767 by the Trustees was entirely toll free and encouraged the use of horses which it was said could do the work of ten men. It was at this time that the Trustees began to mark their new boundary with cast iron markers. One such marker can be glimpsed at the top of the slope leading down to the towpath on the upstream side of Stanstead Bridge. Interestingly this may well have played a role in a dispute in the 1860s between the Trustees and the Ware Hadham and Buntingford Railway Company. The latter accused the River Lea Trustees of taking more land than they had paid for almost a century before. The Railway Company had only purchased the land known as Toll Bridge Meadow a few years before when constructing the Buntingford Branch which opened 1863.



A River Lea Trustees [RLT] cast iron boundary post by the side of the path at the top of the slope leading down from the bridge to the towpath, on the Ware side of the bridge. A similar post found at Hertford Lock has 1766 cast into the metal under the RLT. The Hertford example is three feet six inches long with a large spike at the base. One wonders how many have stubbed their toe on this bit of local history.

DOWNSTREAM OF STANSTEAD BRIDGE IN 1766

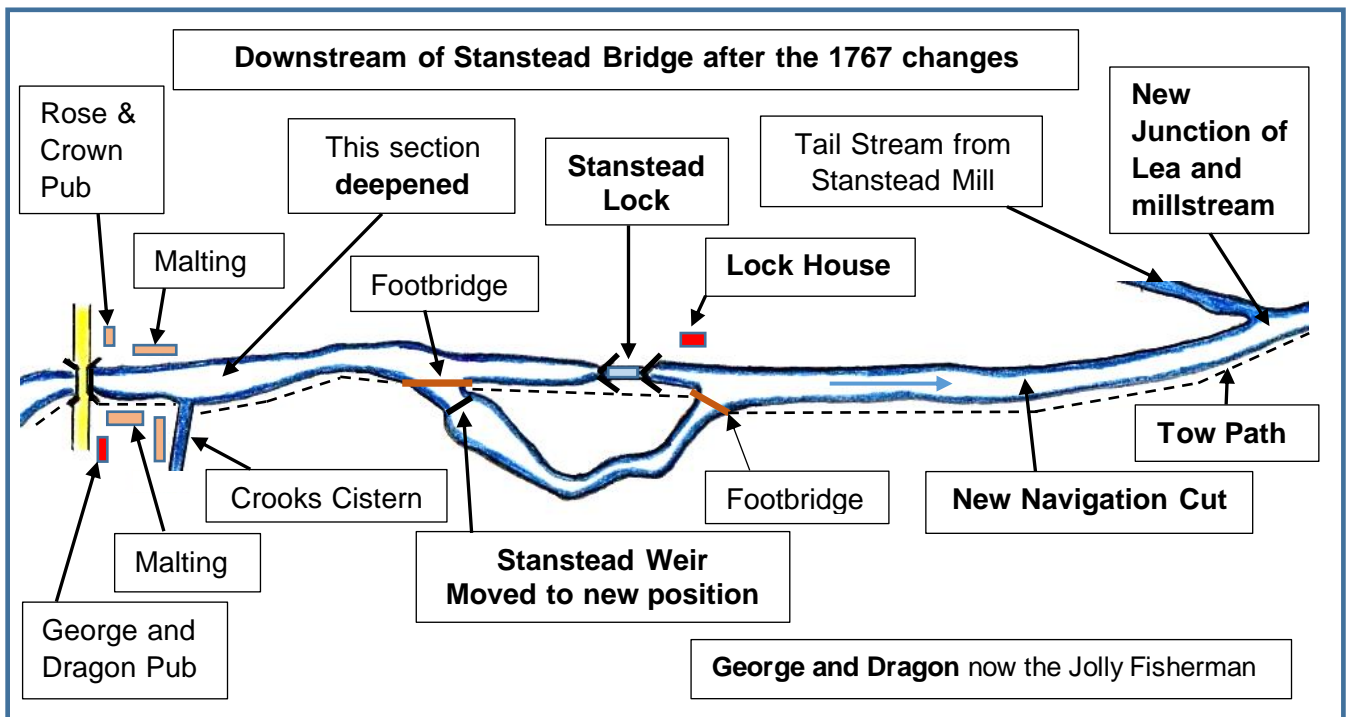


Extract from George III 1766 Act of Parliament for improving the River Lea.

"One other new cut or canal to be used for the said navigation, leading from afore-said channel below Stanstead Bridge into the Tail stream of Stanstead Mill".

The section of river from upstream of the river bridge down to the fishery had traditionally been a shallow section of the river. This was undoubtedly why this part of the river was chosen for an early fording place, later to be replaced by a bridge. Historically wharves had been located just downstream of the bridge on both banks of the river. Crook's Cistern is believed to date from 1701-1708, when Japhet Crook was Lord of the Manor of St Margarets. The use of the word cistern suggest that it had a gate which could be closed to retain the water in the barge cut. There are several occasions during the early 1700s when it is recorded that barges were stranded on the mud at Stanstead [Bruton's] Wharf on the opposite bank of the river. The ability to retain water in Crook's Cistern would therefore be an advantage in times of low river level after the flash lock at Grave's Weir had been opened. Downstream of the fishing weir the river entered the first of two meanders which had a cut off channel across which was Stanstead Weir. This was an ordinary weir which ensured sufficient water for navigation was directed around the meander. This is believed to be the location of an early water mill in Stanstead Abbots. At the downstream end of the second and larger meander the Lea was joined by the tail stream from Stanstead Mill. This is some way further downstream on the River Lea than today's confluence of the millstream with the Lea.

CHANGES MADE DOWNSTREAM OF STANSTEAD BRIDGE



The changes carried out under the 1766 Act of Parliament, along a relatively short stretch of the river below Stanstead Bridge, were considerable. The channel below Stanstead Bridge was dredged to permanently provide sufficient depth for barges when tied up alongside the wharfs on both banks of the river. This was described by Smeaton as "clearing a shoal below Stanstead Bridge" with an estimated cost of £100. Grave's Fishing Weir was removed completely along with its flash lock. A new navigation channel was built starting approximately where the large building at the boatyard now stands down to the tail stream of Stanstead Mill. The first and smaller meander in the river was bypassed by the new cut with a modern cistern lock built into this part of the new cut. This Lock was known for a short time as Leak's Lock thereafter as Stanstead Lock. This lock should not to be confused with the later Stanstead Lock built in 1857, upstream of Stanstead Bridge. A Lock Keepers house was provided just downstream of the lock. The keepers were usually charged with looking after both the lock and the weir. A new Stanstead Weir was built at the upstream end of the side channel that was not part of the new navigation. Both the weir and the lock had a fall of 3 feet 6 inches. The new weir was designed to aid in regulating the depth of water in the channel upstream and as a bypass for the Lock. The new towing path was carried over the entrance and exit of the loop by newly constructed wide wooden footbridges built in such a way as to allow towing to be possible as a horse crossed the bridge. Once the new arrangements were in place the previous navigation channel around the meander in the river was abandoned and cut off from the river and weir channel. Downstream of the lock the new navigation cut bypassed a second and larger meander. Once again, this meander was abandoned and cut off from the new navigation. The centre line along most of the length of the two abandoned meanders was to remain as the parish boundary between Stanstead Abbots and St. Margarets for over 200 years. Both meanders slowly silted up, becoming notable for the prolific growth of bullrushes in the remaining shallow water. The new cut at its lower end made a junction with the tail stream of Stanstead Mill. Downstream of this junction the millstream was widened and deepened to become part of the navigation channel until it re-joined the traditional course of the Lea.

Following the Act of 1850 for River Lea improvements; Stanstead Lock, Stanstead Weir and its associated loop were all removed. Subsequent widening and deepening of the navigation and the building of houses on some of the land where the two meanders once existed makes it difficult to imagine what the scene here was like some 270 years ago.



*A 2015 view of Stanstead Bridge showing the wharf and the old Malting.
Stanstead Wharf now hosts an array of leisure craft, rather than the barges of old.*

THE NEW NAVIGATION

The introduction of the new navigation saw an increase in traffic on the river rising from the 1765 figure of 32,000 tons per annum to 50,000 Tons in 1774. The barges now released from the difficulties presented by the Flash Lock system could travel the length of the new navigation in about 13 hours. This was very much the length of time that had been predicted by Smeaton in his report. To prove a point a special effort was made to see how fast it could be done which led to a one-off record of just 8 hours. However, barges did not increase in size significantly due to the restrictions imposed by the depth of water in the navigation. It was not until the 1850s, in response to the new threat posed by the railways that further improvements were made, which led to barge capacity rising to 50 Tons. It is interesting to note that as barge traffic was running down in the C20th the barges operated by Albanys of Ware had a capacity of 100 tons. A description of the barges in use on the Lea navigation was recorded in 1774. The dimensions were given as 71 feet long by 13 feet wide and were capable of carrying 35 to 40 tons. When fully laden the draft was 2 feet 6 inches at least and most were about 3 feet. It was noted that more recently built barges had a flatter bottom than previously. This was perhaps an attempt to push up carrying capacity whilst still keeping the draft within the limits imposed by the depth of water commonly encountered in the navigation, particularly in the dryer months of the year. A journey by barge still did not compare favourably with the horse drawn road coaches that could get passengers to London from Ware in just over 3 hours. Because of this the Lea Navigation was never to see the introduction of regular passenger boats as was common on the longer distance canals.

With the removal of nearly all the tolls from flash locks and fishing weirs on the river one might have thought the costs of transporting goods by barge would have been reduced. The Lee Trustees introduced their own toll system based on the weight being carried in the barges. During the period 1767 to 1778, they charged 1/5 per ton of malt for the full journey which gave a total charge for a 40 Ton barge of 56/8. This was slightly more expensive than the 56/- that bargees had accumulatively been charged by the various owners of locks and weirs before the modernisation of the navigation. The Trustees appear to have mismanaged their affairs a little as tolls had to be increased to 2/2 per ton in 1778. In fact, despite this rise in tolls, the debt owed by the Trustees from building the navigation was not paid off until the end of the century. Also, in 1778 the Trustees issued orders that the names of barges and their owners should be moved from the bow to the stern of the barges as an aid to more easily identifying who was responsible for paying the tolls.

The Lea Navigation that was constructed as a result of the 1766 Act of Parliament, despite some considerable later improvements, remains in use today. The commercial barges have by and large long gone from the Lea. However, the surge in interest in boating and barges for leisure and in some cases residential use has seen a revitalised role for the Lea Navigation develop in the last 50 years.



A view downstream from Stanstead Bridge with historic wharves either side of the river in the foreground. Leisure boats and barges line the banks on both side of the river. In the distance beyond the crane jib, just discernible on the left bank in the middle distance, is the fairly straight navigation cut of 1767. The long-abandoned meander led off to the right opposite to where the crane stands. Old Stanstead Lock once stood about as far down river as this picture allows you to see from this favourite vantage point for locals enjoying a few restful moments.

John Smeaton 1724-1792

Even today a highly regarded civil and mechanical engineer who was involved in many aspects of research and construction. He is perhaps best known for his design for the third Eddystone Lighthouse but he was also engaged in many and varied technical innovations and construction projects. These included being in charge of the construction of several canals and acting as a consultant on a range of navigation related projects.

All photographs by the author

Stuart Moye November 2017 New material added in July 2021